UNIVERSITY OF ZULULAND

Information needs and seeking behaviour of Hepatitis B and C Patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa

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DECLARATION

I declare that this study' Information needs and seeking behaviour of hepatitis B and C patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa", is my original research work. This thesis has not been submitted to any other university for the award of any other degree. All data and information used in this research work have been duly acknowledged in the text, references and appendixes.

30/05/2022

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DEDICATION

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ABSTRACT

The study investigates the information needs and seeking behaviour of patients with Hepatitis B (HBV) and Hepatitis C (HCV) patients at Ngwelezane Tertiary Hospital in KwaZulu-Natal, South Africa. The objectives of the study were to identify information needs and information-seeking of the behaviour of HBV and HCV patients, establish access and use of information by patients, determine the policies and resources supporting the provision and use of information by HBV and HCV patients, determine the role of counselling and education by healthcare professionals in providing information for HBV and HCV patients, ascertain factors contributing to the use of information by HBV and HCV patients, establish challenges of information provision and information seeking on HBV and HCV diseases, and recommend guidelines for the improvement of condition and information seeking on HBV and HCV. The study was guided by the comprehensive model of information seeking (CMIS) and the gratification and expectancy theory (UGET) to predict the patients' information needs and information seeking behaviour. The study adopted a mixed-method approach to collect data. Hence qualitative data were collected from HBV and HCV patients using the purposive sampling technique, while quantitative data were collected from doctors and nurses using the probability cluster sampling technique. The researcher conducted interviews with individual Hepatitis B and C patients until data saturation was reached at eighteen interviews. Additional interview was conducted with senior administrative staff. Semi-structured printed questionnaires were administered to doctors and nurses that consented to participate in the quantitative data collection. The qualitative data aspect was coded and analysed according to themes. In contrast, the quantitative data aspect was analysed using a correlation test of FISHER and Chi-square test to describe the relationship between different modalities of respondents' bio-data (doctors and nurses). Findings show that counselling and education are crucial for patients since they are "socially and psychologically" prepared to cope with treatment challenges. It recommends that the production of pamphlets in the local language (isiZulu) can serve as valuable resources needed to reduce the language barrier. Also, implementing the Department of Health guidelines on hepatitis and creating health-related education programmes, social awareness, and an electronic database are recommended tools that enable the patient to access information.

Keywords: *Information needs; hepatitis B and C; patients; seeking behaviour; South Africa.*

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ACRONYMS

ANT	ACTOR-NETWORK THEORY
ADM	ALCOHOL, DRUG, AND MENTAL HEALTH SERVICES
CIS	CANCER INFORMATION SERVICES
CIS	CANCER INFORMATION SERVICES
CDSS	CLINICAL DECISION SUPPORT SYSTEM
CI	COFIDENCE INTERVALS
CMIS	COMPREHENSIVE MODEL OF CANCER-RELATED INFORMATION SEEKING
CMIS	COMPREHENSIVE MODEL OF INFORMATION SEEKING
CI	CONFIDENCE INTERVALS
CMIS	CONTENT MANAGEMENT INTEROPERABILITY SERVICES
COVID 19	CORONAVIRUS DISEASE
DOH	DEPARTMENT OF HEALTH
DH	DIGITAL HEALTH
NE	EDUCATIONAL NEEDS
EMR	ELECTRONIC MEDICAL RECORDS
ECMISB	EXPANDED CONCEPTUAL MODEL OF INFORMATION- SEEKING BEHAVIOUR
ECMISB	EXPANDED CONCEPTUAL MODEL OF INFORMATION-SEEKING BEHAVIOUR
GT	GROUNDED THEORY
GT	GROUNDED THEORY
HBM	HEALTH BELIEFS MODEL
HBM	HEALTH BELIEFS MODEL
HIAM	HEALTH INFORMATION ACQUISITION MODEL
HIAM	HEALTH INFORMATION ACQUISITION MODEL
HBV	HEPATITIS B VIRUS
HCV	HEPATITIS C VIRUS
HCC	HEPATOCELLA CARCINOMA
ICT	INFORMATION AND COMMUNICATION TECHNOLOGY
ISA	INFORMATION SEEKING ACTION

ICCS	INTERACTIVE CANCER COMMUNICATION SYSTEM
KZN	KWAZULU-NATAL
LGBTI	LESBIAN, GAY, BISEXUAL, TRANSGENDER, AND INTERSEX
LGBTI	LESBIAN,GAY,BISEXUAL,TRASGENDER,AND INTERSEX
NDOH	NATIONAL DEPARTMENT OF HEALTH
NDOH	NATIONAL DEPARTMENT OF HEALTH
PLWHA	PEOPLE LIVING WITH HIV/AIDS
PTSD	POST-TRAUMATIC STRESS DISORDER
PCA	PRINCIPAL COMPONENT ANALYSIS
RISP	RISK INFORMATION SEEKING PROCESSING
RISPM	RISK INFORMATION SEEKING PROCESSING MODEL
SCT	SOCIAL COGNITIVE THEORY
SCT	SOCIAL COGNITIVE THEORY
SDG 3	SUSTAINABLE DEVELOPMENT GOAL 3
TV	TELEVISION
TTM	TRANS-THEORETICAL MODEL
UMT	UNCERTAINTY MANAGEMENT THEORY
UMT	UNCERTAINTY MANAGEMENT THEORY
UGET	USES AND GRATIFICATION AND EXPECTANCY THEORY
WM	WILSON MODEL
WHO	WORLD HEALTH ORGANIZATION

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1. INTRODUCTION

This study examined information needs and seeking behaviour of hepatitis B and C patients at Ngwelezane Tertiary Hospital in KwaZulu-Natal, South Africa. The chapter presents the introduction and background to the study. The study is premised on the information needs and seeking behaviour of patients with hepatitis B (HBV) and C (HCV) in KwaZulu-Natal, South Africa, using Ngwelezane Hospital as the study area. Information is an intangible but essential asset in all sectors of life, whether political, social, or economic, because it allows the user to make educated decisions and directs the user in the proper direction (Adebayo, 2019). Scholars regarded *information* as a helpful infrastructure that underpins society's effective and efficient operation (Adebayo, 2019; Carley, 1986: 383). Everyone, including the deaf and dumb, is reliant on information. Knowledge or facts regarding a phenomenon are Information (Adebayo, 2019; Carley, 1986: 383).

Losce (1990) defines *information* as knowledge transmitted or received about specific events. In support of this, Okwilagwe (2000) considers the information a crucial input that aids in reducing or eliminating the risk associated with the decision-making process. Information seeking refers to "activities" or "actions" engaged by individuals to find health, risks, and illnesses information, as well as protective behaviours (Lalazaryan & Zare-Farashbandi, 2014: 193; Lambert & Loiselle, 2007: 1006). Knowing patients' information-seeking behaviour can provide experts with valuable information to improve patients' health. The study aimed to examine the information needs and seeking behaviour of patients with hepatitis B (HBV) and C (HCV). As the main focus, the study looked at hepatitis B (HBV) and C (HCV) patients at Ngwelezane Hospital, KwaZulu-Natal, South Africa.

Hepatitis B (HBV) and Hepatitis C (HCV) are dangerous diseases prevalent in many countries worldwide (World Health Organization (WHO), 2021:1). According to WHO (2021:1), over 325 million people live with hepatitis B, and C. WHO (2021:1) revealed that type B and C hepatitis cause chronic liver cirrhosis, cancer and viral hepatitis-related deaths in hundreds of millions of people. The study predicted that 4.5 million hepatitis-related deaths will be preventable through vaccination, diagnostic tests, medicines and education campaigns by 2030,

especially in low- and middle-income countries. Hepatitis B contains acute illness with symptoms that last several weeks, including yellowing skin and eyes (jaundice), dark urine, extreme fatigue, nausea, vomiting and abdominal pain. A mild illness due to Hepatitis C infection can extend from a few weeks to a lifelong severe illness due to exposure to infected blood and drug use, unsafe sexual intercourse and transfusion of unscreened blood (WHO, 2019:1). HBV and HCV disease prevalence occur in different regions worldwide, such as Eastern European, American, Western Pacific, Southeast Asia, and African regions (WHO, 2019:1; Onyekwere *et al*., 2016:1). The prevalence rate of HBV and HCV in African areas varies in percentage due to insufficient and inaccurate data.

Regional variability of the prevalence was reported in sub-Saharan Africa (Hung *et al*., 2021; Musa *et al*., 2015:163). In the North-Eastern African region, the prevalence rate was between 5% to 60% of the population in some selected countries (Nelson *et al*., 2011:571; Aceijas & Rhodes, 2007:352). Concerns about HBV and HCV diseases have put a severe burden on both patients and their caregivers due to the health implications resulting from acute and chronic liver diseases, hepatic decompensation, and hepatocellular carcinoma (HCC; Mast *et al*., 2006:1; Bosch *et al*., 2005:191), cirrhosis, and primary liver cancer (WHO, 2022:1; Chonco, & Rangiah, 2019:65; Lok & McMahon, 2000: 661). Given the epidemic nature of HBV and HCV, adequate information regarding the impact of the spread of the disease must be communicated to the patients and the public to enable them to seek important preventive Information (Winter *et al*., 2008:66). The role of information cannot be ignored in the prevention, control and eradication of diseases, adequate care, treatment and health recovery, and health improvement of patients depending on availability and access to Information (WHO, 2021).

Generally, patients and healthcare professionals need to understand the crucial role of health information in preventing HBV and HCV disease globally. Specifically, a focus on intervention is required in African sub-regions for sustainable development. Equally important is the knowledge and understanding of how hepatitis B and C are transmitted to individuals within the communities. Effective information communication between patients and caregivers is essential to help figure out strategies for controlling and preventing widespread disease in any society. Patients and healthcare providers need the information to help discover a mode of transmission, early symptoms, diagnosis, therapies, and coping strategies (Teague *et al*., 1999:201: Becker & Rosenstock, 1989:179). In addition, access to information regarding

important vaccination programs is imperative to control the spread of dangerous diseases (Proeschold-Bell *et al*., 2010: 635; Rhodes, 2000: 408).

Health information is needed to reduce patients' psychological burdens due to stigmatisation and rejection by family and friends (Roose *et al.*, 2014:652). To figure out the required methods of intervention by either government agencies, policymakers or non-governmental organisations in the control of diseases, the information provided is of utmost importance, either by health professionals specifically in the form of health education, health literacy program, or counselling with caregivers' support (Santos-Hoevener, 2018:82; Ruimy *et al*., 2002:567). Despite the value of information in the life of patients and caregivers, remarkably, many authors have reported a lack of knowledge and awareness of the modes of transmission (Adebayo, 2019; Olayinka, 2018; Roose *et al*., 2014:652), preventive measures, access to testing and diagnostic centres, vaccination centres for prevention (Caballero *et al*., 2012: 1547) and the rates of complications leading to liver cancer and mostly hepatocellular carcinoma (WHO, 2018: 1; Ward *et al*., 2000: 277).

In addition to a poor understanding of the complications of HBV and HCV in patients, poor knowledge of the value of testing and treatment of HBV and HCV may be responsible for the refusal of treatment and medication adherence by some infected individuals (Cacoub *et al*., 2008: 6195). Understanding the frustrations expressed regarding access to patient information needs and methods of information seeking, information provision, and information communication methods between healthcare professionals and patients to help identify the mode of contact of the disease, prevention, and management strategies have become imperative (WHO, 2019: 1).

In South Africa, research shows that HBV and HCV remain significant health threats among patients and healthcare providers (Atlaw *et al*., 2021: 1; Vo Quang *et al*., 2021: 915). Some studies reported a high prevalence rate of 69.8% in adults than in children (Chonco & Rangiah, 2019: 65; Semugoma *et al*., 2017: 1116). Further reports indicated a higher prevalence rate in rural areas than urban areas (Kungoane, 2018: 68; Semugoma *et al*., 2017: 1116). Others suggested that the endemic nature of HBV includes a high level of co-infection (Chonco, & Rangiah, 2019:65; Kungoane, 2018: 68; Platt *et al*., 2016: 797).

The most devastating effects include the disease's socio-psychological, emotional, and health impact on the active population in South Africa (WHO, 2018: 1; Patel & Dowse, 2015: 20). Undoubtedly, access to health information on this dangerous disease by patients, caregivers, and the public is crucial (Shimakawa *et al*., 2017: 688). Several theories have been explored to determine a suitable one to measure the variables of this current study (See chapter 3; sections 3.2 and 3.3). The idea of Uses and Gratification and Expectancy (UGET) was considered appropriate to examine the information needs of the patients, given that the approach has successfully been validated in previous studies despite criticisms. The paradigm of social and psychological can effectively measure the information needs of HBV and HCV patients. Findings from related studies in South African contexts revealed some of the concerns and frustrations experienced by patients regarding the lack of information and understanding of the dangerous nature of the disease regarding the need for information about the mode of infection, prevention, treatment, and management, and the socio-psychological, emotional, and health impact on the patients requires that UGET be applied to the context of this study (Noncungu & Chipps, 2020; Patel & Dowse, 2015: 1). lack of knowledge of the accessible source of information, lack of health-related knowledge and understanding, and the stigma associated with HBV and HCV disease have contributed immensely to the ineffective information-seeking practice among patients (Noncungu & Chipps, 2020; Patel & Dowse, 2015: 1). The researcher conducted a scoping literature review by searching through several databases to identify a gap in studies focusing on information needs and information-seeking behaviour of HBV and HCV patients to inform the best methods of improving information provision by the stakeholders. The study considers investigations to establish accessible sources of information, factors determining information used, challenges patients face to access information, and guidelines for information provision access and use. Despite criticisms, previous studies validated using a comprehensive model of information seeking (CMIS to be an appropriate model to examine the information-seeking behaviour of the patients as a theoretical framework.

Studies reporting the prevalence of HBV and HCV reported a paucity of data on the epidemiology of hepatitis B and C and co-infection with HIV in KwaZulu-Natal, South Africa, and information-seeking behaviour in another health context (Tathiah *et al.*, 2014: 1). Limited studies focused on information needs and seeking behaviour of HBV and HCV patients in the South African context. Therefore, this study must provide answers to how the information needs of patients are established and what methods are used to seek Information by HBV and

HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa. What sources of information are accessed and used by patients, and what information policies guide the use of patient information? What factors influence the use of information by patients and the issues healthcare providers to have to contend with to provide and communicate Information to HBV and HCV patients?

A relevant theory such as CMIS and UGET must guide the study of the information needs and seeking behaviour of HVB and HCV patients. UGET can be used to guide the information needs of the patients. In contrast, CMIS can be used to predict the likely factors influencing patients' information seeking and characteristics of information sources influencing the use of information. Moreover, factors predict information-seeking actions by patients through an effective method of investigation (Case, 2012). The following section discusses the contextual setting of the study.

1.2 CONTEXTUAL SETTING

South Africa is widely recognised for having the third-largest economy in Africa, with an estimated population of over 59 million people (Statistica, 2021:1). As the most industrialised country in the continent, with technological advancement, a diversified economy and a robust healthcare system in Africa, South Africa is still faced with healthcare challenges due to unmet information needs and ineffective strategies for patient information seeking among the populace (Invest South Africa, 2021; WHO, 2021; Mogashoa & Pelser 2014:142). South Africa has nine provinces (Eastern Cape, Free State, Gauteng, Limpopo, Mpumalanga, Northern Cape, North-West, Western Cape and KwaZulu-Natal. KwaZulu-Natal was chosen as the location for this study. The structure of the health care system in South Africa ranges from primary healthcare, districts hospital, regional hospitals, tertiary hospitals and central Hospital (Department of Health and Social Care, 2012:1), yet the country is faced with an increasing rate of HBV and HCV prevalence in rural and urban centres (Prabdial-Sing *et al.* (2021:229; Kungoane, 2018:68; Semugoma, *et al*., 2017:1116). Ngwelezane hospital falls within the range of tertiary (academic) hospitals in the district of KwaZulu-Natal.

The government established health policy and legislation to ensure the reduction of the spread of deadly diseases such as HIV/AIDS, Diabetics, Tuberculosis, among others, to ensure compliance in delivering quality care (Moyakhe 2014:80). Qualitative health care delivery is a

constitutional responsibility in South Africa (Stuckler *et al*., 2011:165). To ensure qualitative healthcare delivery in South Africa, the government introduced various developmental programmes to improve healthcare delivery, efficiency, safety and access to health information for all users (Mogashoa & Pelser 2014:142),

The location for the current study was Ngwelezane Hospital, KwaZulu-Natal, South Africa. Ngwelezane Hospital is one of the largest tertiary hospitals in the District of KwaZulu-Natal, South Africa (KwaZulu-Natal Department of Health, 2001:1; 2019:1). The Hospital has over 1200 staff comprising health professionals and paramedics, who provide services for about 7 700 patients per month, including referrals from other hospitals (KwaZulu-Natal Department of Health, 2001:1; 2019:1). Ngwelezane Hospital is a 554 bedded hospital, with proposed additional construction of a 192-bed surgical ward. The Hospital provides services to the district, regional and tertiary services and communities in Uthungulu, Umkhanyakude and Zululand Districts in South Africa (KwaZulu-Natal Department of Health, 2001:1; 2019:1). The Hospital is located at Ngwelezane Suburb, about 5km away from Empangeni and 20km away from Richards Bay Industrial area (KwaZulu-Natal Department of Health, 2001:1; 2019:1).

The Hospital's mission is to provide cost-effective healthcare services and comply with high safety standards, accessible to all the citizens of Region 4 by employing competent staff and creating an environment conducive to academic excellence (KwaZulu-Natal Department of Health, 2001). The hospital's mission includes promoting the development of personnel and research, while the vision consists of the provision of an accessible health facility that renders cost-effective and quality health care service and tertiary services for the region's citizens (KwaZulu-Natal Department of Health, 2001:1; 2019:1).

Access to Ngwelezane hospital information and services for both staff and patients is through websites, hospital bulletin (Ngwelezane News Hub), awareness programs about various diseases. Patients could access information through hospital websites, hospital personnel and phone calls to designated authorities (KwaZulu-Natal Department of Health, 2001). The provision of hospital bulletin and other accessible information resources was to educate patients and the community about diseases, cognise symptoms of diseases and enable patients to seek healthcare.

Hospital information resources specified how patients could understand and protect themselves from exposure to infectious diseases and as well maintain good hygiene. Services provided by the Hospital include specialised medical and paramedical services at the tertiary level for both districts, regional tertiary services, and postgraduate training, including antiretroviral therapy for hepatitis B and C patients (KwaZulu-Natal Department of Health, 2001:1; 2019:1). Hospital policy on information communication emphasises on confidentiality of patients' information as specified in Appendix 4 and 5.

Provision of healthcare services at the district level; and affiliation to the public sector. The researcher chose this Hospital as a study location because it is a public health facility. The Hospital provides treatment and antiretroviral therapy to HBV and HCV patients and has an excellent environment for learning. The study is situated in the hospital context within the information needs and seeking behaviour of the HBV and HCV patients. Besides, the Hospital's proximity makes it possible for the researcher to conduct the study on information needs and seeking behaviour of HBV and HCV patients by collecting quantitative and qualitative data from the HBV and HCV patients and healthcare professionals working in the Hospital.

1.3 STATEMENT OF THE PROBLEM

The prevalence and health complications of HBV and HCV in adults and children living in African regions, specifically in the KwaZulu-Natal province of South Africa, have been noted in several studies (WHO, 2021; Prabdial-Sing *et al.*, 2021:229; Hung *et al*., 2021:1701; Ladep *et al*., 2019:41; Thrift *et al*., 2017:122; Ozakyol, 2017:238). Hence, there is a crucial need for health information on HBV and HCV to help patients and healthcare services consumers better understand the epidemic nature of HBV and HCV in Africa, especially in South Africa (Sonderup *et al*., 2021:703; Kungoane, 2018:68; Semugoma *et al*., 2017: 1116). Unfortunately, lack of information regarding the mode of infections, signs and symptoms, access to and use of disease information, as well as an effective method of information seeking prevented patients from accessing vital information that could help reduce the spread of the disease within the communities and among rural dwellers in Ngwelezane, KwaZulu-Natal, South Africa (Maphumulo & Bhengu, 2019:1; National Department of Health 2012:4). Understanding HBV and HCV infections remain a significant problem among patients and healthcare workers in Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa (Atlaw *et al.,* 2021:1; Escobar *et*

al., 2021: 704; Sonderup *et al*., 2021: 783). Health information is essential in helping patients understand the mode of infection, the rate of spread within the communities, signs and symptoms, treatment and preventive strategies (Maphumulo & Bhengu, 2019: 1; National Department of Health, 2012:4).

Access and use of information are crucial, given that HBV and HCV a silent killer disease that has claimed millions of lives of people (Prabdial-Sing *et al.*, 2021: 229; Scheibe *et al*., 2019, :28; Semugoma *et al*., 2017, p. 1116). However, HBV and HCV patients lack information due to inadequate access to and use of vital health information that could help prevent the disease, receive the best treatment, get tested to know their health status, and improve their living (Mxoli & Mostert, 2018). Despite the importance of communication and information provision for effective healthcare service delivery (Prabdial-Sing *et al.*, 2021: 229), HBV and HCV patients lack information on hepatitis B and C due to language barrier, lack of confidence, low esteem, lack of ability to communicate their health problem effectively with the healthcare providers (doctors and nurses) and inability to understand diagnostic information nor medical terminologies used to describe their health problems in their medical record. An effective information-seeking, Provision, and communication method between patients and healthcare givers are crucial (Scheibe *et al*., 2019; Kungoane, 2018: 68; Semugoma *et al*., 2017: 1116). HBV and HCV patients find accessing information from healthcare facilities challenging. The availability of accessible sources of hepatitis information for patients could have helped prevent them from contracting the dangerous disease (Prabdial-Sing *et al.*, 2021: 229; Semugoma *et al*., 2017: 1116). Based on the submission by Vo Quang *et al*. (2021:915), achieving viral hepatitis elimination in African countries by 2030 can be accelerated by improving access to information-seeking strategies by individual patients and the general public.

Also, despite the role of health information programs provided by the government of South Africa to meet the healthcare needs of the people, access to health education and counselling from healthcare providers needed to be improved (Maphumulo & Bhengu, 2019: 1). Patients need access to health information on HBV and HCV through healthcare providers. On the one hand, some are timid and cannot communicate their problems. Some decried understanding medical terminologies used in their case reports and personal files. The available information could not meet patients' basic information needs and expectations (Maphumulo & Bhengu, 2019: 1; National Department of Health 2012:4). Others reported a poor understanding of the

disease complications and poor treatment knowledge (Cina *et al*., 2015: 343). Studies have suggested that patients must be educated and enlightened about the type of treatment. Knowledge of the treatment provided by the physicians is crucial to allow patients to choose the best treatment they desire (Boyer & Faillebin, 2013: 41; Astone *et al*., 2003: 107; Azodo *et al*., 2010: 364). Meeting the information needs of HBV and HCV patients is linked to healthcare providers' education and counselling.

Healthcare policy and legislation are essential for regulating treatment, prevention, development and management of the healthcare system and training medical personnel in every health institution. They are equally essential for guiding access to and using patient information to protect patients' confidential Information (Philips, 2018: 178; Giaimo, 2016: 2; Moyakhe, 2014:80). However, patients are unaware of the hospital policy and documents guiding patients' information by protecting patients' confidential information. Policy documents guiding access to and use of HBV and HCV patients' information are scarce within the hospital facilities and websites. (Moyakhe 2014:80). Provision of essential guidelines for information provision, communication, access and use, and the need to ensure confidentiality of patients' information, is crucial.

This study addresses the paucity of literature on HBV and HCV patients' information needs and seeking behaviour. The study focuses on these gaps by identifying the information needs of patients, the extent of access and use of information, policy alignment with information access and use, factors contributing to the use of information, and issues hospitals must contend with in providing Information for HBV and HCV patients in Ngwelezane Tertial Hospital, KwaZulu-Natal, South Africa (Kew, 1996b: 395; Kew, Houghton, Choo, & Kuo, 1990a:873). The outcome can be used to improve patients' information provision and information-seeking patterns in tertiary health institutions in South Africa.

1.4 AIM OF THE STUDY

This study aimed to investigate the information needs and information seeking behaviour of HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.

1.5 OBJECTIVES OF THE STUDY

The specific objectives of the study are:

1. To determine the information needs and information-seeking behaviour of HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.
2. To establish HBV and HCV patients' access and use the information at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.
3. To establish the policies and resources supporting information provision and use for HBV and HCV patients at Ngwelezane Tertiary Hospital, South Africa.
4. To determine the role of healthcare professionals' counselling and education in providing information for HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZuluSouth Africa.
5. To ascertain factors contributing to the use of information by HBV and HCV patients at Ngwelezane Tertiary Hospital, South Africa.
6. To establish the challenges that Ngwelezane Tertiary Hospital KwaZulu-Natal, South Africa, faces in HBV and HCV information provision and use.
7. To recommend guidelines for providing information for HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.

1.6 RESEARCH QUESTIONS

The following are the specific research questions that guided the study:

1. What are the information needs and information-seeking behaviour of HBV and HCV patients at a selected tertiary health institution at the Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa?
2. To what extent are HBV and HCV patients at a Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa, able to access and use the information?
3. To what extent has Ngwelezane Hospital, KwaZulu-Natal, South Africa, able to establish policies and resources to support the provision and use of information by HBV and HCV patients?

4. What role have healthcare professionals' played in counselling and educating HBV and HCV patients at the Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa?
5. What factors contribute to the use of information by HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.?
6. What challenges are Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa, in HBV and HCV information provision and use?
7. What guidelines can the Ngwelezane Hospital, KwaZulu-Natal, South Africa adopt for information provision for HBV and HCV patients?

1.7 JUSTIFICATION OF THE STUDY

This current study is necessitated due to limited literature on information needs and seeking behaviour of HBV and HCV patients at Ngwelezane Tertiary Hospital, South Africa. Julien *et al.* (2011:19) opined that the literature on information behaviour focusing on information use could be higher than studies on information needs and seeking behaviour. This study envisaged that findings could bridge the information gap in the existing literature on information needs, seeking behaviour, and use by HBV and HCV patients to reduce the burden of HBV and HCV disease on people. The current study has clinical, methodological and theoretical implications for the Comprehensive Model of Information Seeking (CMIS). It uses the Gratification and Expectancy Theory (UGET) and the potential to aid the improvement and application of interventions by policymakers to meet the information needs of HBV and HCV patients and healthcare providers.

Merriam-Webster Dictionary (1828:1) described the scope of a study regarding the extent of the operation. Therefore, this study covered the "information needs and seeking behaviour" of HBV and HCV patients in a selected tertiary health institution in South Africa. The selected tertiary health institution has a department that provides treatment or therapies for HBV and HCV patients. Besides, the Hospital's proximity allowed the researcher to collect quantitative and qualitative data from HBV and HCV patients, doctors and nurses. Furthermore, the theoretical framework of the study covered a comprehensive model of information seeking (CMIS) (Case & Given, 2016:157) and uses, gratification and expectancy theory (Katz *et al*., 1973: 164). The reason is that both approaches have testable and measurable variables through quantitative and qualitative data collection techniques, analysis and integration. Lastly, the methodological scope covers a pragmatic paradigm with a case study mixed-methods design.

1.8 THE ORIGINALITY OF THE STUDY

The originality of this study is adding new information to existing or old information by contributing to the body of knowledge in research. From the point of view of the literature, this study added to new knowledge of information needs and seeking behaviour of HBV and HCV patients at Ngwelezane tertiary hospital in South Africa using a mixed-methods approach to investigate HBV and HCV patients' information needs and seeking behaviour as well as seeking the opinion of doctors and nurses. The study added to knowledge by applying CMIS to patients' information seeking, while UGET examines the social-psychological origin of patients' needs. The result emerging from a mixed-methods point of view in applying UGET to the information needs of the patients was significant for social-psychological needs. Regarding counselling and education of hepatitis B and C, this study bridged the gap in providing the required methods of counselling patients and education to control the spread of the dangerous but silent disease. This study adds to the knowledge of various accessible sources and the use of health information on hepatitis B and C, either by patients or healthcare professionals.

This study contributes to knowledge by establishing evidence-based standards of practice by providing policies guiding hepatitis B and C patients' information provision and use. The originality of this study was derived from a literature review, and thematic analysis, through a literature search from databases on studies focusing on information needs and seeking behaviour of HBV and HCV patients. The researcher conducted a scoping literature review to identify the gap in studies focusing on the application of CMIS and UGET to hepatitis B and C patients' information needs and seeking in the South African context. A comprehensive search for literature focusing on the current topic from databases such as Ebsco Discovery Services, Scopus, Web of Science, Library and Information Science Sources, a selected social science database.

The study provides insights into how to bridge the information gap on the subject of study. Findings from the literature provide more insights into the information needs and seeking behaviour of HBV and HCV patients and the appropriate framework suitable for the study. The study identified the key factors common in human information behaviour studies. The purpose

was to allow the researcher to understand the study's research problem (Creswell & Creswell, 2018: 217) and strategies for improving information seeking, provision and use.

1.9 SCOPE OF THE STUDY

Merriam-Webster Dictionary (1828:1) described the scope of a study regarding the extent of the operation. Therefore, this study covered the information needs and seeking behaviour of HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa. The selected tertiary Hospital has various departments that provide treatment for HBV and HCV patients, hepatitis B and C therapies for infected patients, Provision of healthcare services at the district level, and affiliation to the public sector. These criteria were verified by the KwaZulu-Natal Department of Health records, South Africa.

Besides, the Hospital's proximity allowed the researcher to collect quantitative and qualitative data from HBV and HCV patients, doctors and nurses. Furthermore, the theoretical framework of the study covered a comprehensive model of information seeking (CMIS) (Case & Given, 2016:157) and uses, gratification and expectancy theory (Katz *et al*., 1973: 164). The reason is that both approaches have testable and measurable variables through quantitative and qualitative data collection techniques, analysis and integration. Lastly, the methodological scope covers a pragmatic paradigm in a case study design.

1.10 LIMITATION OF THE STUDY

The study was limited to information needs and seeking behaviour of HBV and HCV patients at Ngwelezane Tertiary Hospital, South Africa. Data collections were limited to HBV and HCV patients receiving treatment at Ngwelezane Tertiary Hospital, doctors and nurses providing treatment to HBV and HCV patients at Ngwelezane Tertiary Hospital, and the senior administrative staff working at Ngwelezane Tertiary Hospital. Doctors and nurses were recruited for data collection, given the crucial role of providing treatment and health information for patients during their hospital visitations. The researcher may apply findings from this study to another health context in South Africa. However, the result cannot be generalised, given the limited number of participants in the study.

This study limits theoretical applications to CMIS to guide information-seeking aspects of the survey (Case & Given, 2016: 157), while the applications of UGET were limited to the

principle of social and psychological origin of needs (Katz *et al*., 1973: 164). Also, the methodological scope was limited to a mixed-method case study to collect qualitative and quantitative data from HBV and HCV patients at the selected tertiary health institution. The target population was limited to HBV and HCV patients eighteen years and above who consented and were willing to provide rich information. The researcher did not include patients eighteen years below and those who declined to participate in the study.

1.11 DEFINITION OF KEY TERMS AND CONCEPTS

- **Hepatitis B and C patients**: HBV and HCV patients are individuals who tested positive for HBV and HCV for six months and are registered to receive medical treatment under physician care in a hospital (WHO, 2020: 1).
- **Patients** are registered to receive medical treatment under physician care for a particular disease in a hospital.
- **Health professionals**: Health care professionals in this thesis are referred to as those who work as medical doctors (such as family physicians, internists, obstetricians, psychiatrists, radiologists, and surgeons), physician assistants, veterinarians, veterinary technicians, veterinary assistants, pharmacists, pharmacy technician and nurses providing therapies for patients in the hospitals.
- **Medical professionals**: Medical professionals in this context refer to doctors and nurses working in the Hospital providing therapy for Hepatitis B and C patients.
- **Information behaviour**: The term "information behaviour" includes various actions engaged by individuals to actively or unintentionally seek Information on HBV and HCV through various sources or channels to meet their information needs (Bates, 2010: 2381).
- **Information needs** refer to inward desire or recognition to satisfy users' information or knowledge gap (Wilson, 2000:52).
- **Information-seeking behaviour**: This study referred to information-seeking behaviour as various actions or strategies employed by individuals to purposefully or unintentionally search for information in response to a perceived need (Wilson, 2000: 49).
- **Information provision**: Information provision refers to various ways of making information available for users on HBV and HCV diseases to create awareness, prevent

infections, cope with the illness, and promote recovery (*Merriam-Webster Dictionary*, 2020: 1; Van der Meulen *et al*., 2008: 857).

1.12 STRUCTURE OF THE THESIS

Chapter 1: Introduction and Background of the Study

Chapter one consists of an introduction, background to the study, contextual setting, problem statement, aim and objectives of the study, research questions, justification of the study, originality of the study, scope and limitation of the study, ethical consideration, definition of key terms and concepts, structure of thesis, and summary of the chapter.

Chapter 2: Literature Review

Chapter two explores the existing literature on HBV and HCV, information needs, and seeking behaviour. This chapter discusses the concept of HBV and HCV, health information behaviour, information behaviour of HBV and HCV patients, information provision, and models of health information behaviour.

Chapter 3: Theoretical Framework

Chapter 3 consists of an analysis of theories supporting a study on health information provision, models of information-seeking behaviour, and the framework adopted for the study.

Chapter 4: Research Methodology

Chapter 4 presents the research methodology used in the study. The chapter discusses the research paradigm, methodology, research design, study population, sampling procedure and sample size, data collection procedures and methods, data analysis, and ethical considerations.

Chapter 5: Data Analysis and Interpretation

Chapter 5 focuses on the data gathered through the interview and semi-structured questionnaire and the analysis and interpretation of data.

Chapter 6: Discussion of Findings

Chapter 6 presents the discussions and integrations of findings from quantitative and qualitative data collected from the respondents in detail.

Chapter 7: Summary, Conclusions and Recommendations

This chapter highlights the summary, conclusions, recommendations, and suggestions for further research. The chapter also proposed information provision and use guidelines for HBV and HCV patients.

1.13 SUMMARY

The chapter highlighted the global epidemic information on HBV and HCV diseases. The prevalence affected many regions worldwide, including Eastern, European, American, Western Pacific, South East Asia and African regions, specifically the South African region. The chapter further highlighted the importance of information, given the frustrations expressed about patients' lack of knowledge and awareness, information provisions and communications concerning HBV and HCV preventive measures and management strategies. The chapter provided background to the statement of the problem, specific objectives, research questions, and the scope and limitation of the study. Additionally, the chapter justified the study, discussed the study's originality, and how the requirement for ethical considerations was observed. The chapter ended by providing the thesis structure from chapters one to seven. The next chapter discusses the literature review on information needs and seeking behaviour of HBV and HCV patients.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

An exhaustive and refined literature review is critical in any research, given the underpinning and motivating factor for a wide-range application and usefulness in every aspect of research. The complex nature of health information research requires a comprehensive and sophisticated review of the literature (Boote & Beile, 2005:3). A literature review provides a clear and balanced picture of concepts, theories, and data relevant to a study (Bloomberg & Volpe, 2016:37). The purpose is to provide a framework for the research and a yardstick for comparing the results with other findings (Creswell & Creswell, 2018:27), while the study investigates information needs and information-seeking behaviour of hepatitis B (HBV) and C (HCV) patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa. Also, there is a need to examine existing literature on policy and access to information on HBV and HCV by patients. There is a need to explore other areas that scholars and researchers have investigated to identify gaps and justify the purpose of this study and define the originality and contributions to the body of knowledge.

Hence, the paucity of literature in this context is not only limited to information needs and information seeking behaviour of HBV and HCV conditions alone, and there is a need to identify a gap in studies applying the comprehensive model of information seeking (CMIS) to the context of this study, as well as uses and gratification and expectancy theory (UGET) to patients information needs. These could provide insight into identifying specific variables in models or theories and a suitable methodology that aligns with the construct and research objectives set for this current study. Scholars such as Adebayo (2019), Ek & Heinstro (2011), Wilson (2000) believes that the practice of gathering information in both human and technology situations is known as information seeking. One may wonder if the government, management of the Hospital, and policymakers have done enough on information communication and provision of effective policy for patients to access and use information.

This chapter aims to discuss the related literature on HBV and HCV as diseases and subject literature on health information needs and seeking behaviour of HBV and HCV patients. The researcher utilised the databases of the University of Zululand for the literature review.

Databases searched include e-resources, the complete Ebsco-host discovery services, Web of Science, Scopus and Google Scholar. The criteria for study selections include; articles published in English, studies with similar theoretical applications, articles central to the research topic, peer-reviewed journal articles, full-text that addresses HBV and HCV diseases, and patient information in similar study contexts. The contextual setting of studies includes selected pieces from developed countries in Europe, the USA, and developing countries, such as Africa and its sub-region, South Africa. The researcher also used theoretical, empirical, and subject literature related to HBV and HCV prevalence in the health context. The chapter reviewed literature based on the objectives set out for this study. These includes:

- To determine the information needs and information-seeking behaviour of HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.
- To establish HBV and HCV patients' access and use the information at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.
- To establish the policies and resources supporting information provision and use for HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.
- To determine the role of healthcare professionals' counselling and education in providing information for HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.
- To ascertain factors contributing to the use of information by HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.
- To establish the challenges that Ngwelezane Tertiary Hospital KwaZulu-Natal, South Africa, faces in information provision and use.
- To recommend guidelines for providing information for HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.

2.2. INFORMATION NEEDS AND INFORMATION-SEEKING BEHAVIOUR OF HBV AND HCV PATIENTS

Ford (2015:11) defined "behaviour" as a response to a stimulus, including thought and actions. This definition implies that individuals may perceive that they have a problem that requires information, and doing something about it requires effort. Information-seeking behaviour is the micro-level of behaviour used by the searcher to engage with various information systems,

whether between the seeker and the system or the pure process of establishing and reporting back on a search. It investigated the impact of emotions, notably uncertainty, in the information-seeking process, indicating that many searches are abandoned due to an excessively high level of ambiguity (Kuhlthau, 2011). Information seeking may comprise recognising and interpreting an information problem, developing a search strategy, conducting the search, evaluating the results, and repeating the process if necessary.

Many authors have defined information but in different ways to achieve the purpose of research. According to Case (2012:48), many authors have tried to explain information by using other concepts but eventually agreed with the definition by the Merriam Webster Online Dictionary (1828), which defined information as "knowledge obtained from investigation, study, or instruction". In this study, information seeking behaviour refers to actions exhibited by individual HBV and HCV patients to obtain knowledge from investigations, examinations or instructions to solve their health problems.

Ford (2015:13) reasonably believed that information that is meaningful at one level could be considered data in the context of higher-level meaning, as long as the purpose of information use is achieved. Health information is universally needed by health care professionals such as health managers, statisticians, decision-makers within the health system, health insurance organisations, public health providers, and consumers, specifically HBV and HCV patients in this study (Paunović 2008:72).

Wilson (2000) defined information behaviour as the whole of human behaviour regarding sources and routes of knowledge, encompassing both active and passive information-seeking and information usage. In defining "information behaviour", there is a relationship between "information needs", "patients' information needs", "information seeking", and "information use" or information utilisation, and these beg for clarifications as they emerge, given that they cannot be separated from each other since they are interwoven or inter-related. Pettigrew *et al*. (2001:44) defined information behaviour as the "totality of human behaviour concerning sources and channels of information including active and passive information seeking and use". In addition, Case (2012:10) noted that information behaviour could be studied in many contexts, especially in health contexts and other related disciplines, although with different motives and goals. Adebayo (2019, noted that the way humans search for and use information

is referred to as information-seeking behaviour. The scholar further described information-seeking behaviour as purposive information searching due to a need to satisfy some purpose.

In the context of Hepatitis B and C information needs and seeking behaviour, many factors need to be examined to achieve the ultimate goal of this study. These factors include identifying patients' information needs, establishing how patients access and use information, establishing awareness of information policies guiding information provision by health professionals, and accessing and using information by patients. Other factors that need to be established include establishing methods used in counselling and educating patients on specific diseases by healthcare providers and policymakers in managing chronic conditions to reduce the spread and prevalence of the disease.

To realise the specific objectives of this study, the researcher must examine previous studies focusing on information needs and information-seeking behaviour in other contexts to understand the best approach to adopt for investigations and to establish the originality of the study as well as unfold how gaps in literature can be bridged as well as show areas that this study contributes to studies (Case, 2012:10). These can be achieved through a comprehensive search of databases for previous studies and getting acquainted with methods or approaches applied. According to Spink and Cole (2006:25), human information behaviour can be studied by using diverse techniques to explain human information behaviour relating to finding information, given that each approach or concept has its "strength and weaknesses." Researchers of information behaviour studies must keep in mind that the general goal of "information needs and seeking behaviour" investigation is to provide insight into contributing to or filling information gaps (Tanaka, *et al*., 2013:799). The following subsection discusses information needs, patients' information needs, information seeking and other related themes found in the literature.

2.2.1 Patients' Information Needs

There is a need to understand the relationship between identifying the information needs of patients and supplying the information gap (Adebayo, 2019). Information need is a subjective experience that occurs only in the mind of the person in need (Wilson, 1997:7), which implies that information needs arose out of the desire to fill a knowledge gap. Taylor (1986:254) differentiated four levels of needs: a person's subject of interest, motivation, characteristics, the relationship of the inquiry to the file organisation, and anticipated answers. Similar opinion

by Case and Given (2016:6) refers to information needs as a recognition that knowledge is inadequate to satisfy a goal, perhaps the desire to satisfy a curiosity, which implies that if knowledge is insufficient to meet a goal, it can create a knowledge gap, which in turn makes an opportunity to develop a new theory or strategies (Dervin, 1999:727). Ford (2015:35) agreed that information is needed to solve a particular problem and achieve a specific goal.

Several researchers examined patients' information needs (Lowenstein *et al*., 2019:1; Chimonas *et al*., 2019:632; Tran *et al*., 2019:1; Lavallee, Grogan, & Austin, 2019; Reid *et al*., 2010:682). Patients' information needs were explored in knee replacements surgery (Smith *et al*., 2019:1). The need for patients to cope with the pain to survive the ailment is critical which depends on patients' effective management of pain with the help of doctors and nurses caring for HBV and HCV patients (Rockstroh *et al*., 2008:82). Also essential is improving patients' dietary habits before percutaneous coronary intervention (George *et al*., 2018:307). Patients must understand the strategies for pain management and understand the risk and benefits of treatment strategies employed by healthcare professionals, especially regarding drugs, treatment adherence, and decision-making (Smith *et al*., 2019:1). HBV and HCV patients can receive information through various healthcare professionals, patient associations, online health forums, and health information exchange or websites (Kamran *et al*., 2015:15).

There is a need for patient information regarding screening for transmission risk behaviour, testing, and vaccination against various types or groups of viruses (Edli *et al*., (2005:276). Additionally, public awareness needs to be raised at the right time (Lazarus *et al*., 2007:426). It is also vital that national political leaders wake up to realise the need for them to address hepatitis as an urgent public health issue (Lazarus *et al*., 2007:426). Many HBV and HCV patients who suffer from depression and anxiety need to understand the nature and mode of contact of the disease and interact with healthcare givers (Buller-Taylor, 2018:1095). Information is required to help improve patients' quality of life and those caring for them and their family members or relatives (Boyer & Faillebin, 2013:41). The need for emotional and psychological support through particular intervention to ease patients' emotional tension has been suggested. This strategy will help patients gain control over their lives to reduce uncertainty and depression (Lee & Hawkins, 2010).

HBV and HCV patients must receive help and emotional support from family, friends of HBV and HCV patients or others who might have had similar experiences. Providing support for

patients will enable them to share personal problems, gain emotional satisfaction, and restore their confidence (Lee & Hawkins, 2010:926). If patients' information needs are not met, it could lead to a situation whereby patients waste much time searching for information through the media to receive emotional support (Lee & Hawkins, 2016:926). This scenario might eventually lead to frustration. Therefore, this study must ascertain if the information used through media sources can satisfy the social, emotional and psychological needs of HBV and HCV patients.

2.2.2 HBV and HCV Patients' Information Seeking Behaviour

Information seeking behaviour is a strategy a person device to find information. It may include searching, selecting and using different search tools such as browsing and monitoring (Ford, 2015:23). Marchionini and White (2007:205) describe basic activities involved in information seeking. These include recognising a need for information, taking action to fulfil the requirement, figuring out the nature of the condition, expressing the information needs through a search system, and examining the search results. In the context of HBV and HCV patients, the first step in preventing such diseases is by encouraging them to search for health-related information (Lalazaryan & Zare-Farashbandi, 2014:193). Lambert and Loiselle (2007:1006) maintained that seeking information about one's health is a crucial coping strategy in health-promotion activities and psychosocial adjustment to illness.

Stonebraker *et al.*, (2017:1588) health-related study on factors associated with health information seeking, processing and use among HIV positive adults in the Dominican Republic also identified three concepts of health information that include: seeking, processing, and use, which are equally relevant to be considered in health information seeking- behaviour before effective health management is possible. There are possibilities that patients engage in health information seeking to improve their health conditions for decision-making or health improvement purposes. These activities may also include searching, finding, and using information related to HBV and HCV and other health-related chronic diseases (Lalazaryan and Zare-Farashbandi, 2014:194).

Despite the availability of health information through various sources, many people still lose their lives or face obstacles from chronic diseases such as HBV and HCV due to a lack of knowledge about preventive measures (Stonebreaker *et al*. 2017:1588; Berkman *et al*., 2011:97), which is why it is very imperative to provide practical preventive measures for

patients and the general populace (Berkman *et al*., 2011:98; Lambert and Loiselle, 2007:1006). Meanwhile, there is a link between health information and health behaviour. If behaviour changes but the health status do not improve, filling the knowledge gap requires information-seeking efforts or actions by individuals. A positive change in health status and health behaviour is the responsibility of health educators and literacy programmes (Stonbraker *et al*., 2017:1588). However, the process of health information cannot be complete without the contribution of health literacy (Stonebreaker *et al.*, 20171589; Lalazaryan & Zare-Farashbandi, 2014:194).

Wilson (2000:49) defined information-seeking behaviour as the purposive seeking of information due to a need to satisfy some goal. Information seeking may also be referred to as how people search for and utilise information in the sense that, for an individual to achieve a particular set goal as a result of a need, they might be required to make conscious efforts leading to information-seeking actions, which might involve interacting with information sources or channels. Information seeking behaviour arises from a need for information (Wilson, 1999:249). An individual or persons may seek information due to a perceived gap in knowledge or information and, as a result, deliberately pursue information to bridge a gap or satisfy information needs (Belkin, 1980:133).

Case and Given (2016:6) believed that information seeking is a conscious effort used to acquire information in response to a need or gap in knowledge. This notion relates to the earlier definition by Johnson and Case (2012:31), who refers to information seeking as the purposive acquisition of information from selected information carriers. This study relates to information-seeking actions as methods of seeking information passively, deliberately or unintentionally, to achieve the desired goal. For users of the information to accomplish the ultimate goal of communication, different actions are exhibited, either passively or actively. Not all activities are influenced by information carrier factors, as indicated in the Johnson model (Johnson & Case, 2012:40). In the comprehensive model of information seeking, the antecedent factors influence information-seeking actions (Becker & Rosenstock, 1984:179; Stein *et al*., 2012:20).

Information-seeking actions involve using strategies by information seekers (Godbold, 2006:6). Johnson *et al. (*1997a:70) argued that individual information-seeking actions depend on the level of concern or interest in health-related problems, just as HVB and HCV patients would do. Johnson (1997a:70) agreed with the theory of uses and gratification because users

are goal-oriented information seekers when the source of information is easily accessible (Robson & Robinson, 2013:175). Previously, studies found that information-seeking actions were related to monitoring, browsing, accidentally encountering, and active and passively seeking information by information users (Savolainen, 2016:657; Johnson & Case, 2012:40; Wilson, 1999:232). Other information users also engage in actions that include: creating information, spreading/sharing information, avoiding and destroying information (Godbold, 2006:6), and purposively seeking information.

Information seekers must have a specific goal (Spink & Cole, 2006:25). Actions were usually performed to ensure that the "information gap" is closed or bridged in diverse contexts (Godbold, 2006:6). It is also noteworthy that accessibility, availability of information, immediate solutions, ability to solve the problem, and the currency of information are features of information carriers that influence information-seeking by individuals (Johnson, *et al*., 2001:339). Actively seeking information may lead to a desirous outcome or behavioural changes in individuals (Jennings, 2018:1; Han, Wise, Pingree & Hawkins, 2010:367).

Robson and Robinson (2013:174) opined that both credibility, authoritativeness and accuracy of information sources predict information-seeking actions by individuals. Johnson argued in support of Lee and Kim study (2015:285) and linked health information seeking to behavioural outcomes (positive or negative). Wilson's (2000:52) contributions to information behaviour supported Ellis's (1989) model in Case and Devin's (2016:151) information-seeking actions such as: starting, chaining, browsing, differentiating, monitoring, extracting, verifying, and ending (Case & Devin (2016:151). Information-seeking actions lead to positive or negative outcomes in information behaviour studies. According to *Online Merriam-Webster Dictionary* (2020), "outcomes" can be regarded as "results or consequences" resulting from actions.

It implies that the outcome of information seeking may lead to improvements in decision-making (Freimuth *et al*., 1989:6); various aspects of health (Gümürdülü, 2014:222); understanding and knowledge (health literacy); the quality of living (Cormier, 2005:4); empowerment; and every aspect of health (Han *et al.,* 2010:367). Other studies identified improvement in understanding knowledge and health literacy (Gulati, *et al*., 2016:558), empathic support, effectiveness in decision-making, and gained self-efficacy and positive behavioural changes (Cinar *et al*., 2015:343). Additionally, many information-seeking strategies or actions were noted by scholars, specifically in the context of health (Hartoonian

et al., 2014:1308). Hatoonian *et al*., (2014:1308) examined information-seeking behaviours across various information delivery channels to establish the impact of health-related factors on levels of information seeking.

This study examines the information-seeking actions of HBV and HCV patients to establish the factors motivating their information-seeking actions. The study found that information-seeking actions were motivated by the salience factor because salience directly affects information-seeking behaviour and information-carrier characteristics. The study also highlighted the need to understand the antecedents' information-seeking factors because such factors help information providers meet patients' information needs (Case, 2012). Jacobs *et al*. (2017:1) examined factors associated with health information seeking from the internet, traditional media, and health care professionals among a diverse population of US adults. The study found that due to the cost-efficiency of internet use, the affordability of health information sources, and access to health information, individual users, families, and caregivers are motivated to seek information (Jacob *et al*., 2017:1). The following discussion is on access and use of information.

2.3 ACCESS TO INFORMATION BY HBV AND HCV PATIENTS

Access to HBV- and HCV-related information depends on the ability of individuals to obtain information needed at a particular time. Conceptually, access means "the act of approaching" (Collins Online English Dictionary, 2021) or ability to obtain. Meanwhile, access to HBV and HCV patient information depends on information seekers' actions, and the degree of health information the patients and their relatives can obtain about their illnesses (Cros *et al*., 1998:51). The previous studies examined the worldwide prevalence of HBV and HCV, the clinical implications, healthcare facilities for the treatment and prevention of HBV and HCV, challenges, and information provision in Africa and sub-regions, with a specific focus on South Africa (Finhaber *et al*., 2008:541; Mulders *et al*., 2004:400).

Research by Howell *et al*. (2021:1), and Cros *et al*. (1998:51) previously noted the importance of information and how adequate information4wsignificantly contributes to the prevention of endemic HBV and HCV, patient self-care, adherence to prescribed medication, timely diagnosis, emotional and psychological well-being, coping with anxiety, and the anticipation of a speedy recovery from the disease. A study by Cros *et al*. (1998:51) revealed that a vast

majority of the patients affected by HBV and HCV have a deficient level of information concerning the means of transmission, leading to a high rate of interfamily infection cases. Therefore, patient information regarding the mode of infections, prevention, and treatment, among others, must be accessible at the right time. There is a positive link between access to patients' information, such as demographic data (primary data), results of disease diagnosis from either laboratory tests or through the use of modern diagnostic equipment or technologies, and effective utilisation (George *et al*., 2013:183; Liu *et al*., 2006:653; Gustafson *et al*., 1999:1).

The characteristics of information sources determine the choices of information sources used by patients because information access influences the effective utilisation of health information sources to produce a desirable goal (Arıkan *et al*., 2019:157; Carpenter *et al*., 2011:629). Research shows that healthcare information requires multiple procedures to access (Jena & Kar, 2019:48; Ward *et al.*, 2000:277). For decades, access to health information was possible through traditional methods of record-keeping that are very cumbersome or through electronic medical records (EMR) from different departments such as radiology and pharmacy (Jena & Kar, 2019:48).

Doctors' prescriptions are usually written in papers, radiologists use image format, and electronic medical records (EMRs) use texts and numeric data (Jena & Kar, 2019:48). Patient information was also accessible in various texts, numeric, images, digital, video, and multimedia. However, before doctors and nurses could gather patients' information, such as age, gender, health status, educational level, economic status, place of origin, and sometimes tribes, culture, and heritage, the patients must pass through some rigour or a very long process of clerking (Jena & Kar, 2019:48). At times, doctors might need to wait for some days or weeks to obtain just a test result for patients before making decisions (Jena & Kar, 2019:48; Belle *et al*., 2015:1).

Consequently, the lack of organisation in record keeping and data management systems and the unstructured methods of data documentation led to many challenges and inconsistencies (Jena & Kar, 2019:48). Therefore, an effective information management system, easy access to information by healthcare providers, and communication practices will greatly assist healthcare industries in overcoming the challenges of HBV and HCV patients accessing and using health information (Johnson & Case, 2012:16).

2.3.1 HBV and HCV Patients' Information Use Behaviour

Many scholars have tried to define information use according to their understanding and the context of their studies. Wilson (2000:50) described human information use behaviour as physical and mental activities involved in incorporating the information found into the person's existing knowledge base. Information used was also described as individual physical acts, such as marking sections in a text to note the importance of communication and mental acts in the use of decision making. To help researchers better understand the concept of information use, Taylor (1986:184) explained that information gathered must be used for a purpose, either for decision-making or to effect a change in the recipient's knowledge. When data is collected, it must be utilised to yield positive benefits, solve problems, facilitate innovation, and have effective learning outcomes (Wilson, 2000:50; Taylor, 1986:184).

Therefore, in the context of HBV and HCV patients, information use has become imperative to identifying transmission methods of viral infections in healthcare workers, pregnant women, youths, and adults. Knowledge and information regarding sources of diseases, preventive practices, treatment, and follow-up procedures are essential. Researchers continue to emphasise sufficient information to improve the utility of antiviral therapy for chronic HBV and its favourable therapeutic effects (Yamagiwa & Masaki, 2018:1049). Even though many patients believe that adequate medication and support would reduce the diverse burden of the disease on their lives, being aware of prevention with the right information at the right time is equally very important (Yamagiwa, & Masaki, 2018:1049).

Studies revealed that there are different approaches to using information, whether theoretical, methodological or conceptual, depending on the contexts of the study. Methodological use involves the use of quantitative, qualitative and mixed methods. Mixed methods have been applied to various aspects of health services research (Kaur, 2016:93; Zhang & Creswell, 2013:51) and behavioural and social science research (Peterson *et al*., 2013:217; Hayes *et al*., 2013:8). Saab *et al*. (2018:410) used a meta-narrative systematic review to appraise qualitative, quantitative and mixed-methods studies that investigated men's information-seeking behaviour on cancer prevention and risk reduction, using different search tools and databases from January 2006 to May 30th, 2016. The result shows that only one study applied mixed-methods to men's information-seeking behaviour regarding cancer risk, prevention, and screening.

Internet health information seeking was explored by Perez *et al.* (2016:107). They employed a mixed-methods approach to investigate different levels of socioeconomic status and how education and prior experiences with health services influence decision-making through credible information seeking processes. The purpose was to understand why certain information was used and why some were not used or failed to achieve their objectives. Four levels of outcomes of information seeking were proposed by using mixed methods to examine situational relevance, cognitive impact, information use, and patient health outcomes (Pluye *et al*., 2013:108). The mixed-methods approach has been used to investigate health-related prevention and risk reduction, the positive and negative aspects of internet use for sexual health among adults, young and old, and raise awareness about sexual health (Magee *et al*., 2012:276).

2.3.2 Information Sources Used by HBV and HCV Patients

Access to information can be achieved through various sources as opined by many scholars (Jacob *et al*., 2017:5; Tanaka *et al*., 2013:779; Marco *et al*., 2006:256; Spink & Cole, 2006:28), and through channels or carriers of information (Spink & Cole, 2006:28). Information sources can also be referred to as information channels or carriers of information (Spink & Cole, 2006:28). Individuals may seek information from personal experience, followed by peer sources, prominent persons similar to themselves. As the study examined the information needs and seeking behaviour of patients with hepatitis B (HBV) and C (HCV), it looked at hepatitis B (HBV) and C (HCV) patients in Ngwelezane Hospital, KwaZulu-Natal, South Africa, as the main the focus. A patient seeking information related to HBV and HCV disease may consult various sources, including confidential sources such as health care personnel and peer groups and electronic ones such as television, the internet, and radio. Other sources include hospitals, non-governmental organisations, information centres, and print sources such as books, periodicals, pamphlets, and handbills. Decision making may be linked to information seeking.

The choice could range from a minor personal problem to one that impacts billions of people or has far-reaching economic or political consequences for individuals, communities, states, or nations. The process through which an information seeker receives knowledge regarding their health, an illness, health promotion initiatives, and what comprises health risks is referred to as health information-seeking behaviour. Health knowledge is essential for making health decisions and engaging in quality healthy behaviours. Ek and Heinstro (2011) argue that information seeking is an unavoidable requirement for these behaviours' consistent and appropriate performance. Other people's prior work, other individuals, and information

repositories such as manual papers and online databases could all be used to gather information. When an individual seeks information on purpose to achieve a goal, this is referred to as information seeking. Sources of HBV and HCV information may also include newspapers, doctors, nurses, mass media, the Internet, friends, and family members (Jacob *et al*., 2017:5; Tanaka *et al*., 2013:779; Marco *et al*., (2006:256). Different types of information sources could easily be accessed by HBV and HCV, regardless of their ethnic backgrounds or demographic characteristics (Tanaka *et al*., 2013:779). Sources of information used are discussed as follows:

3.2.1. The Internet

Jacob *et al*., (2017:5) revealed that a more significant percentage of health information seekers used the internet for health information than family/friends/co-workers, health care professionals, and traditional media. A qualitative study by Maslen and Lupton (2018:916) focusing on women using online health and medical information in Australia found that women used online sources for information search, actively and creatively, in diverse ways when seeking face-to-face medical expertise. Tanaka *et al*., (2013:779) discovered that 29.5% of the 726 HBV patients used the Internet as an information and relevant psychosocial factors. The study indicated a significant association between the internet and newspapers as a source and their educational level because 35.5 % of the 726 HBV internet-user patients who identified the Internet as their source of HBV information had college degrees. Kamran *et al*. (2015:15) noted that patients preferred searching the websites for health information even though they cannot always trust those websites. To avoid using wrong information, physicians need to guide information seeking, if possible, with specialised keywords and reliable information sources. Marco *et al.* (2006:256) added that information sources such as "ask-the-expert" available through the internet could be a good model for information seeking to patients in an anonymous, convenient, and timely manner.

2.3.2.2 Family, Friends, Relatives and Colleagues

Okada *et al.,* (2020:15) indicated that apart from information received from physicians as commonly used by patients, patients could receive information from friends, family, and colleagues at work who provide valuable information for decision-making to support information use hepatitis screening, examination, and treatment. Tanaka *et al*. (2013:779) reported that 38.8% out of the 726 participants of the study received HBV information from

friends. However, it is essential to note that in a digital age, information technologies have opened up more opportunities for health information seeking than what family, friends, and co-workers can provide, as long as the users have the skills to explore information technologies (Jacob *et al*., 2017:5).

2.3.2.3 The Physicians

Several studies focussing on the prevalence of HBV and HCV show that patients preferred to seek health information from health professionals (doctors, nurses, and other healthcare professionals and para-professionals) (Okada *et al*., 2020:2973; Kamran *et al*., 2015:15; Cinar *et al*., 2015:343; Teague *et al*., 1999:201. For example, Okada *et al*. (2020:2973) indicated that primary care physicians and public health nurses' recommendations are the most commonly used and influential sources of information among patients for decision-making regarding hepatitis screening, examination, and treatment. Also, Okada *et al.,* (2020:2973) also investigated the sources (factors) of information used by HBV and HCV patients to raise awareness about comprehensive treatments. The study found that recommended information from primary healthcare physicians was used (Okada *et al*., 2020:2973).

A similar study by Kamran *et al.,* (2015:15) demonstrated that health care professionals provided useful information for patients at the time of chronic diseases management. Tanaka, *et al*., (2013:779) reported that 39.3% of the 726 HBV patients learnt about HBV screening from physicians. This finding implies that physicians had the most substantial direct effects on screening behaviour. Seeking information regarding HBV from physicians are highly associated with the perceived risk of contracting HBV and a higher level of self-efficacy (Tanaka *et al*., 2013:779). The physicians and other health professionals have undoubtedly contributed immensely to patients' information use for effective management of diseases and decision-making.

2.3.2.4 Newspapers, NGOs, Mass Media and Associations

Hopwood *et al*., (2015:156) revealed that HCV patients preferred information sources provided by hepatitis, lesbian, gay, bisexual, transgender, and intersex (LGBTI); and HIV organisations. The patients also recognised media sources such as TV commercials and other health programmes. Other sources of information include the mass media, such as TV/radio broadcasting (Meillier *et al*., 2015:3558; Niederau 2014: 11595; Cormier 2005:4, Otu,

2003:311). Tanaka *et al.*, (2013:779) found that a higher percentage of patients (39.8 %) obtain HBV information from the newspaper and TV (31.7 %). Other sources of information include patients' associations (Kamran *et al*., 2015:15) and interactive services (Marineau *et al*., 2007:147).

2.3.2.5. Computerised Educational Programs

Many scholars confirmed that computerised educational programmes were used to create awareness of complications of chronic diseases (Corrarino *et al*.,1999:151; McCoy, 1998:388). Health information literacy programs and educational materials have been used specifically to sensitise public members about the spread of spread of HBV and HCV patients (Corrarino *et al*.,1999:151; McCoy, 1998:388; Meillier *et al*., 2015: 3558). Online health resources and educational materials on the internet (Gulati *et al*., 2016:558; Crutzen *et al.*, 2012:45) have been widely used and accessible. For efficient use of information to be ascertained, the role of counselling and education cannot be ignored to improve information used by HBV and HCV patients, which is discussed in the next section.

2.3.2.6. Mobile Applications-Assisted Self-Care Interventions

According to Liu *et al*. (2019:1), Mobile app-assisted self-care interventions can effectively manage chronic diseases such as HBV and HC. Mobile apps were tested for monitoring the health and medication of other patients living with chronic diseases such as diabetes and hypertension, which applies to the context of this study. The reason is that their use facilitates remote management of health issues and data, provision of personalised self-care recommendations, automated feedback, personalised goal-setting, reminders, education materials, data visualisation, patient-care provider communication, and decision-making (Liu *et al*., 2020:1: Bashi *et al*., 2020:5; Sundararaman, 2017:488).

2.4 POLICIES AND RESOURCES SUPPORTING HBV AND HCV INFORMATION PROVISION AND USE

This section highlights health information policies supporting improvement in the accessibility and utilisation of health information by patients and policies guiding the use of information on HBV and HCV in the health facilities in South Africa. The following sections discuss policies and resources supporting HBV and HCV information provision and use.

2.4.1 Policies Supporting HBV and HCV Information Provision and Use

Health information policies were established to guide the effective management of healthcare services, such as preventing chronic diseases services in developed and developing countries worldwide (Batarseh *et al*., 2020:1). The relevance of health information policies can be established by considering the concept of health policy and how it applies to health information provision, the importance and different areas of applications, as well as the purpose of health information policies concerning the effective management and elimination of chronic diseases such as HBV and HCV.

2.4.1.1 Health Information Policy and Area of Applications

According to Philips (2018:178), health policy includes different ways healthcare is planned in a single setting according to national or international guidelines to improve population health. Research shows that policy is needed to guide every activity concerning treatment, prevention, information provision and use for both patients and caregivers (Philips, 2018:178). Giaimo (2016:2) posits that the healthcare system in any nation has to be guided by rules and regulations to provide efficient healthcare services. Healthcare policy is essential for the regulation of treatment, prevention, development and management of the healthcare system and the training of medical personnel in every health institution (Philips, 2018:178; Giaimo, 2016:2). Research shows that health healthcare policy is important for diseases elimination. The various aspects of health information policies have been discussed in the previous sections. The following sub-section discusses the importance of health information policy and application areas in the healthcare system.

2.4.1.2 Effective Management of Healthcare Services

Research shows that preventive care policies provide the best guidance for disease management using various strategies (Batarseh *et al*., 2020:1; Yang *et al*., 2017:465; Katuu 2018: 134; Rowe, & Moodley, 2013:1). Today, many countries around the world (developed, developing and under-developed) have existing health policies guiding health service delivery, management, and health information provisions. Among the developed countries with functional health policies in the USA. The United States of America has a hybrid healthcare 'policy structure that provides coverage for most Americans, with the highest health expenditure per capita of all western and developed countries and benefits of preventive healthcare (Pollack, 2008:97; Iriart *et al*., 2001: 1243). To effectively manage health information systems within the healthcare facilities, an information communication technology system using "Big Data" or "Data Analytics" was considered effective in managing healthcare information systems (Batarseh *et al*., 2020:1). Other researchers saw the big data approach as a useful strategy to effectively manage or improve public health information systems as a means of protection, to regulate, control and eliminate HBV and HCV diseases (Yang *et al*., 2017:465; van Beek & Chronister, 2015:868; Levin & Stevens, 2014:49).

2.4.1.3 Preventive Care and Disease Elimination

Provision of preventive care for disease elimination is part of the highest priority set by policymakers in the healthcare system. Batarseh (2020:1) considered data-driven measures essential for disease reduction as a preventive care strategy. Studies that investigated the prevalence of HBV and HCV diseases in another context revealed that the causes of the disease were due to varied circumstances, including drug injection use among youths and adults (van Beek & Chronister, 2015: 868; Leal, Stein, & Rosenberg, 1999:124). Policymakers need to engage with people who inject drugs or engage in the worst devices, thereby spreading the diseases in many countries, cities, and local communities to prevent HBV and HCV diseases (Scheibe *et al*., 2019). Therefore, policy-makers must set up an effective working policy or guidelines to reduce screening, medication and treatment (Leal *et al*., 1999:124).

Policy for the prevention and care of HBV and HCV patients was established to facilitate the possible elimination of HBV and HCV. These comprise screening, diagnosis and care for viral

HBV and HCV patients (Chabrol *et al*., 2019:1). In addition, health information policies were established to ensure that every category of people, such as adults, children, pregnant women and nursing mothers, are protected from HBV and HCV infections by establishing testing policies and practices for pregnant and lactating mothers (Spencer *et al*., 2003:614).

2.4.1.4 Access to Treatment and Care

Health information policy is essential for improving access to HCV treatment (Mason *et al*., 2019:1). Shiferaw *et al*., (2016:769) emphasised the need for every country to formulate policies for easy access to treatment and care; disease surveillance, identification and screening of vulnerable groups; "use of the birth dose of HBV vaccine; care and treatment", and improvement in the provisions of information on viral hepatitis. A policy is also required as "a guide to reduce variability in practice and make data more accessible" for patients and the stakeholders of healthcare services. Yang *et al*. (2017:465) maintained that policymakers need to develop a health information policy to reduce the burden of hepatocellular carcinoma in Africa and the rest of the world.

2.4.1.5 The Value of Health Information Policy

Health information policy is essential to facilitate easy access to health information for patients and healthcare providers to effectively use health information and efficient health service delivery (Elven *et al*., 2020:1). There is a growing need for health information policy to guide the implementation and prevention of deadly disease infections globally (Buntin *et al*., 2011:464; Tunis *et al*., 2003:1624; Lohr *et al*., 1998:1). Tunis *et al*. (2003:1624) highlighted the need for clinical and decision-makers to become more involved in health information policy formulation. Buntin *et al*., (2011:464) emphasised the value of health information policy and its contributions to improving individuals' health.

Health information policy can guide physicians in the hospitals' settings to adopt ICT, such as electronic health records (HER), to achieve the best practices and the best results in healthcare service delivery. Lohr *et al*., (1998:1) maintained that evidence-based medical practices focusing on using guidelines and policies when discharging duties are about to produce good results. A draft report focusing on using the health information policy framework by the Department of Health (2018) emphasised that health service providers need to be transparent

with patients about how personal health information is used and shared for primary, secondary, and research purposes. This also includes the fact that information must be communicated to patients in a clear and accessible way to decide on matters related to their health and wellbeing (Department of Health (DoH), 2018).

Policymakers at the national and international levels require policies to guide the provision of resources and interventions to prevent the outbreak of deadly diseases such as HBV, HCV and other associated conditions (Sharareh *et al*., 2020:1). Studies show that most HBV and HCV patients are not fully aware of their health status, so policymakers should make access to information freely available to support screening for patients and other individuals concerned about health (Pappoe *et al*., 2019:380). Policies are needed to guide healthcare institutions in screening and vaccinating their staff and students (Karadeniz & Alaşehir, 2020:480).

A standardised and comprehensive national policy orientation toward universal healthcare is needed and should ensure that HBV and HCV patients enjoy unlimited access to information and counselling delivered after diagnosis by healthcare providers (Chabrol *et al*., 2019:1). Coping with HBV and HCV, reducing disease burden, screening, and simplifying the whole therapeutic package by healthcare providers and policymakers should be efficiently implemented (Chabrol *et al*., 2019:1). A pro-active policy is another valuable strategy for reducing any possible incidence of HBV and HCV (Turcanu *et al*., 2019:37).

2.4.2 Health Information Resources on HBV and HCV

Health information resources comprise essential guidelines needed by healthcare providers to support patients' use of information. Studies showed that there are existing information resources related to the epidemiology, prevention and management of diseases by health care workers, particularly nurses and in some cases, exposures with risk of harm" available for use (Hanrahan & Reutter, 1997:144). Health information resources are used in developed and developing countries, specifically in African countries, to design strategies to control the spread of disease and the death rate due to complications experienced from chronic and contagious diseases such as hepatocellular carcinoma (Yang *et al*., 2017:103).

Findings revealed that urgent efforts are needed to provide information resources to educate people on reducing the spread of contagious diseases in Africa and globally (Yang *et al.*, 2017:103). Ren *et al*., (2017:37) noted the burden of chronic HBV and HCV on patients and

families directly, the affected quality of life of the people, which equally required that awareness be raised, and the community-based management intervention program to reduce the effect of chronic hepatitis on patients. Yeung *et al*. (2018:103) believes that "policy should be established to make healthcare system affordable and accessible for users."

Van der Meulen *et al*., (2008:857) believed that strategies are needed to psychologically prepare patients for treatments, rehabilitation, and recovery from traumatic experiences, such as stigmatisation, which can lead to depression, anxiety, and complications of HBV or HCV disease (Javadi *et al*., 2014:17). Medical professionals need to provide information for patients and the general public to eliminate HBV and HCV diseases (Cinar *et al*., 2015:343). Health information provision is required through specific counselling and educational programmes that nurses and doctors must provide to improve patients' quality of life and reduce anxiety and depression in therapy patients. Adequate information provision is required to prevent HBV and HCV diseases (Caballero *et al*., 2012:1547). Prevention methods also require active information-seeking strategies, including adequate training and funding for healthcare providers and allied staff (Caballero *et al*., 2012: 1547).

Edlin *et al*., (2005:276) argued that the strategy required for prevention is understanding the dynamics of substance use and addiction, caring for HCV patients who are illicit drug users, screening for transmission risk behaviour, testing and vaccination against type B and C viruses. Strategies for elimination also include evaluation of treatment services, psychiatric care for those psychologically affected, and social support, requiring adequate information. Garfein *et al*. (2007:1923) believe that strategies for prevention require interventions through the provision of information, enhancing risk-reduction skills, and motivating behavioural changes through patients education, counselling, awareness programs and introduction of information literacy. Lazarus *et al*., (2007:426) stated that access to hepatitis prevention and treatment required that public awareness is raised, which implies that national political leaders need to address hepatitis as a public health issue.

2.4.3 Challenges Facing the Implementation of Health Information Policy by Healthcare Providers

According to Andrew and Pillay (2005:2), one of the strategic priorities for the national health system in South Africa is to improve the overall health system, which requires enhancing information systems (P.8). Health information policy is critical in ensuring the practical implementation of strategic healthcare plans. Pillay *et al*., (2002:4) indicated that the

relationship between policy, legislation and implementation is often misunderstood. Before legislation can be drafted, a policy must have been developed to guide the nature and content of the legislation. Policy development can only be effective when implemented. From the onset, Andrew and Pillay (2005:10) noted the growing increase of health challenges in controlling diseases such as HBV and HCV diseases and why policies need to be formulated and effectively implemented.

In the South African context, investigations through a comprehensive literature search of databases revealed a scarcity of scholarly publications on health information policy and resources on HBV and HCV patients' information access. Literature suggesting policy on access to information, awareness, vaccination, and testing for HBV and HCV in many countries are limited. More literature is needed to emphasise health information policy from multidisciplinary perspectives. The existing literature focuses on the global prevalence of various diseases, including HBV and HCV, experiences and challenges of patients in advanced, middle and low-income countries. Given the importance and value of information and resources needed to manage HBV and HCV diseases to create awareness for the prevention and cure of HBV and HCV diseases, as well as for healthcare providers and stakeholders, information scientists, librarians, and scholars argued in support of the provision of literature focusing on health information policy on HBV and HCV.

Among authors in support of health information policy on HBV and HCV were Crawshaw *et al*., (2018:143), who suggested the need for policy informing the public on the risks of contracting HBV and HCV, and provided the implications for "a more targeted approach to testing, which has already started in the advance countries." Daw *et al.,* (2016:517) argued that health information policy would promote the prevention and control of HCV worldwide.

2.5 COUNSELLING AND EDUCATION BY HEALTHCARE PROFESSIONALS ON HBV AND HBV PATIENTS' INFORMATION

Counselling and education are strategies for improving health and preventing or managing chronic diseases like HBV and HCV. According to the *Online Dictionary of Nursing* (2021), "health education" is a method used to inform people (either individually or collectively), persuade and enable them to adopt lifestyles that are believed to improve health and reject habits regarded as harmful to health. On the other hand, counselling is a method of tackling

psychological difficulties in individual patients. Therefore, HBV and HCV patients must be educated using different methods and approaches to inform or persuade them individually or collectively to adopt lifestyles to improve their health conditions (Cinar *et al*., 2015: 343).

2.5.1 Purpose of Patients Education on HBV and HCV

Education contributes to improved quality of life for patients (Sha *et al*., 2013:922). Education is an essential strategy used to improve people's knowledge regarding prevention methods, pain management, adherence to medications for chronic diseases such as HBV and HCV (If contacted), and cure (Sha *et al*., 2013:922). Knowledge of HBV and HCV is fundamental because it helps to increase awareness. Moreover, education helps effect changes in attitude regarding health practices and improvement in individual HBV and HCV patients (Haq *et al*., 2014:807; Sha *et al*., 2013:922; Raza *et al.,* 2013:1127). Sharif *et al*. (2005:81) revealed that psycho-educational intervention improved patients' quality of life. Education and psychological intervention are needed to assist family members of patients suffering from chronic diseases.

Patient education undoubtedly helps patients understand the importance of adherence to treatment, the complications of non-adherence to treatment, and the need for assistance with therapy and other care (Cacoub *et al*., 2008:6195; Sharif *et al*., 2005:81). Sharif *et al*. (2005:81) examined the effect of a psycho-educational intervention on the health-related quality of life of patients with chronic liver diseases using a case study at Shiraz University of Medical sciences. Raza *et al*. (2013:8) emphasised creating awareness about HBV and HCV infection risk factors during counselling intervention.

Healthcare managers should emphasise prevention strategies using mass media to create awareness, education, and counselling to control the spread of the diseases. Patients and healthcare professionals have benefited immensely from digital or traditional patient education (Kavarthapu & Sankari, 2017:1). Patient education improves HBV and HCV diseases, knowledge, attitude, and health practices (Haq *et al*., 2014:807). Patients' educational materials on HBV, HCV, cirrhosis and hepatocellular carcinoma can be reviewed for effective utilisation to close the gap between the availability and utilisation of material resources (Gulati, 2016:558).

Digital education is another potential "strategy that can increase educational opportunities, supplement teaching activities, and reduce the barriers in health professional education" (Semwal *et al*., 2019:1). Digital education has a crucial role in preventing chronic diseases and improving several areas of patients' health knowledge if targeted toward specific disease prevention (Ouyang, 2013:471). Nurses and experts in medical sciences are expected to educate or counsel patients to relieve them from anxiety and depression while receiving treatment (Cinar *et al*., 2015:343). As a result of traumatic experiences due to complications of HBV or HCV, education, information and advice by obstetricians, peri-natal nurses, and other experts are crucial (Yang *et al*., 2013) to help patients recover speedily. Certainly, education is essential in treating and preventing HBV and HCV diseases among the general populace.

2.5.2 Counselling of HBV and HCV Patients

Merriam-Webster (1828) defined counselling as "professional guidance of the individual by utilising psychological methods". Counselling involves using various techniques such as personal interviews and testing interests and aptitudes. Health is the condition of being sound in the body, mind or spirit, or a situation where someone or something is thriving or doing well (*Merriam-Webster Dictionary*, 1828). Patients in the hospital setting are individuals awaiting or under medical care and treatment (*Merriam-Webster Dictionary*, 1828). Hence, counselling is a vital information provision strategy used to manage the social and psychological state of health of patients suffering from chronic diseases such as HBV and HCV. The following subsections discuss the role of counselling in the life of patients:

2.5.2.1 Enhancing Effective Management and Recovery Process

In counselling, healthcare providers' role is essential in managing, caring for, treating, preventing, and recovering HBV and HCV patients. Counselling on HBV and HCV plays an integral role in patients' lives (Astone *et al*., 2003:107).

2.5.2.2. Reduction of Psychosocial Impact and Health Literacy

Counselling is crucial in recovering or reducing the psychosocial impact of chronic HBV or HCV in patients. (Proeschold-Bell *et al*., 2010:635; Sharif, 2005:81). According to *Collins Online English Dictionary* (2021), counselling refers to advice that a therapist or other expert gives to someone about a particular problem. Uritani *et al*., (2021:1) emphasised the beneficial effects of counselling and education programmes on self-efficacy for managing pain and

chronic diseases during consultations with medical experts or professionals. Medical experts such as doctors and nurses or therapists can use counselling as a strategy to improve the lives of people with chronic diseases such as liver disease and liver transplants, promote occupational safety of health workers and improve health literacy and outcomes. However, it is noteworthy that the purpose of counselling patients includes the ability to persuade patients to make appropriate health decisions (Uritani *et al*., 2021:1)).

2.5.2.3. Adherence to Treatment

According to M'imunya *et al*. (2012:1305), patient education and counselling are essential for health promotion and adherence to treatment, especially for chronic diseases. Findings show that majority of patients do not adhere to medication therapies. The consequences of non-adherence to treatment and medications are severe for chronic and devastating infections like HBV and HCV, given that it could result in prolonged periods of infectiousness, deterioration, and the occurrence of drug-resistant patients. Patient education and counselling promote adherence to treatment for various chronic diseases and reduce occupational risks (Azodo *et al*., 2010:364).

Treatment adherence is a vital strategy to help HCV patients improve health conditions and speedy recovery (Surjadi *et al*., 2011:213). Counselling impacts patients' knowledge, attitude, practices and quality of life (Puvvada & Muthukumar, 2018:305). In a practical sense, Turner *et al*. (2017:4605) emphasised the need to improve the support and education of HCV patients through universal screening. Study shows that persons diagnosed with HCV are significantly affected by psycho-emotional, cognitive and health challenges. Such challenges need to be engaged through collaborative care and services from the nurses and other healthcare personnel (Turner *et al*., 2017:4605).

2.5.2.4.Reduction of Psychoemotional Effect

Many patients experience psycho-emotional effects due to social stigma, shame, fear, and dealing with risky behaviours (Turner *et al*., 2017:4605). Patients' challenges were "compounded by poor knowledge and barriers to supportive care" (p.4611). Both the healthcare workers and HBV and HCV patients in the hospital settings face occupational and health risks, which requires urgent needs for counselling and education to encourage safe work

practices (Azodo *et al.,* 2010:). Cros *et al*., (1998:51) study focus on patients' knowledge of hepatitis B and C virus. The study revealed that most patients affected by HBV and HCV lack information about the mode of transmission and preventive measures. Cho and Park (2016:394) maintained that "public campaigns or education programs are needed to meet the needs for information on the disease for patients with chronic hepatitis C participating in clinical trials and help the general public acquire knowledge" or change the view on these diseases.

Patients with psych emotional disorders need treatment, education, and support to improve their emotional status. Patient counselling promotes knowledge of the disease and its management and positively impacts treatment outcomes (Puvvada & Muthukumar, 2018:305). M'Imunya *et al*., (2012:305) pointed out that patients' education and counselling intervention may increase successful treatment completion, and nurses must carry out the counselling through telephone conversation, which may likely increase patients' chances completing their treatments.

Prevention strategies must include counselling and education for HBV and HCV patients, access to hepatitis education, and public awareness by national political leaders and health care providers. Strategies must also include price reductions for anti-hepatitis drugs, targeted testing, counselling and prevention activities, increased access to HBV and HCV treatment and vaccination for the populations most at risk (Edlin *et al*., 2005:276). It is also imperative that health care providers focus on counselling efforts exclusively, especially in viral transmission (Prince, 2009:142).

2.5.3 Impact of Counselling and Education on HBV and HCV Disease Elimination

Healthcare providers must increase their capacity to educate and encourage client engagement in HCV care. Patient education and counselling help reduce knowledge gaps regarding HCV complications (Boyer & Faillebin, 2013:41). Counselling and education by medical experts during consultation on viral hepatitis can play a crucial role in eliminating the disease (WHO, 2020). Astone *et al*., (2003:107) understood the need to increase HCV educational services in drug treatment programmes since HCV has reached epidemic magnitudes among drug users. In another development, education provided by nurses focusing on improving quality of life, reducing anxiety and depression in patients receiving hepatitis C virus therapy is crucial to healthy development (Cinar *et a*l., 2015:343; Astone *et al*., 2003). Castro-Sánchez et al. (2016:103) emphasised the importance of health literacy in eradicating infectious diseases such

as HBC and HCV, tuberculosis, malaria, hand hygiene, and diarrhoeal disease. It is believed that poor health literacy was associated with reduced adoption of protective behaviours, such as taking immunisation and seeking an adequate understanding of the benefits of adherence to proper medications (Castro-Sánchez *et al*., (2016:103). If patients receive sufficient health literacy, they can make an informed decisions. Garfein *et al*., (2007:1) noted that "peer-education intervention" is another strategy that can provide information and enhance risk-reduction skills by motivating behavioural changes through peer education and training. Educational training can also reduce or eliminate the risks or might prevent HCV transmission (Garfein *et al.*, 2007:1), and apart from experts' consultations,

2.5.4 Psychological Preparedness for HBV and HCV Patients Information Provision

Research shows that psychological distress in patients receiving treatment for chronic diseases such as HBV and HCV is widespread (Agarwal *et al*., 2020:1; Fontana *et al*., 2002:401). Recent studies show that the sudden widespread of coronavirus disease (COVID-19), brought an untold disaster of unprecedented proportions with global consequences (Agarwal *et al*., 2020:1). Consequently, patients with chronic diseases, such as HBV and HCV, who are at the end-stage receiving care are vulnerable to psychological and emotional distress. These patients may find it challenging to handle or manage open discussions, such as attending to queries or interviews and getting a routine for treatment or clinical check-ups.

It has become imperative that patients in such circumstances are psychologically prepared to deal with the emotional trauma, communication challenges, and responses in a discussion forum or conversational event during a health disaster of such magnitude. Similar research shows the need for medical professionals to understand patients' preparation for psychological distress that comes with treatment, especially during the epidemic period (Cerna, 2000:11). Reports show that many factors are responsible for psychological disorders in HBV and HCV patients. Incidence of psychological disorders, such as stress, trauma, depression, medical complications as a result of psychological distress, psychiatric disorder, health anxiety, health phobia, and post-traumatic disorder have been experienced by HBV and HCV patients at one stage of their treatment or the other (Özkan *et al*., 2006:214; Fontana, 202:401). Scholars believe that the most well-intentioned physicians, medical doctors or nurses cannot provide all the information patients need. (Cerna, 2000:11). Lingen (2008:9) argued that anxiety disorder, also known as health anxiety or health phobia, is a feeling of apprehension and fear characterized by physical symptoms such as palpitations, sweating, and feelings of stress. If

such health conditions are not treated early, they can become chronic, or grow progressively worse, and are pathologically associated with other mental disorders (Lingen, 2008).

According to the *Encyclopaedia of Public Health* (2008:136), Post-Traumatic Stress Disorder occurs in individual patients due to psychological stress that causes damage. The condition develops after a traumatic experience as a delayed reaction to the trauma. Due to the outbreak of COVID-19, many people, including patients with underlying health challenges, such as HBV and HCV patients receiving antivirus therapy at the hospitals, are exposed to PTSD due to shock and the long period of lockdown at individual homes. Patients who are already living with chronic illness such as HBV and HCV patients are prone to extended period of stressful situation, and perhaps may like to avoid exposures to traumatic activities (*Encyclopaedia of Public Health*, 2008:136)).

A cross-sectional, descriptively designed study by Kim *et al*. (2006:1047) found that patients suffering from psychological distress and are seriously impaired are linked with particular symptoms such as fatigue, muscle cramps, or pruritus. However, it was suggested that management should pay attention to the provision of psychological intervention. Psychological intervention and preparedness are imperative for improving patients' quality of life with chronic diseases (Kim *et al*., 2006:1047). Coping strategies for psychologically distressed HBV and HCV patients must include psychological support, emotional support from spouses, educational intervention, counselling by doctors, nurses, psychologists and experts in interdisciplinary studies (Fontana *et al.*, 2006:401). The reason is that "psychological preparedness can help people think logically and wisely and help reduce the risk of severe injury and loss of life". It is crucial that individuals and communities adequately prepare psychologically before confronting any challenging situation (Roudini *et al*., 2017:1).

Psychological preparedness must improve patients' knowledge of handling psychological and emotional trauma by HBV and HCV patients in vulnerable populations (Surjadi, 2011). *Encyclopaedia of Public Health* (2008:143) reported that "alleviating psychological distress is a complex problem in end-stage care" because the hospital and palliative care require combination of teams team of experts such as physicians, registered nurses, social workers, physiotherapists, occupational therapists, complementary therapists, volunteers, and family members to contribute towards the psychological preparedness of HBV and HCV patients. It is crucial that experts in health education programmes, counsellors, psychologists, nurses, and

experts from interdisciplinary studies effectively contribute their parts to the rehabilitation and recovery of patients from experiences such as "anxiety and depression in patients receiving HCV therapy" and to improve the value of life (Cinar *et al*., 2015:343).

Palliative care for the patients must be provided to improve knowledge on HBV and HCV, and related diseases. Also, the Encyclopaedia of Public Health (2008:126) maintained that "effective palliative care in the form of educational intervention, skills training and emotional support are required to prepare the mind of patients with chronic diseases, including their family members." Medical experts and healthcare providers can best provide training, while emotional support can be provided by counsellors, family friends, and relatives (Lenze, 2008:126).

2.6 FACTORS CONTRIBUTING TO THE USE OF HBV AND HCV PATIENTS' INFORMATION

Patients' information and information needs of HBV and HCV patients have been discussed in sub-sections 2.2.1 and 2.2.2 of this chapter. This section analysed literature addressing factors contributing to the use of information by HBV and HCV patients. Scholars have reported the purpose, usefulness, significance, outcome, and benefit of using patients' information. The following sections shed light on their findings.

2.6.1 Risks Avoidance or Reduction

Much has been written concerning factors responsible for the use of information by patients in related studies (Mak *et al.,* 2018:262; Kuecuekbalaban *et al*., 2017:1; Salmanzadeh *et al*., 2016:380). Some studies indicated that information use is determined by different factors, but depending on the circumstances and needs of individuals at a particular time (Kuecuekbalaban*et al*., 2017:1; Salmanzadeh *et al*., 2016:380). Other related studies indicated that the use of information depends on the intention of eliminating the spread of the disease, to avoid the risks, or reduction of spread and prevalence (Salmanzadeh *et al*., 2016:380). Certainly, the need for improving access to antiretroviral therapies is very paramount; the need for HBV and HCV screening so for accessibility to treatment and preventive medical care is equally important (Mak *et al.,* 2018:262). A cross-sectional investigation into the prevalence of HBV and HCV among workers employed in state hospitals in Ahvaz, Iran revealed that the use of information was considered an important factor in controlling the spread of infection

(Salmanzadeh *et al*., 2016:380). No doubt Access to relevant information helps patients and individuals avoid risks.

2.6.2 Demographic Factors

Demographic factors are socio-psychological and structural factors that influence the way individuals distinguish the severity of the disease and impact decision-making (Corcoran, 2013:10; Stein *et al*., 2012:20). Notable scholars have indicated the importance of demographic factors in social sciences and in public health. Savolainen (2015:661) indicated that age, gender, and economic status play a significant role in the information-seeking behaviour of individuals. More important is the role health status of individual patients in identifying factors that predicts or influence information-seeking actions by individuals (Jennings 2018:1: Hovick *et al*., 2014:511; Van Zandt*et al*., 2002:61). Study by Kuecuekbalaban *et al*., (2017:1) using a cross-sectional survey to investigate 2,527 participants indicated that factors such as age, sex, and residence, as well as the socio-demographic, health-related and individual factors with self-testing must be taken into consideration in controlling the spread of infection. They found out that demographic information is an important motivating factor the use of information could be responsible for the improvement in patients recovery.

2.6.3 Significance of Information to users

The more importance is attached to the value of information, the more consumers will be attracted to use it. Johnson (1997:70) described "salience" as a motivating factor that determines information seeking and use by individuals to bridge an information gap that is motivating enough. Robson and Robinson (2012:174) argued that salience factors are those that determine individual patients' information-seeking actions in terms of "its significance and applicability." Salience factors related to HBV and HCV diseases are those that concern the symptoms of the disease, early diagnosis, therapy, mode of transmission, prevention, and coping strategies (Teague *et al*., 1999:201: Becker & Rosenstock, 1989:179); improving coping with the diseases and preventive measures (Proeschold-Bell *et al*., 2010:635), for example, vaccination; mode of transmission (Rhodes, 2000:408); and educational intervention for prevention and health literacy (Santos-Hoevener, 2018:82; Ruimy, *et al*., 2002:567). Other relevant information includes those that can reduce barriers to treatment (Roose *et al*., 2014:652), coping strategies, reducing psychological burdens, and improving patient-doctor relationships.

2.6.4 Beliefs of Information Users

The beliefs of information users are among the seven antecedents that commonly influence individual information behaviour (Chang & Huang, 2020:24; Johnson & Case, 2012:41). People's beliefs in their ability to control what motivate them to seek information. It has to do with the individual state of ignorance or knowledge about a topic (Becker & Rosenstock, 1984:179). Patients' beliefs lie in the perceived benefits of the information search or perceived hazard that motivates looking for preventive measures (Johnson & Case, 2012:41). If patients believe in imminent potential danger or health risk, it is natural that they will actively seek relevant information from friends, family members or support groups rather than waiting for news media (Becker & Rosenstock, 1984:179). For HBV and HCV, antecedent factor, such as "beliefs," relates to perceived benefits of information or a perceived hazard of not receiving information (Sublette *et al*., 2013:894); belief in self-efficacy (Becker & Rosenstock, 1984:179); and belief in preventive medicine and religion (Proeschold-Bell *et al*., 2010:635).

2.6.5 Knowledge and Awareness

The knowledge of HBV and HCV and the awareness of transmission, preventive measures, management, and treatment strategies contribute to the effective use of information to control diseases and illnesses in society (Dehghani *et al*., 202015). Thus, the need for patients to have adequate knowledge of coping mechanisms, management of disease, mode of contacts, preventive measures, treatment options; the importance of medication adherence; the usefulness of vaccination; and the readiness and positive attitude towards receiving the vaccination for preventive purposes are of utmost importance for the recovery and elimination of HBV and HCV in society (Napolitano *et al*., 2019:2070). Findings revealed that "poor attitudes of patients towards vaccination, treatment and adherence to medication were due to lack of understanding and poor knowledge of the importance of HBV and HCV testing, treatment, and prevention measures (Cacoub *et al*., 2008:6195).

In addition, most of their expressed fear of treatment and side effects of treatment strategies and medications were due to a lack of knowledge of treatment options and the beliefs that medications are false. Therefore, apart from knowledge, education and awareness of information regarding the prevention and treatment of HBV and HCV are equally important (Zola *et al*., 1997:61). It can be concluded that access to information, training and education by the caregivers in a consistent manner may improve HBV and HCV patients' knowledge regarding testing, treatments and adherence to medication (Cacoub *et al*., 2007:384; Zola *et al*., 1997:61).

Knowledge acquisition and awareness of hazards caused by disease, prevention and treatment measures are important for individuals and inform physicians on achieving a higher level of success (Aspinall *et al*., 2014:179). The knowledge of HBV and HCV informs patients about the preventive behaviour, treatment and adherence to therapy while living with the disease (Spence & Dash, 1990). As Wu *et al*. (2015:58) observed in a "comparative study of patients' knowledge of HCV in the United States and urban and rural China", there were major gaps in knowledge among patients in China and the US. The information shows that efforts to improve HCV knowledge are necessary and should be tailored towards patients' education and health literacy. Due to the low level of knowledge of HBV and HCV risk factors, Pieper and Sickon (2018:62) suggested that health practitioners should encourage screening and provide health risk and preventive information for patients.

Al-Tawil *et al*. (2013:135) noted poor knowledge of management and prevention among healthcare workers. He *et al*. (2013:4913) indicated that lack of awareness is the major problem among patients suffering from chronic disease. According to the majority of the participants, knowledge of the prevention of diseases are among the vital strategies management options available for primary liver cancer." Hepatitis "education level was found to be an important factor affecting knowledge levels" (He *et al*., 2013:4913).

2.6.6 The Need for Education and Preventive Care

Another important factor for using information is that proper education is a preventive measure and may positively reduce the spread of HBV and HCV diseases (Rasekh *et al*., 2019:1). Many articles have been published regarding patient education (Haq *et al*., 2014:807; Shah 2013:922; Raza, 2013:8; Ouyang, 2013:471. However, few documents focusing on HBV and HCV patients' education have been recorded (Gulati, 2016:558). Among the few studies focusing on HBV and HCV patients' education was Rasekh *et al*. (2019:1). The study argued that the lack of adequate information about the risk of HBV and HCV infections was responsible for spreading the disease among people using drugs. The study suggested that active preventive programmes and educational campaigns be organised and targeted at youths.

2.6.7 Peer Influences

The influence of peers among the youth population is among the factors that contribute to using health information. Falade-Nwulia *et al*. (2020:1) identified the influence of peers on the health-seeking behaviour of their network members and emphasised the importance of well-

informed peers'. It is also very important that information regarding the "transmission routes of these viruses be made available to young people who are at the highest risk of infection" Dehghani *et al*., 2019:15). According to Asadollahi and Najafi (2019:230), among the factors responsible for the continuous spread of HBV and HCV infections for many decades were peer influences "through injecting drug use addiction, misuse of drugs, age, and imprisonment factors."

Other factors contributing to information used by patients include the characteristics of each information channel or source used, potential benefits derived from using the information, and the availability and accessibility of channels or sources of information for use. Some information users are mainly interested in the contents of information sources (Johnson, 1997:70). Others prefer information obtained through direct face-to-face human interaction (Turner *et al*., 2017:70) because human source aids interactions among peers, reports experiences to each other, which brings relief. Argument by Robson and Robinson (2011:174) proves that many believed in the "credibility of an information source, authority, accuracy and comprehensibility of information" (Johnson, 1997:70; Johnson *et al*., 2001:335).

2.6.8 Characteristics of Information Sources

Each source of information possesses characteristics that influence the use by patients or that prevents them from using the information on HBV and HCV. Findings revealed that the information source greatly influences patients' information-seeking behaviour (Jennings, 2018:1). Influences such as social presence (Johnson & Meischke, 1993:343), information richness, easy accessibility and availability, and the preference of users can motivate information seeking, which in most cases can be professional knowledge (Robson & Robinson, 2012:169; Johnson & Meischke, 1993a:343). According to Johnson *et al*. (2001:335), information carriers "shape the intention to seek information, while information-seeking actions determine the individual's information field development". Johnson (1997:10) maintained that the choice of information channel or carrier depends on its role in the life of an individual's patients.

While some users look at credibility, authority, accuracy, and ability to comprehend information sources (Robson & Robinson, 2012:169), others look at the perceived benefits, potential danger, or health risks (Lindsay *et al* 1999:135). Naturally, patients look for friends, family members, and support groups for relevant information rather than waiting for news media when perceived health risk is involved (Becker & Rosenstock, 1981:179). Some patients

avoid seeking information if they realise the potential danger to prevent risks of anxiety or depression, leading to further complications such as stroke (Jennings, 2018; Becker & Rosenstock, 1981:179).

2.6.9 Potential Benefits Derived From Information Sources

Many benefits of using different information sources to facilitate easy access to patients' information and communication for effective recovery from diseases have been reported. Information received through health professionals, such as doctors, nurses, and medical experts, has facilitated patients' well-being (Cinar *et al*., 2015:343). Focusing on support needs and health information needs of HBV and HCV patients contributed largely to reducing depression and anxiety and improving the quality of patients' lifestyles (Temple-Smith., 2004:46; Teague *et al*., 1999:201). Studies further show that the information received on HBV and HCV diseases lead to improved decision-making, health, understanding, and knowledge (health literacy); quality of living, empowerment, and satisfaction (Jeong *et al*., 2016p.368; Shaw *et al.,* 2008:389; Kaplan & Trosh, 2004:29 Johnson & Meischke, 1993:169).

A large amount of information received through the "support groups" intervention no doubt contributed a lot to health promotion through interpersonal interactions, psychosocial interventions, "maintaining or fostering social support," enhancement in "health outcomes," promoting a "higher health-related quality of life for persons living with chronic hepatitis C virus" (Turner *et al*., 2017:70; Cinar *et al*., 2015:343; Cormier, 2005:4). Other benefits include the provision of social relief due to poor understanding of HCV infection and its care, poor access to care, barriers to costly treatment, and navigating complex care for comorbidities (Turner *et al*., 2017:70; Cinar *et al*., 2015:343; Cormier, 2005:4).

2.7 CHALLENGES RELATED TO HBV AND HCV PATIENTS' INFORMATION-SEEKING BEHAVIOUR

Previous studies have noted the high burden and prevalence of chronic HBV and HCV globally and in South Africa. Several efforts have been made to end the spread of viral hepatitis, but these have met with different challenges. This section discusses several challenges faced by healthcare providers and patients to provide, access or use the information on HBV and HCV diseases

2.7.1 Lack of Organised and Accurate Data

Providing effective and qualitative information for HBV and HCV patients has met several challenges, including inadequate data and weak hepatitis surveillance for decision-making (Nwokediuko, 2011:786). Nwokediuko (2011:786) earlier identified obstacles regarding the information provided by healthcare professionals, such as "lack of accurate prevalence data, absence of a surveillance programme" and lack of understanding of HBV and HCV infections by the general public and healthcare providers.

2.7.2 Lack of Awareness of the Danger of HBV and HCV

Several studies reported a lack of awareness of the danger of HBV and HCV. Some complained about knowledge of transmission mode, preventive measures, therapeutic facilities, coping mechanisms, and testing facilities (WHO, 2017). WHO reported a lack of awareness of HBV and HCV screening and vaccination among the general populace and healthcare workers (2017). Hours *et al*., (1991:255) noted that "lack of needed information negatively affects patient-care and family members' physical, psychological, and social well-being".

2.7.3 Fear of Psychological Impact of HBV and HCV

Owing to the impact of HBV and HCV, a study shows that "80% of the patients experienced tiredness, stress, health threat and increasing level of anxiety" (Wicker *et al*., 2014:1). Some patients find it challenging to undergo HCV testing as part of repetitive health evaluation. Others are not aware of the need to undergo testing. According to Awan *et al*., (2011:213), approximately "86.4% HCV patients face death threat while 67.3% HBV face this threat. About 93.5% HBV patients and 97.8% HCV patients feel depression." Many fear receiving a positive diagnosis, leading to serious anxiety, frustration and depression or psychological disorder (Jones *et al*., 2014:204). Due to changes in the lifestyle and psychological status of HBV and HCV patients, Fabris *et al*. (2006:1161) suggested that "counselling and educational programme must be an integral part of the general practitioner's activities and the specialist."

2.7.4 Lack of knowledge and proper view of the management of HBV and HCV Diseases

Studies revealed that lack of adequate information, knowledge and education regarding the mode of contact, prevention strategies, management of the diseases, pain management, and recovery had discouraged many from accessing available treatment measures (Treloar *et al.*, 2013:1; DeWalt *et al*., 2004:1228;). Treloar *et al. (*2013) proved that HCV knowledge and

proper education are Lack of adequate knowledge of diseases and proper education has been linked with an increase in the rate of spread among the older population. Therefore, Treloar *et al*. (2013) suggested that education on the impact of the diseases should be targeted at those who are not literate among the older population.

DeWalt *et al*. (2004:1239) posited that "low literacy level is associated with a range of adverse health outcomes", and it accounts for declining use of available health information and services, especially in disease prevention services and self-management of diseases such as HBV and HCV. Treloar *et al*., (2013) further stated that "low literacy is associated with several adverse health outcomes". Furthermore, lack of health knowledge contributes to increasing incidences of chronic illness such as HBV and HCV, diabetics, strokes, liver cirrhosis, "poorer intermediate disease, poorer health outcomes and poorer use of healthcare services" (Treloar *et al*., 2013). On the other, poorer ability to interpret labels and health messages, among youths and elderly persons "contributes to poorer overall health status and higher mortality rates" (Adeyemi *et al.*, 2013:155; Papatheodoridis *et al*., 2016:1).

Adeyemi *et al*., (2013:155) reported a low level of knowledge of HBV infections and disease among pregnant women in Ibadan. The researcher suggested that information dissemination required urgent considerations in their healthcare facilities, especially for HBV patients. A study by Papatheodoridis *et al*. (2016:1) also reported that "out of 28 million people living with HBV and HCV, about 120,000 people die every year due to lack of awareness and understanding, combined with social stigma and discrimination".

2.7.5 Language and Communication Difficulties

A lack of smooth interactions between physicians and patients diagnosed with HCV infection was reported by Zickmund *et al*. (2004:999) due to communication difficulties with physicians, particularly gastroenterologists. In contrast, Jackson *et al*. (1997:292) reported language and communication barriers with non-English speaking patients. Straus (2007:711) reported a lack of information about these prevalent and life-threatening disorders. Diagnostic tests are either not easily available or not requested by primary care physicians. As a result, patients may give misleading guidance when hepatitis-B markers or anti-HCV are found. Other obstacles to information provision on HBV and HCV include a low level of information literacy. Treloar *et al*., (2013) proved that "knowledge of HCV and education is important for HCV treatment, particularly in the older population," while educating people about causes and

preventive measures should be targeted at those who are not literate among the older population.

2.7.6 Problem with Access to Information

Ahmed *et al*. (2016:1522) identified barriers to information access as cultural, communication, social-economic status, healthcare system structure, and immigrants' knowledge of the diseases. Forsythe *et al*., (1992:181) lamented that physicians' inability to obtain and manage clinically relevant information constituted a major problem. Information technology infrastructures are needed to improve IT networks and achieve the health sector's required information and data communication level. However, challenges of the high cost of IT facilities, lack of system integration, users resistance, and slow IT adoption have made the task impossible (McKnight, 2006:145; Pravikoff *et al*., 2005:40).

2.7.7 Cost of ICT Infrastructural Facilities

International Encyclopaedia of Information and Library Science (2003:162) identified the cost of infrastructural facilities as the major barrier to information provisions, given that information technologies infrastructures are capital intensive. These include the cost of creating and acquiring information as well as maintenance. Helms *et al*., (2008:85), in their study on information technology and the healthcare industry, analysed part of the multifaceted barriers facing healthcare industries, among which is the high cost of information technology implementation. Bernstein *et al*. (1980:169) identified a pertinent issue to be information transfer through online access. In addition to this was the inability to exchange health information among health professionals due to an erratic power supply (Akinyede *et al.*, 2012:180; Idowu, Conford & Bastin, 2008:15).

2.8 GUIDELINES FOR HBV AND BCV INFORMATION PROVISION, ACCESS AND USE

It is crucial to know that health information is needed by patients, health care providers, managers, statisticians, health insurance companies, and consumers to make decisions for protection and safety in the health system. This implies that every individual needs health information for various purposes. Therefore, to achieve this study's desired purpose, there is a need for guidelines to ensure that access and use of health information on HBV and HCV are recommended to address the challenges faced by patients and healthcare providers.

Consequently, Scheibe *et al*. (2019:29) posited that "when this study was being planned, the South African National Department of Health (NDOH) was in the process of developing national viral hepatitis policy. This implies that people living with HBV and HCV and-focused hepatitis services were not included, largely due to limited local data."

The guidelines focussing on patients information, access and use of information on specific diseases can be found on the home of Ngwelezane hospital website (See the reference list; Appendix 5, and 6). Authors suggested specific guidelines for improving health information access and use which can also be applied to HBV and HCV. This includes digital health interventions for chronic diseases (Bashi *et al*., 2020:1), communication interventions through information and communication technology [ICT] (Monaco, *et al*., 2019:1689), "telemedicine for chronic pain management, especially during the Covid-19 pandemic outbreak" (Ghai *et al*., 2020:456), "mobile app-assisted self-care interventions for improving patient outcomes" (Sundararaman *et al*., 2017:1), "integration of mobile health technology in the treatment of chronic pain" and "internet interventions for chronic pain" (Buhrman *et al*., 2016:17). Buhrman *et al*. (2016:17) argued that "Internet-based interventions have the potential to overcome several practical barriers".

Furthermore, access to the internet has many advantages for healthcare management. These include "reducing costs and increasing convenience for users, reducing health service costs, and reaching isolated groups. Also, it can offer a treatment opportunity, avoiding stigmatisation, and people can have timeless access to the internet, and thus, to treatment" (Buhrman *et al*., 2016:17). According to Ghai *et al*., (2020:456), the "application of telemedicine to health care management" can help to decrease the risk of exposure of the patients and healthcare workers to contagious diseases. The application is usually focused on psychological interventions, exercise, mindfulness-based stress reduction therapies, with benefits of reduction in pain, disability, depression, and anxiety in intervention groups compared to control groups (Ghai *et al*., 2020:456).

Even though telemedicine is emerging as a key technology for efficient communication and sustainable solution for providing essential health care services for people, the application to the healthcare services for patients treatment, and counselling in specific clinical condition is beneficial (Ghai *et al*., 2020:457). Many authors believe that adopting digital health interventions is beneficial in managing chronic diseases such as HBV and HCV and bridges

the communication gap between patients and healthcare providers (Bashi *et al*., 2020:1; Monaco *et al*., 2019:1689; Marcolino *et al*., 2018:23;). Scholars noted that "digital health (DH) interventions have contributed to the transformation of healthcare delivery in the past decade". They can still transform the healthcare delivery system in a wide range for future applicability, specifically in the management of chronic diseases, pain management and effective communication system in the healthcare system (Bashi *et al.*, 2020:1; Ghai *et al*., 2020:456; Monaco *et al*., 2019:1689).

Bashi *et al*., (2020:5) recommended "digital health intervention as an evidenced-based framework to unlock the potential of rapidly advancing technologies for patients with chronic diseases." Based on the intervention for disease elimination, WHO (2020) suggested that "countries need to move towards achieving the global hepatitis goals targeted to reduce new viral hepatitis infections by 90% and reduce deaths due to viral hepatitis by 65% by 2030". The goal under the Sustainable Development Agenda 2030 include access to information regarding the following:

- *"Access to education and counselling on options for care and treatment for people infected with hepatitis B and C virus*
- *Raising awareness of dangers of HBV and HCV diseases, promoting partnerships and mobilising resources;*
- *Increasing health equities within the hepatitis response;*
- *Preventing transmission; and*
- *Scaling up screening, care and treatment services".*

Other guidelines include the following:

2.8.1 Effective Information Communication strategies

Loutfy *et al*., 2018:94 suggested that guidelines should consider effective communication strategies that meet the needs of the populace based on the social determinants of health of the people. An evidence-based information system approach is essential for the prevention and spread of HBV and HCV diseases. Equally important is implementing guidelines that will assist the practitioner in developing an information system framework to facilitate effective information communication channels and promote understanding between doctors, patients and other health paraprofessional bodies.

2.8.2 Addressing Educational Needs (EN)

Guideline for information provision for HBV and HCV patients must address "the continuing education and unmet treatment needs for patients with HCV (Terrault, *et al*., 2015:1). Strategies for educating patients must include "the appropriate HCV medication use, improving adherence, and coordinating care provided by the professional team" (Terrault *et al*., 2015:1). Effective strategies should be developed to improve access to and use healthcare information by users of health facilities in South Africa in various contexts, with a specific focus on HBV and HCV patients. Utilising artificial intelligence and 21st-century software systems to explore gaps in information provision, accessibility and utilisation for HBV and HCV patients and healthcare providers is essential (Jayanthi *et al*., 2019:58).

2.8.3 Improving Adherence to Antiretroviral Therapy by Patients

Collaborating with experts in "public health, psychology, anthropology, sociology, and medicine, among others, will aid antiretroviral therapy adherence" (Kegee *et al*., 2018:83). Jooste and Jasper (2012:56) advocated collaborative actions by various stakeholders in the development of nursing management. Guidelines that include re-engineering the entire public health care system to achieve improved health outcomes, information management, and the social determinants of health were suggested by Naledi *et al*., (2011:18). Also, Bam (2015:188) argued that "at least 95% adherence to medication is needed to keep diseases under control, and leads better access to health care facilities and medication by clients." This recommendation is based on World Health Organization guidelines. The knowledge and skills of professional nurses and the quality of service must be improved through further training to effectively provide effective or efficient services (Gosangaye & Mayeye, 2013:110).

2.8.4 Reduction of Social Stigmatisation in HBV and HCV Patients

It is also important that guidelines address the stigmatisation associated with HBV and HCV infection through education. People living with HBV and HCV diseases should be made aware of the potential stigma and discrimination they may face from people who are less informed about the risks of infection. Such individuals may require further counselling to cope with psychosocial, emotional, and mental health stability (Loutfy *et al*., 2018:94; Terrault *et al*., 2015:1).

2.8.5 In-service Training and Skills Development for Healthcare Providers

The guideline must include in-service training and workshops based on a specific area of specialisation that will enhance their knowledge level (Meintjes & Nolte, 2016:315). Spearman, *et al*. (2013:337) suggested that HBV is preventable through the universal vaccination coverage of all children and identification of those with chronic HBV infection. Improvement in data or information consistency could be achieved through a well-designed and focused study. Dookie and Singh (2012:67) proposed that "political and policy assurance be improved towards qualitative primary healthcare delivery", including "reorientation of healthcare workers, integration of primary healthcare activities into other community-based development, improved management skills", and effective coordination at all levels of the health system (Dookie & Singh, 2012:67).

Hospital management must invest in capacity building and skills development to solve problems between communication, networking, and community participation. Malakoane *et al*., (2020:58) maintained that effective health service system can be strengthened with the effective use of health information. Gcora and Cilliers (2016:1) advised that along with access to information, adequate finance of information communication infrastructure is very important to drive a change management programme, implement policies guiding e-learning programmes, and train health workers. Strategies for improving access to healthcare information and services in low-resourced settings may include mobile phones to assist patients by healthcare workers in South Africa (Watkins, *et al*., 2018:139). Furthermore, adopting responsible innovation for the support of the health system can help overcome the challenges of the health system (Lehoux *et al*., 2019:63).

World Health Organization (2010:22) defined health technologies as the application of organised knowledge and skills in the form of devices, medicine, vaccines, procedures, and systems developed to solve health problems and improve the quality of life. Effective use of health information policies to guide use of information about dangerous diseases by stakeholders in the health management systems will improve knowledge about information needs, the pattern of information seeking and effective use of health information policies to

achieve the desired goal. Hotta *et al*., (2020:13) examined of the use of telemedicine-based services in developing countries, to reduce part of the healthcare challenges faced by the people. It was revealed that telemedicine services can be used to improve service provision in South Africa and other countries where internet spread is more advanced (Hotta *et al.,* 2020:13).

2.9. APPRAISAL OF THE CHAPTER.

Information needs and seeking behaviour of hepatitis B and C patients were examined from a literature point of view. The chapter provided insight into various information that previous studies need to explore. It was obvious that patients need to understand the strategies employed by health managers, to understand the risk of disease infection and benefits of information for timely intervention and treatment strategies employed by healthcare professionals. The need for drugs information, treatment adherence among others were highlighted. However, limited studies examine patients' information needs in the context of HBV and HCV patients in South Africa. Various approaches to information seeking employed present their area of strength and weakness such as the non-availability of accessible sources of information. Eventually, studies that examine HBV and HCV patients' information is very scarce in the South African context.

Despite the importance of policies and regulations in guiding patients' information access and use, a policy guiding HBV and HVB patients' information in the South African context is very scarce on hospital websites. However, health information policies guiding HBV and patient information use are yet to be established in HCV in the South Africa context. The importance of health information needs and seeking behaviour were discussed and linked with HBV and HCV patients' information-seeking behaviour. The review shows that patients' information needs include screening, testing, timely vaccination, pain management, counselling, education, and support. Access to and use of patients' information and various sources of information used in previous studies were highly valued.

Counselling and education by healthcare providers were highlighted to improve information provision and communication for patients. Factors contributing to the use of information were analysed. The contribution is limited in the context of HBV and HCV patients in South Africa. Various challenges identified in the previous studies include lack of organised and accurate data, lack of awareness of the danger of HBV and HCV, lack of knowledge and proper view

of the management of HBV and HCV diseases discouraged access and use of information by HBV and HCV patients. It is an effective solution to the challenges facing patients in their use of health information.

2.10. SUMMARY

This chapter examined related literature to the current study. Information needs and seeking behaviour of hepatitis B and C patients were examined from a literature point of view. It was revealed that literature that examines information needs and seeking behaviour of hepatitis B and C patients in the South Africa context is very scarce. The contributing factors motivating information seeking were examined. It was revealed that information seeking required efforts by individuals and strategies to achieve the goal of information seeking. Access to information resources is crucial. It was revealed that access and use of information depend largely on the accessibility of information sources, while the choice of information sources used depends on the characteristics of information sources.

The value of health information policy and its purpose was discussed, and the need for its implementation was discussed in the South African context. Individuals' information-seeking patterns, access, and use encountered various challenges in related studies. These include lack of organised data, lack of awareness, fear of social and psychological effects, stigmatisation, and language barrier. Several recommendations were made to include establishing guidelines to address the challenges. The next chapter discusses the theoretical framework for the study.

CHAPTER 3: THEORETICAL FRAMEWORK

3.1 INTRODUCTION

Theories explain or predict the relationship among variables in a study. Creswell and Creswell (2018:72); Case (2012:134) defined theory as a set of related statements that explain, describe, or predict phenomena in a given context, while models are used to describe relationships among concepts. Creswell and Creswell (2018:72) posited that a mixed-methods researcher uses theory to inform many aspects of design as they collect, analyse, and interpret quantitative and qualitative data. Glaser *et al*., (1968:364) argued that theories were developed through an induction that involves building upward from observation through coding, analysis, and identifying categories of a phenomenon. Thus, a theory is grounded in observation rather than derived from abstract ideas (Glaser *et al*., 1968:364). This study agreed with the theoretical perspectives of Creswell and Creswell (2018:72) in the application of quantitative, qualitative, and mixed-methods research; a literature review and a conceptual model or theory that helps to explain what the researchers seek to find in a study (p.52-53).

A comprehensive cancer-related information-seeking model (CMIS) was applied to guide this study. CMIS was previously applied to guide the use of magazines (Johnson & Meischke 1993:343). The study also employed the uses and gratification and expectancy theory (UGET) (Katz *et al*., 1973:164) to investigate the research problems in the context of this study. CMIS was adopted because the factors described in the model are highly relevant to the concept and purpose of this study. CMIS focuses on "antecedent, information carrier, and information-seeking factors" that are relevant to the context of this study, while UGET by Katz *et al*., (1974:1) is concerned with four basic principles: "the social and psychological origin of needs", how needs generate expectations concerning sources of information and entertainment; the resulting manner in which people expose themselves to media; the resulting gratification of needs; and other consequences, many of which may be unintended". The current study adopted the "social and psychological origin of needs" to examine HBV and HCV patients (Katz *et al*., 1974:1). CMIS and UGET are underpinned by the pragmatic approach specified in the previous studies. The researcher used a pragmatic approach as a framework combining qualitative and

quantitative data collection and data analysis, integration and interpretation as a case study mixed-methods design. The following sections discuss the theories supporting information needs and seeking behaviour.

3.2 THEORIES SUPPORTING INFORMATION NEEDS AND SEEKING BEHAVIOUR

Theories supported information needs and seeking behaviour, explored by previous scholars such as Case (2012:172), Krikelas (1983:5), and Chatman (1996). Krikelas (1983:5) stated that no single theory of information seeking would make an easy comparison among studies. Chatman (1996:193) maintained that we have no central or body interrelated theories we can view as middle-range. Based on the submission of previous scholars, this current study focused on applying a conceptual framework instead of generating specific theories. Johnson and Case (2012:104) agreed with the submission that the theoretical model investigating information seeking behaviour must provide a sound theoretical basis for predicting changes in information-seeking behaviour and, by extension. Wilson's theory agreed with concepts drawn from other models such as Leckie *et al*., (1996:161) and Savolainen (2009a:187) in Wilson (2016:1). Chatman (1991:438) had earlier applied the "uses and gratification theory" by Katz *et al*., (1974:1) to investigate the use of mass media and other sources for information and entertainment purposes by Janitors. Chatman (1991:43) argued that media audiences choose between media and content to accomplish the goal of gratification. The study proposes that people actively use media to attain gratification. In line with UGET, the theory help researchers understand how people deal with their problems and identify the point at which they gain satisfaction in using media sources (Case, 2012:172). Chatman's (1991:438) study on the pleasure principle agreed with the principle of social and psychological activities to reduce emotional pressure. Donohew *et al*., (1984:267) revealed that acquiring information is an automatic human behaviour that typically brings pleasure.

Research shows that theories were applied to achieve the desired goal. However, for theories to achieve the set goals of information seeking, strategies applied must focus on the specific needs of individuals before making decisions (Donohew *et al*., 1978:25). Spink *et al.* (2002:25) contributed to the literature supporting information seeking and mediated searching during human information-seeking processes, found out that information seeking involved actions and strategies at different stages to achieve the goal of information seeking in different contexts.

Several theories have been explored to measure variables in different contexts. At the same time, the variables applied must be able to measure the objectives of a study efficiently. The following sections 3.2.1 to 3.2.6 discuss other theories supporting information-seeking behaviour in the related studies.

3.2.1 Uncertainty Management Theory (UMT)

The Uncertainty Management Theory (UMT) has been explored in information-seeking behaviour studies (Kuang & Wilson, 2017:378; Hogan & Brashers, 2015:61; Miller, 2014:233; Rains, 2014:1296; Rashers, 2007:201). The theory has been applied in the communication arena, health context, communication discipline, and social and behavioural sciences (Hogan & Brashers, 2015:61). Miller (2013:233) applied UMT to examine the information-seeking experiences of cancer survivors. Findings revealed that cancer survivors reported feeling uncertain about the challenges awaiting them. Rain (2014:1296) also applied UMT to health information seeking of cancer patients using the World Wide Web. They found out that those who use the World Wide Web could predict their uncertainty about cancer prevention more than those who did not use it. Kuang and Wilson (2017:378) carried out a meta-analysis of UMT applications to study chronic illnesses in the health context. The study indicated that "the direction and magnitude of uncertainty effect vary for different information management strategies". Illness uncertainty is strongly and positively associated with anxiety and avoidance.

3.2.2 Social Cognitive Theory (SCT)

Social Cognitive Theory (SCT) has strongly influenced the works of several researchers (Turner, 2010:243; Case *et al*., 2004:660; Bandura, 2001:1; Lent *et al*., 1994:79; Wood & Bandura, 1989:361). Bandura's (2001:1) contribution to SCT categorised the theory into three modes of agency: a direct personal agency, a proxy agency that relies on others to act on one's behest to secure desired outcomes, and a collective agency exercised through socially coordinative and interdependent effort. In his contributions to social cognitive theory, Bandura (2004:143) refers to human health as a social matter, not just an individual one that requires a comprehensive approach to health promotion but changing the practices that have widespread effects on human health (p.143).

Bandura (2009:110) recognised the role of mass media in society, the psychosocial influence of communication on human thought, and how it affects and motivates individuals' actions. Bandura held the opinion of self and society, personal factors such as cognitive, affective, biological events, behavioural patterns, and environments that influence each other bi-

directionally (p.110). Despite the enormous contributions to social cognitive theory by Bandura (1996:623), the scholar believed that a "comprehensive approach to health promotion and disease prevention" is required to change former practices of a social system to a system that will equip users with self-regulatory skills to manage their health habits, and among others.

3.2.3 Grounded Theory (GT)

Grounded Theory (GT) of information seeking is supported by Kulthau (1993:399) derived from general psychological theory. According to Glaser, Strauss and Strutzel (1968:364), the grounded theory requires three operations: collections, coding and analysis of data, to be carried out jointly to develop a theory as it emerges (p.364). Studies revealed that GT had been applied to information-seeking behaviour studies in different contexts (Duncan & Holtslander, 2012:20; González-Teruel, & Abad-García, 2012:31; McKnight, 2007:57; Lalor *et al*., 2008:185; Mansourian, 2006:386; Ellis, 1993:469). González-Teruel and Abad-García (2012:31) argued that "GT procedures for studying information-seeking behaviour have generated theories" in different research contexts. Ellis (1993:469) examined the "modelling of information-seeking patterns of academic researchers" by using the UGT approach.

The study addressed methodological approach issues involving GT applications to studies in analysis, comparison, validity, data recording and coding, and selections. Duncan and Holtslander (2012:20) utilised "grounded theory to explore the information-seeking behaviour" of nursing students. They found that students usually face the challenge of using appropriate words or phrases when using databases. Although most grounded research works have been carried out in health information, the procedures was partially applied because the disposition is limited to the subject studied. In addition, the documentation of procedures was often said to be deficient (González-Teruel & Abad-García, 2012:31).

3.2.4 Lazarus and Folkman's Stress, Appraisal, and Coping Theory

Lazarus and Folkman's stress, appraisal, and coping theory (Lazarus & Folkman's, 1984:141) have been applied to studies in different contexts, such as workplace environment, health and sexual behaviour, coping with hallucination, and chronic pain and diseases (Dysvik *et al*., 2005:297; Brief & George, 1995:15; Folkman *et al*., 1986:992; Folkman, & Lazarus, 1986:107; Folkman *et al*., 1992:218; Farhall & Gehrke, 1997:259). According to Brief and George (1995:15), the theoretical perspective of Lazarus and Folkman's theory has contributed to the study of psychological stress. It is reinforced by the number of empirical studies his theoretical

work has driven. Also, the theory promotes understanding of psychological stress, focusing on individuals and the environment, and how coping has provided many valuable insights.

3.2.5 Miller's Monitoring and Blunting Hypothesis

The theoretical perspective of Miller's monitoring and blunting hypothesis (Miller, 1987:345) has influenced work by researchers such as Solomon and Mikulincer (1987:131), Williams and Jones (2012:274; Steptoe and O'Sullivan (1986:143), Hoffner (1993:91), and Miller (1980:145). For instance, Solomon and Mikulincer (1987:131) examined the post-traumatic stress among soldiers who suffered a combat stress reaction during the war. The study by Hoffner (1993:91) examined children's strategies for coping with stress and their ability to achieve cognitive structure. Other works influenced by the monitoring and blunting perspective include William and Jones (2011:274), who examined a measure of children monitoring and blunting coping styles in a dental situation.

3.2.6 Trans-Theoretical Model (TTM)

The trans-theoretical model (TTM) of health behaviour (Prochaska, DiClemente, 2005:147; Prochaska, DiClemente, & Norcross, 1992:1102) involve different stages of change, such as processes of change, self-efficacy, and decisional balance. Several researchers have applied TTM in different contexts to examine a change in the bereavement process, blood donor, health assessment, health risk behaviour, smoking, and addictive behaviour (DiClemente, Doyle, & Donovan, 2009:879; Bridle *et al*., 2005:283; Candlewood, 2011:107). DiClemente *et al*., (2009:5) believed that researchers should use TTM to establish a proper understanding and assessment of the model's dimensions. Bridle *et al*., (2005:283) argued that TTM had gained widespread popularity and acceptance, yet little is known about its effectiveness as a basis for health behaviour intervention. Caddlewood (2011:107) maintained that bereaved people could benefit from the increased awareness among counsellors, family, friends, employers, and society if they undergo a self-transformation.

3.3 SELECTED MODELS OF HEALTH INFORMATION SEEKING BEHAVIOUR

According to Case (2012:134), a model describes relationships among concepts but is closely tied to the real world. Johnson (1997:70) asserted that "models have strengths and weaknesses". Models are often tested to find their strengths and weaknesses (Spink and Cole, 2006:25). Models of information-seeking behaviour are applied to specific problems or contexts of

studies (Griffin, Dunwoody & Neuwiirth, 1999:230; Wilson, 1999a:249; Johnson, 1997:70; Johnson and Meishke, 1993:343). Some selected models of health information-seeking behaviour are discussed in this section.

3.3.1 Health Beliefs Model (HBM)

HBM information-seeking behaviour researchers have adopted the health beliefs model (HBM) to explain and predict preventive health-related and illness behaviour. HBM was influenced by Rahimikian *et al*., (2008:103), who asserted that HBM is one of the most powerful models used in health education programmes. Becker and Rosenstock (1984:175) described the variables of HBM as those that influence health behaviour, including individual perceptions; modifying factors; perceived seriousness; demographics: social, psychological and structural; perceived threat; cue to action; perceived benefits minus perceived barriers; the likelihood of taking action. Falck *et al*., (1995:523) applied HBM to predict "HIV needle risk practices among injection drug users" and found out that "HBM has a role in risk-reduction among injection drug users".

Rosenstock *et al*., (1988:175) applied "HBM, social learning theory, self-efficacy, and locus of control to the problem of explaining, predicting and influencing behaviour". They argued that there is conceptual confusion among researchers and practitioners about the interrelationships of these theories and variables. The study suggested more effective behavioural interventions than are previously available to health educators. However, scholars established that the application of HBM is limited to questions used in specific studies or contexts, which makes it difficult for a researcher to design appropriate tests of the HBM and compare results across studies. Consequently, studies do not support HBM because of factors, such as cultural, specific influences, social-economic status, and previous experiences, that may heavily influence behavioural practices (Hochbaum *et al*., 1952:432).

3.3.2 Risk Information Seeking Processing Model (RISPM)

Several studies adopted the risk information seeking processing model (RISPM) to develop preventive behaviours, to support climate change policy and environmental behaviour studies (Yang *et al*., 2014:20; Yang *et al*., 2014:296; Hovick *et al*., 2011:656; Ter Huurne *et al*., 2009:215; Johnson, 2005:631). RISPM model comprises seven factors that might predispose individuals to seek and process information (Griffin *et al*.,1999:230). These factors include individual characteristics, perceived hazards characteristics, affective response to risk, felt

social pressure to possess relevant information, information sufficiency, a personal capacity to learn, beliefs about the usefulness of the information in various channels to influence the extent to which a person will seek out the risk information (Griffin *et al.* 1999:230).

Yang *et al*., (2014:296) examined the influence of information processing on individuals. The study supports climate change mitigation policy using the RISP model but suggests that important paths to encourage systematic processing of information related to climate change may lead to increased public support as a theoretical perspective or mitigation policies. Also, Ter Huurne *et al*., (2009:215) agreed that the "RISP model has international strength and that the newly proposed paths are credible". However, the variables of RISP were criticised for not focussing on information retained, slighting the role of emotion and were only tested with survey data (Turner *et al*., 2011).

3.3.3 Wilson Model (WM)

Wilson's model was adapted from Wilson (1999:249); the model identified twelve components of "information-seeking behaviour" such as "information user", needs, "information-seeking behaviour satisfaction or non-satisfaction", "information use", "information transfer", "demands on information systems", "demand on information sources to achieve success or failure, information exchange or other people" (Wilson, 1999:249). Wilson's model draws attention to gaps in research but does not provide suggestions of causative factors in information behaviour, nor does it suggest hypotheses be tested (Case, 2012;252). Wilson's models have been criticised for ignoring sources' characteristics and the complex nature of the level of satisfaction of needs (Case, 2012:47). Also, the Wilson model did not capture information policies and resources in support of information provided in the health context.

3.3.4 Gilberg-Andersen Behavioural Model

In recent years, Gilberg-Andersen's behavioural model for vulnerable populations has influenced behavioural studies (Kim & Lee, 2016:18; Haley *et al*., 2014:206; Stein *et al*., 2012). The Gelberg-Andersen Behavioural Model informed the study by Haley *et al*. (2014:206) for Vulnerable Populations". The study identified factors associated with missed study visits and described the multifaceted retention strategies used by study sites (Haley *et al*., 2014:206). Stockdale *et al*., (2007:1020) adapted Andersen's Behavioural Model to determine if health sector market conditions affect vulnerable subgroups' use of alcohol, drug, and mental health services (ADM) differently than the general population.

Austin *et al*., (2008:26) sought to determine whether ethnic differences exist in the relationship between the predisposing and enabling domains of the Gelberg-Andersen Behavioural Model for Vulnerable Populations and mental distress. The study focused specifically on community-level predisposing and enabling characteristics (Stockdale *et al*., 2007:1020). It was discovered that many factors contributed to mental distress among different ethnic groups of homeless women (Austin *et al*., (2008:26).

3.3.5 Health Information Acquisition Model (HIAM)

According to Johnson and Case (2012:107), Health Information Acquisition Model (HIAM) was developed by Freimuth *et al.,* (1989:9) and focused on cancer information services (CIS), heavily influenced by the Lenze model as well as Atkin's (1973:205). HIAM was grounded in descriptive research and concentrated on surface-level actions (Freimuth, Stein, & Kean, 1989:6). The model emphasised active information seeking and information acquired passively. The process of "information seeking involves six steps: stimulus, information goals, cost benefits, analysis of searching, searching behaviour, evaluation of information decision point on the adequacy of information (Johnson & Case, 2012:40). The model's shortcomings include the recognition of feedback at every time-consuming stage (Freimuth, Stein, & Kean, 1989:6). It also requires that the researcher go back and repeat every task sequence (Case & Devin, 2016:107). Secondly, the model has never been tested in a health information context (Case & Devin, 2016:107).

3.3.6 Expanded Conceptual Model of Information Seeking Behaviour (ECMISB)

According to Lalazaryan and Zara-Farashbadi (2014:193), the expanded conceptual model of information-seeking behaviour (ECMISB) by Longo (2005:189) was designed to understand the nature, source and usage of health information on chronic diseases. The model was patients' centred because it was derived from the experiences and reports of patients (Longo, 2005:189). The expanded model comprises variables influencing patients and consumers' information-seeking behaviours and information use (contextual and personal), health information-seeking behaviour (an active and passive receipt of information as well as patient or consumers outcomes (Lalazaryan and Zara-Farashbadi, 2014:193; Longo, 2005:189; Lambert & Loiselle, 2007:1006; Longo *et al*., 2001:413).

ECMISB has been used to investigate studies focusing on understanding breast-cancer patients' perceptions (Longo *et al*., 2009:184); reaching rural women; breast cancer prevention

information-seeking behaviours; and interest in the Internet, cell phone, and text use (Kratzke *et al*., 2013:54), understanding the medicines information-seeking behaviour and information needs of South African long-term patients with limited literacy skills (Patel & Dowse, 2015:1494), parents and caregivers of children with mental illness in Tanzania (Tandi & Florence, 2013:567), and breast cancer prevention information-seeking behaviour and interest in cell phone and text use: a cross-sectional study in Malaysia (Akhtari-Zavare *et al*., 2015:1).

ECMISB has been used to understand the health information-seeking behaviour of patients and consumers in different contexts (Longo, 2005:189). However, the output process of patients' information-seeking was noted to be absent in all previous models, while the non-linear nature of health information-seeking behaviour and the interplay of both active and passive receipt of information were not reflected (Longo *et al*., 2010:334). ECMISB has been criticised based on concerns about where information seeking might occur and limited applicability to research questions explored by the researchers (Case, 2012). Other health-related models include information seeking models are as Godbold (2006:6; 2013:22); Stein *et al*., (2012:21); and Griffin *et al*., (1999:230).

3.4 THEORIES UNDERPINNING THE STUDY

The current study's theories are the uses and gratification and expectancy theory (UGET) and the comprehensive information-seeking model (CMIS). UGE theory and CMIS have been selected to guide the current study. UGET paradigm of social and psychological origin of needs was selected to determine the information needs of HBV and HCV patients. The purpose of using the CMIS model was to determine the information-seeking behaviour of HBV and HCV patients.

3.4.1 Uses and Gratification and Expectancy Theory

According to Case (2012:194), the uses and gratification theory is a paradigm concerned with the following:

a) The social and psychological origin of needs
b) How needs generate expectations from sources of information and entertainment.
c) The resulting manner in which people expose themselves to media and

d) The resulting gratification of needs, along with other consequences, many of which may be unintended.

Based on the principle of uses and gratification (Katz *et al*., Blumler and Gurevitch, 1974), the media audience is essential in selecting information sources intended for use. Secondly, it is believed that users choose information sources rather than sources choosing the users or individuals using the source. Also, media can only affect the users if the individual decides to be affected by them (Case, 2012:194). It is also assumed that individuals can choose a particular media intended to gratify (satisfy) a specific need, either for entertainment or otherwise, such as television or the internet.

Moreover, media use can be studied by asking people directly about their interests and motives rather than collecting data or observing human behaviour (Case, 2012:195). Galloway (1981:435) opined that expectancy-value theory holds promise for extending uses and gratification research beyond studies of the charting and profiling reasons for attending to the media. The UGET theory was adopted to investigate the research objective of the current study, to determine patients' information needs and determine the extent to which social and psychological needs" of HBV and HCV patients are gratified (satisfied) (Case, 2012:194). Patients' information needs are expected to be satisfied through information from the sources used. The theory has been adopted to determine accessibility to various information sources and the utilisation level of HBV and HCV patients. UGET has the variables that can measure the information needs of HBV and HCV patients and their information use.

Scholars have widely used the theory, and it is very reliable. It can also test the choice of various information sources used by HBV and HCV patients and describe the outcome of information sources used by patients. According to Wilson (2000:51), information needs are not fundamental needs such as food, clothing, shelter, or needs for sustenance, but secondary needs that arise from the desire to satisfy primary needs. An individual may seek information due to a perceived gap in secondary needs and then take steps to bridge the gap. In the context of HBV and HCV patients' information needs, patients' education needs are critical, as reported by many researchers. The epidemic nature of the disease and the need for treatment require that patients are educated through various means such as national education programmes, effective communication methods, and the mass media (Astone *et al*., 2003:107).

Due to the prevalence of psychiatric disorders, particularly stigmatisation and depression as a result of the effect of HBV and HCV diseases on patients, researchers must identify the gaps caused by the impact of the disease and bridge the gaps to gratify the social and psychological needs of patients, based on the principle of UGET (Kraus *et al*. (2003:708). Healthcare workers and patients need effective communication to either prevent or protect themselves from occupational hazards (Azodo, 2010:364). In turn, patients' cannot underestimate information disseminated through media sources.

The disease's epidemic nature among school children calls for awareness and preventive measures through patient education (Barati *et al*. (2005:249). The need for therapeutic education for patients helps to improve patients' quality of life (Boyer & Faillebin, 2013:41). In addition, there is a need for disease control of HBV and HCV to reduce patients' and health service providers' knowledge gap through mass media and other effective means of communication (Buller-Taylor *et al*., 2018:1095). UGET has been used in different contexts: students learning experiences, social media, social networking, internet use, improvements in customer relations and customer behaviour, guiding health-related studies associated with sources of health information and contextual factors. However, it has not been applied to identify health information needs, access and use by HBV and HCV patients, policies and resources supporting the provision, and use of information by HBV and HCV patients.

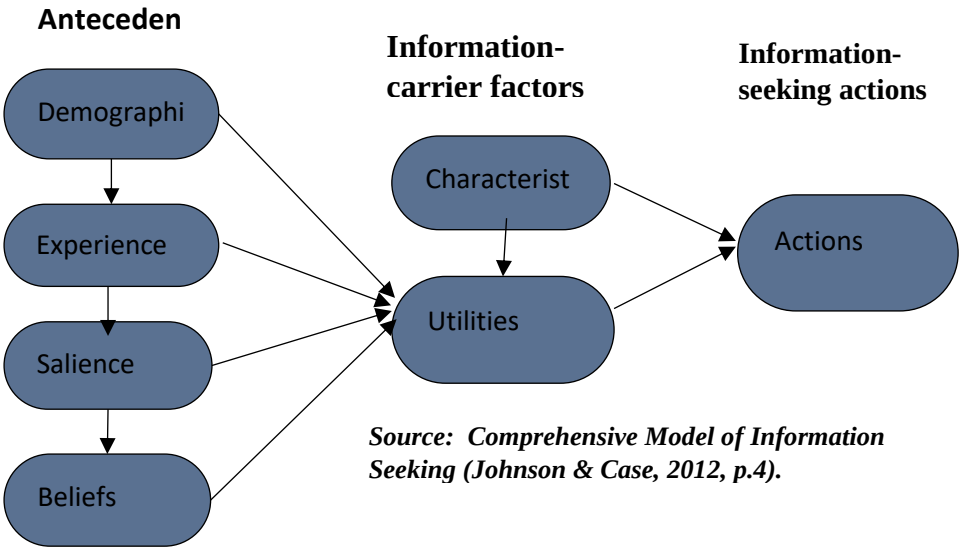
It is yet to be explored to determine the role of counselling and education by healthcare professionals, provide information for HBV and HCV patients, and ascertain the factors contributing to the use of information by HBV and HCV patients. Moreover, to establish challenges that healthcare providers face in providing patient information.

3.4.2 Comprehensive Model of Information Seeking (CMIS)

A comprehensive model of information seeking (CMIS) is characterised by seven factors grouped under three headings: antecedent factors, information carrier factors, and information-seeking factors (Case & Given, 2016:157; Johnson & Case, 2012;40). The antecedent factors influence the perception of information carriers' utility and motivate users' information-seeking actions. Under the information carrier factors, information carrier characteristics influence the utility of the information carrier by users, and information carriers influence information-seeking actions. The antecedent portion of the CMIS was drawn heavily from the health belief

model (HBM), which was drawn from the work of Lewin and another social psychologist (Johnson & Case, 2012:41; Mikhail, 1981:65). Figure 3.1 illustrates the variables of CMIS.

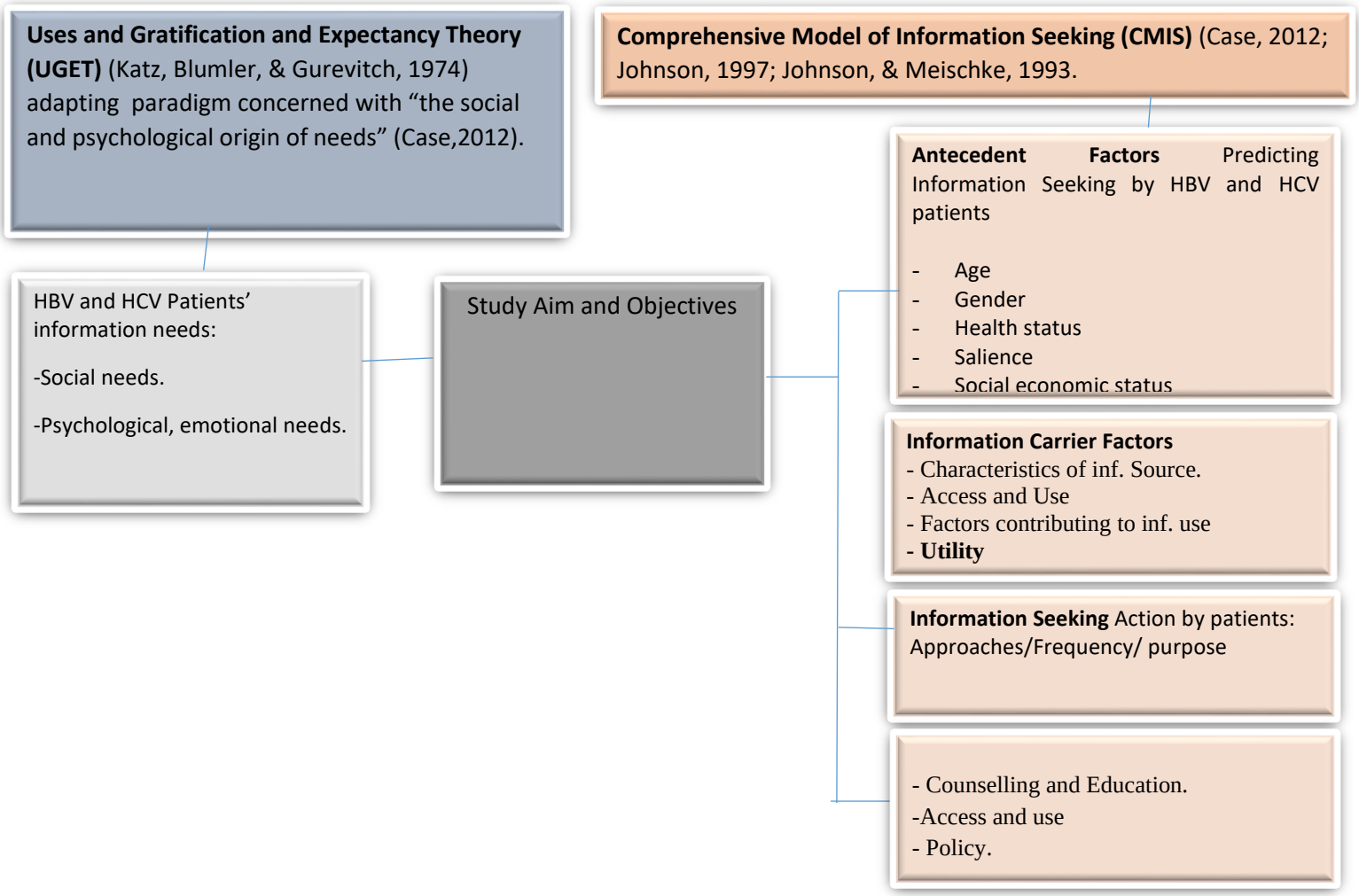
Figure 3.1: Comprehensive Model of Information Seeking



Source: Comprehensive Model of Information Seeking (Johnson & Case, 2012, p.4).

The theoretical framework for the study of information needs and seeking behaviour adapted the CMIS model and UGET to explore the general aim and objectives of the study. CMIS (Johnson, 1997:70; Johnson & Meishke, 1993:343) is very simple and more general in the sense that it gives room for further improvement through a feedback loop between actions and antecedents. Moreover, it has been empirically tested in health communication studies and other health-related contexts (Bernadas *et al.*, 20197; Banyat, 2018:563; Kim *et al.*, 2017:1; Ruppel, 2016:208; Sheng & Simpson, 2015:96; Han *et al.*, 2010:367). Therefore, the theory can also be applied in the current study context.

Figure 3.2: Research Theoretical Framework



Source: Developed by the researcher from other theories and models in the literature.

3.5 CHOICE AND APPLICATIONS OF CMIS AND UGET TO THE CURRENT STUDY.

CMIS by Johnson (Johnson & Case, 2012:40; Johnson, 1997:70), and UGET (Case & Devin, 157; Case (2012:194) was applied to the study of information needs and seeking behaviour of HBV and HCV patients in a tertiary health institution in KwaZulu-Natal, South Africa to address the research problems described. The CMIS model was built upon the antecedent factors (demographic, experience, salience, and beliefs), information carrier factor (characteristics and utility), and information-seeking action (Johnson & Case, 2012:40). At the same time, the social and psychological aspects of UGET were applied to the current study to determine the information needs of HBV and HCV patients. The suitability of CMIS and UGET as the theoretical framework guiding the study is summarised in Table 3.1.

Table 3.1: Mapping research questions to CMIS and UGET construct

Specific Research Questions	**Area of relevance**	**Theory/Model**
What are the information needs and seeking behaviour of HBV and HCV patients?	The principle of Social and psychological origin of needs of HBV and HCV patients. Information seeking behaviour of HBV and HCV patients.	UGET CMIS
To what extent are HBV and HCV patients able to access and use the information?	Information carrier factor (utility) Information sources	CMIS
To what extent has the selected tertiary health institution in South Africa been able to align policies and resources to support the provision and use of information by HBV and HCV patients?	The utility of the information carrier factor	CMIS

What factors contribute to the use of information by HBV and HCV patients?	Antecedent factors (demographic, experience, salience and beliefs)	CMIS
What role have counselling and education by healthcare professionals played in providing information for HBV and HCV patients?	Information carrier factor (characteristics and utility)	CMIS
What challenges are faced by the selected tertiary health institution in South Africa in providing HBV and HCV patients information?	Information carrier factor (characteristics and utility)	CMIS

Source: Generated by the researcher from other theories and models in the literature.

It is noteworthy that CMIS antecedent factors- information carrier factors and information-seeking actions- adequately addressed all the current study constructs. However, the information needs of HBV and HCV patients were managed using the social and psychological needs construct of UGET.

3.5.1 Antecedent Factors

The antecedent factors of CMIS comprise demographics, experience, salience, and beliefs (Case, Andrews, Johnson & Allard, 2005; Becker & Rosenstock, 1984). CMIS scholars believe that antecedent factors influence the decision of individuals to either seek information or avoid seeking information (Sheng & Simpson, 2015; Han *et al*., 2010; Johnson, 2001).

3.5.1.1. Demographic factors: Demographic factors are socio-psychological and structural variables that influence how individuals perceive the severity of the disease, which impacts decision-making (Corcoran, 2013; Stein, Andersen, Robertson & Gelberg, 2012). They include age, gender, economic status, and health status and predict or influence the information-seeking actions of individual patients (Savolainen, 2015; Van Zandt, D'lugoff, & Kelley, 2002). In addition, demographic factors form the fundamental aspects of empirical research (Jennings, 2018: Hovick, Liang & Kahlor, 2014; Han *et al*., 2010).

3.5.1.2. Patients' Experience. In recent years, patient experience has become an essential indicator of the provision of quality healthcare services and excellent clinical care (Wolf *et al.*, 2014:7). According to Oben (2020:906), patient experience is universally acknowledged as an independent dimension of healthcare quality. Undoubtedly, patient experience is strongly tied to patients' expectations beyond clinical outcomes or health status. The experiences of HBV and HCV patients regarding management of the diseases, including pain management and the ability to adhere to medications and recommended treatment, can only be narrated by the individual patients involved (Godbold, 2013; Ward *et al*., 2000), experiences from caregivers (Zola *et al*., 1977), family members (Temple-Smith, 2004; Ward, *et al*., 2000), patients' reactions to a positive diagnosis of disease at the diagnostic centres (Treloar *et al*., 2010), testing and diagnostic centres (Winter *et al*., 2008), and location of vaccination centres for the prevention of the disease (Caballero *et al*., 2012).

3.5.1.3. Salience is an integral part of antecedent factors that determine individual patients' information-seeking, whether important enough to bridge the information gap or motivate information seeking (Johnson, 1997). Robson and Robinson (2012) argued that salience factors are those that determine an individual patient's information-seeking actions in terms of "its significance and applicability," such as symptoms of a disease, early diagnosis, therapy, mode of transmission and prevention, coping strategies (Teaque *et al*., 1999: Becker & Rosenstock, 1989), improving coping with the diseases and preventive measures (Proeschold-Bell *et al*., 2010) period of vaccination, and mode of disease transmission (Rhodes, 2000).

3.5.1.4. **Beliefs** are factors that depend on the individual patient's state of ignorance or knowledge about a topic (Johnson & Case, 2012), either in the perceived benefits; perceived hazard; self-efficacy; methods of prevention of disease; and alternative medicine (Johnson & Case, 2012; Becker & Rosenstock, 1984). According to Johnson (1997:70), beliefs are important factors in information seeking because they compel individual patients thinking and level of motivation regarding information seeking and the degree of control over the event and their self-efficacy (Johnson, 1997). For example, if patients believe in imminent potential danger or health risk, it is natural that they will actively seek relevant information from friends, family members or support groups rather than waiting for the news media (Becker & Rosenstock, 1981). For HBV and HCV, antecedent factor, such as "beliefs," relates to

perceived benefits of information and perceived hazard of not receiving information (Sublette *et al.,* 2013), self-efficacy beliefs (Becker & Rosenstock, 1981), myth beliefs in preventive medicine and religion (Proeschold-Bell *et al*., 2010). Applying the antecedent factors of CMIS to the current study helped identify the factors contributing to the use of information by HBV and HCV patients and addressed research question five.

3.5.2 Information Carrier Factors.

Information carrier factors applied to research question two of the current study, which helps determine how HBV and HCV patients can access and use information. The first and most essential clarifications about the information carrier factor were made by Spink and Cole (2006: 28). They indicated that the information source could be information channels or carriers of information. In addition, information carrier factors such as characteristics and utilities are regarded as sources that influence individual patients' choice of information carrier (Case *et al*., 2005).

3.5.2.1 Characteristics of Information Carrier Factors

Studies revealed that every information carrier possesses distinctive features admired by information seekers (Becker & Rosenstock, 1981: 181), or that might prevent them from using the information carrier. Influences such as social presence (Johnson & Meischke, 1993:343), information richness, easy accessibility and availability, and user preference can motivate seekers to seek information (Robson & Robinson, 2012:174; Johnson & Meischke, 1993: 343). It is also noteworthy that information seekers are mainly interested in the "content of information," not the channel or information carrier (Johnson, 1997), while others have a strong preference for information that comes directly from other people (Turner, Craig, Makanji, Flores, & Hernandez, 2017) because human source facilitates interactions among peers and brings relief. Johnson (1997:10) argued that the choice of information channel or carrier depends on its role in the lives of individual patients. Other scholars revealed that information sources influence patients' information-seeking behaviour (Jennings, 2018:para.1).

Some users look at the credibility, authority, accuracy and ability to comprehend information sources (Robson & Robinson, 2012: 174). If individual HBV and HCV patients realise that a particular information source is not accessible or credible enough to meet their information needs (Lindsay *et al*., 1999), it is natural that such patients will seek an alternative. Therefore,

perceived risk or benefits determine the likelihood of individual patients seeking information (Jennings, 2018; Becker & Rosenstock, 1984). The information carrier factors of CMIS was used to investigate research question four of this study: To determine the role of counselling and education by healthcare professionals in providing information for HBV and HCV patients.

3.5.2.2. Types of information carrier factors

Health information literature on patients' information behaviour discussed various information carriers. Health professionals (doctors and nurses) (Onyang, 2013; Stephenson *et al*., 2004; Sias & Bennett, 2001)], discussion groups (Hamilton, *et al*., 2006a), support groups (Hopwood, 2016; Niederau *et al*., 2008; Cormier, 2005), mass media resources such as TV and radio broadcasting stations (Meillier *et al*., 2015; Otu, 2003), social media (Perking, 2000), expert services (Marco *et al*., 2006; Freeman & Spridakis, 2004), interactive services (Marineau, 2007) are examples of information carriers typically used by HBV and HCV patients. Counselling and education are other important information channels for HBV and HCV patients (Gilbert *et al*., 2005; Giannini & Testa, 2002). Others include web-based information sources for collaborative outreach projects to meet the information needs of patients (Cleveland *et al*., 2009), computerised educational programmes (Corrarino *et al*.,1999; McCoy, 1998), health literacy and other educational materials specifically for HBV and HCV patients (Meillier, *et al*., 2015), and online health resources and educational materials on the internet (Gulati, 2015; Crutzen *et al*., 2012; Perkins, 2000; Johnson & Case, 2012).

3.5.2.3. Utility of information carriers

The utility is another aspect of the information carrier factor in the CMIS model that clarifies how antecedent factors (demographics, experiences, salience and beliefs) influence the perceptions of information carriers (Johnson, 1997). This submission implies that information carriers or channels are selected based on how they can match information seekers' needs and expectations. Robson and Robinson (2012) described Johnson's utility concept as the one that is "relevant, topical and of interest." These include support for emotional, psychological, and sociological needs, being better informed, sharing empathy, enhancing interpersonal relationships, relieving stress and anxiety, and offering social support (Han *et al*., 2010). A strong reason is that every user or information seeker wants to be satisfied with the information channels/carriers they have chosen to use, as long as it can gratify their intended goals (Robson

& Robinson, 2012). The utility of information carrier will be used to investigate research questions three and six, to establish how the hospital has aligned its policies and resources to support the provision and use of information by HBV and HCV patients and the challenges faced in providing information for patients

3.5.3 Information Seeking Action (ISA)

The researcher applied the information-seeking actions to investigate research question one of this study. The purpose was to determine the information-seeking behaviour of HBV and HCV patients. Studies focusing on information seeking revealed that not all actions are influenced by information carrier factors (Johnson & Meischke, 1993b; Johnson, Donohue, Atkin & Johnson, 1995). Information seeking actions could also involve creating, spreading/sharing, avoiding, and destroying (Godbold, 2006; Wilson, 1999). Other strategies used by information seekers include browsing, avoiding or destroying information. According to Johnson (1997), information-seeking actions relate to the use and gratification theory. The author believed that users are goal-oriented information seekers when the source of information is easily accessible (Robson & Robinson, 2011). A study by Han *et al*., (2010:p.371) used the CMIS model on information seeking to explore computer users' collaborative, interactive literature services.

The variable of information seeking action of CMIS is useful to investigate research question one of the current studies. The study revealed that users gain empathic support, effective decision-making, self-efficacy, and positive behavioural changes. Jennings (2018: 3) revealed that active information seeking could lead to behavioural changes or influence behavioural changes that motivate information carrier use by patients. Information-seeking actions specifically noted for influencing information-seeking actions, specifically emphasised by Han, Wise, Pingree & Hawkins (2010:368), are easy accessibility, availability, and social support through interactive learning services. Robson and Robinson (2012: 174) believed that sources that influence an individual to seek information must be credible, authoritative, and accurate. Johnson *et al*. (1997a) argued that individual information-seeking actions depend on the level of concern or interest in health-related problems.

3.6 JUSTIFICATIONS FOR ADOPTING CMIS MODEL AND UGET THEORY

This study adopted the UGET principle of social and psychological origin of needs to identify the information needs of HBV and HCV patients in this current study (Case, 2012:194) to investigate the research objectives. CMIS (Johnson & Meischke, 1993a:343) and UGET were

adopted to guide the current study so that the strengths could make up for the weaknesses of the other. At the same time, the antecedent factors, information carrier factors and information-seeking actions of CMIS were adopted to investigate research objectives two to six. However, the antecedent factors contained in the CMIS model were heavily drawn from HBM (Johnson & Case, 2012:41; Becker & Rosenstock, 1984:179; Johnson & Meischke, 1993:343). Active information seeking, passive receipt of information, and patient/consumers outcomes were drawn from ECMISB (Case & Devin, 2016:109; Longo, 2005:189).

The idea of information seeking actions and strategies, such as spreading and disputing information, disbelief or avoidance of information, creating and destroying information, was derived from Actor-Network Theory (ANT) (Godbold, 2013:22). Both CMIS and UGET have been widely used by scholars and have been empirically tested (Bernadas *et al*., 2018:7; Banyat, 2018:563; Kim *et al*., 2017:1; Case & Devin, 2016:157; Baker & Pettigrew, 1999:444; Johnson and Case, 2012:40) in the health context as well as media and communication context (Ruppel, 2016:208; Levy & Windahl, 1984:51; Palmgreen, 1984:20). Both UGET and CMIS models consist of variables that best describe information-seeking actions to produce information-seeking outcomes and the use of information sources and channels. Besides, CMIS and UGET have testable and measurable variables through mixed-methods (quantitative and qualitative) data collection, analysis, and integration processes (Creswell & Creswell, 2018:18; Saab *et al*., 2018:410; Pang *et al*., 2016:145; Perez *et al*., 2016:107; Case & Devin, 2016:157; Cherryholmes, 1992:13; Murphy, 1990). CMIS model also reflects the reality of the information-seeking potentials of HBV and HCV patients.

3.7 JUSTIFICATION FOR NOT ADOPTING OTHER THEORIES

There are theories of information-seeking behaviour, but many fail to predict information-seeking actions and tendencies to engage in information seeking by many individuals, contexts, cultures and societies (Case, 2012:187). A similar position by Chatman (1996:193) maintained that many early studies on information seeking made no explicit claim to theory because most of the investigations were administrative. Other scholars believe that many theories, such as uncertainty management, emphasise interpersonal communication. Even though they have been applied in the health context, they have not been used to information behaviour.

Case (2012:197) argued that it is essential that information behaviour researchers use a comprehensive theory to contribute meaningfully to research. Other theories and models were not adopted due to their inability to measure variables in this study. Other variables were unable to determine HBV and HCV patients' access and use of information, assess the role of counselling and education by healthcare professionals in providing information for HBV and HCV patients, ascertain the factors contributing to the use of information by HBV and HCV patients, and establish challenges faced in providing information to HBV and HCV patients. The constructs of other theories could not meet the objectives of the current study, and their inability to address the research questions necessitated this study.

3.8 STUDIES THAT APPLIED CMIS AND UGET IN DIVERSE STUDY CONTEXTS

CMIS and UGET have been extensively applied to different contexts and implications studies. This section discusses various studies that applied CMIS and UGET in their studies.

3.8.1 Applications of CMIS in the Previous Studies

CMIS has been used to examine information-seeking behaviour studies, such as online information seeking (Bernadas *et al*., 2018:7; Bansyat, 2018:563), interactive cancer information systems (Han, *et al*., 2010:367), scanning health information sources (Ruppel, 2016:208), and health information seeking using mobile apps and internet (Kim *et al*., 2017:1). Sheng and Simpson (2015:96) applied CMIS to investigate demographics, trust in online health information, and users' perceived usefulness of the internet. Bernadas *et al*., (2018:7) also examined online health information seeking of domestic workers. CMIS variables were used to investigate health-related information carrier factors, salience, and trustworthiness influence users' utility of information sources.

Johnson *et al*., (2001:335) had earlier applied the CMIS to examine cancer genetic information-seeking actions by patients. The authors explored the role of demography, experience, salience, beliefs, and the information field in which people exist, hoping that seeking cancer-related information could positively impact individuals' morbidity and mortality while also affecting an individual’s family communication network. Another study by Han *et al*., (2010:367) examined the factors associated with using an interactive cancer communication system. The study reported that CMIS is useful for understanding cancer patients’ resource selection and usage within an ICCS.

Han *et al*. (2010:367) proved that online information-seeking depends on patients' demographics, disease status, and psychological factors (p.367). Hartoonian *et al*., (2014:1308) investigated information-seeking behaviour across various information delivery channels using CMIS variables such as health-related factors, information-carrier factors, and information-seeking behaviour. The study explored information-seeking behaviour, established direct experiences, and salience and information-carrier characteristics on information carrier utility. It was noted that the salience directly affected information-seeking behaviour and information carrier characteristics. Furthermore, Ruppel (2016:208) investigated the "scanning of health information sources to provide a clearer theoretical understanding of information scanning". The authors discovered "that health-related factors were associated with trust and information sources". However, association differed between "entertainment-oriented sources, information-oriented sources, and the internet".

Finally, Bansyat *et al*., (2018:563) applied CMIS to "online health information seeking in India to examine the association between health-related antecedents, information-carrier factors and their direct effects on online information seeking". The result showed a" significant relationship between use of information to determine the height, media use and self-efficacy to engage in preventive behaviour" and the link between "information carrier factors and direct effects on online information-seeking by users". In contrast, demographics have no relationship with the use of the internet. Direct experiences with illness resulted in a negative relationship with internet utility. Kim, *et al*., (2017:38) examined the factors "associated with medical information-seeking through mobile apps and the internet among family caregivers and the general public". The authors employed CMIS variables of the "outcome of medical information seeking of mobile apps use and internet use". The survey found that "online medical information seeking is different between family caregivers and the general public".

Another study by Oh (2015:939) used CMIS as a theoretical framework to explain the relationship between various predictors of information seekers. The author investigated various "factors predicting online health information seeking for others and caregivers of cancer survivors" Oh (2015:939). The study reported inconsistency in the direction of variables of demographics examined in the study "Oh (2015:939). Zhang *et al*., (2019:1) explored the "self-care and health information-seeking behaviour of diabetic patients in Singapore". Other factors related to "health and information carriers" that might influence that behaviour were also examined based on the CMIS. The study found that the 'respondents most frequently used

authoritative sources such as doctors, nurses and pamphlets from hospital clinics for health information. Van *et al*., (2018:1583) applied CMIS to examine "online cancer information seeking and revealed that economic status, beliefs, and interest in online health information exchange" predicted the utility of online cancer information seeking, just like information career characteristics.

The study suggested the extension of CMIS to investigate specialised health information seeking in the health context to address information sources such as patients' portals, emails, checking of laboratory results, and booking appointments with doctors online. CMIS guided the study of Paek *et al*., (2017:526) to examine adults' intention to view health TV programmes in South Korea. Paek, *et al.*, indicated that demographic factors in older adults, psychological factors of health consciousness, and health literacy influenced the degree to which people would perceive health TV programmes to be useful. Delorme *et al*., (2011:766) investigated prescription drug information seeking and influencing factors by applying CMIS in an American context. The study revealed that the consumers engaged in prescription drug information search before and after visiting doctors".

Lee and Kim (2014:285) examined the application of CMIS to "predict the use of diverse childhood vaccine information sources in South Korea". They investigated the "association between the mothers' engagement with specific vaccine information sources and behavioural intention to immunise children". The study revealed that specific "characteristics of different sources of information must be considered before disseminating critical health information through various sources". The scholars also turn to the internet, pharmacist and doctors most for prescriptions of drug information.

3.8.2 Implications of CMIS Noted in the Related Studies

Different authors have analysed the implications of using CMIS to guide studies on health. Johnson *et al*., (2001:335) used CMIS to provide an avenue to reduce morbidity and mortality through early detection and treatment of the diseases. This study can also be applied to the treatment of HBV and HCV. In addition, it has the potential for information-seeking intervention and creating procedures and materials for the medical library to offer information-seeking instructions. It will also enhance librarians' skills for information provided in medical libraries to healthcare professionals. The study of Han *et al*. (2010:367) sheds light on the "characteristics leading to information seeking from available services". It provided objective

evidence of "online information-seeking behaviour differently from the methods that rely only on other methods or experimental manipulation. Hartoonian *et al*., (2014) provided the "theoretical implications of a model of health information seeking and the antecedents of information seeking to develop and implement systems of care that will help providers better meet survivors' needs.

Basnyat *et al*. (2018:563), in their study, provided a "practical implication for health education and intervention in the digital era and can motivate individual patients to search for online health information effectively". Thus, there is theoretical support for "CMIS as a viable framework that can be used beyond health information seeking". Another theoretical implication revealed by Paek *et al,*. (2017:526) stressed the "importance of TV as a viable health information provider that can reduce health information gaps" and help older adults, the poor, and the less educated improve their health knowledge and health behaviours. This assertion indicates a conceptual and operational refinement of CMIS.

3.8.3 Applications of UGET Noted in the Previous Studies

Much has been written about the application of UGET to predict "students' e-learning experiences; the benefits of social networking in online support groups for health; internet and media use"; and "chronic health-related information seeking", among others (Sundar & Limperos, 2013:504; Lee & Hawkins, 2010:926; Mondi, Woods, & Rafi, 2008:241; Shao, 2008:7). For example, Mondi *et al*., (2008:241), using a cross-sectional survey research design, investigated how students' UGET for e-learning resources influences their perceived e-learning experience. The study discovered a significant relationship between five dimensions of students' UGET for e-learning resources and their perceived e-learning experiences (p.241). In an earlier study, Sundar and Limperos (2013:504) examined UGET for older and new media by identifying two measurement artefacts. The scholars observed that measures designed for older media capture gratification from newer media, and gratification is conceptualised and operationalised to information seeking. Interestingly, the study challenged the notion that "gratification was borne out of innate needs and proposed that affordance of media technology can shape users' needs" by giving rise to new and distinctive gratification (Sundar & Limperos, 2013:504).

UGET has also been used to guide health-related studies associated with sources of health information and contextual factors (Walker *et al*., 2017:561; Glik *et al*., 2014:73; Chunk,

2014:639). Walker *et al*. (2017:561), guided by the UGET approach, examined mothers' use and preference for e-Health media and associated contextual factors. They found out that mothers widely use e-Health-related media, but the use was associated with contextual factors. A similar study by Chunk (2014:639) examined social networking in an online support group for health and how online social networking benefits patients. The study suggested that online support group users make selective use of varied features, depending on their needs, while perceptions about receiving emotional and informational support are associated more with using some features than others. It was also discovered that making friends and personal sharing stories on blogs help satisfy emotional support needs.

Glik *et al*., (2014:73), guided by UGET, explored health-related media use among youth audiences in Senegal to understand how young audiences navigate traditional and newer forms of media technologies, emphasising the skills and competencies needed to obtain, evaluate, and apply health-related information. Their study supports using different interventions to leverage both new and traditional media strategies to address the lack of health and media literacy. Shao (2008:7) examined the appeal of user-generated media: uses and gratification perspectives. The paper investigated how and why people use UGET and the factors that make UGET, particularly appealing from a use and gratification perspective. The study helps researchers to understand the appeal of UGET in an integrated way. Lee and Hawkins (2010:152), in a

> *"baseline online survey with breast cancer patients as a control group examined how unmet needs that have not been satisfied regarding information and emotional support determine the patterns of cancer patients' health-related internet use".*

The study found that patients' information needs were not satisfied, while the unmet needs such as emotional support were much more emphasised than other needs.

3.8.4 Implications of UGET Noted in Related Studies

UGET presents theoretical, methodological and practical explanations for how individuals with cancer use the internet (Mondi *et al*., 2008:241. Applying the UGET model to studies implies that the model gives researchers and educators a new tool to forecast the success of developing and deploying e-learning resources in educational systems (Mondi *et al*., 2008:241). As a result, healthcare providers can also develop effective ways of communicating with users

online, while the internet can also be a valuable supplement to traditional care and support for patients with various conditions.

3.9 CRITICISM OF CMIS AND UGET

Previous studies have disapproved of the CMIS model for not providing a variance influence of predictors on other information carriers such as online health information sources for family caregivers through the internet (Oh, 2015:1143). Other authors have suggested that extending CMIS is required to investigate specialised health information seeking in the health context to address information sources such as patients' portals, emails, checking laboratory results, and booking appointments with doctors online (Van Stee & Yang 2018:1583). UGET has been widely applied to studies in various contexts; however, it was criticised that the theory has a weak predictive power and complexity and vagueness in the key concepts (Ko, 2000:1). In addition, some critiques argued that the theory relied on self-reports (Ruggiero, 2000:3).

Glik *et al. (*2014:73) argued that due to the "exponential increase in the availability and utilisation of media', there was little investigation of how the population of youths engage with and critically evaluate the content of new media using the UGET approach. Walker *et al.* (2017:561) maintained a more robust approach that focuses on audience-relevant media to reach new mothers by using their most favoured websites. Despite the limitations and criticism of CMIS and UGET application to studies in various contexts, CMIS and UGET remain relevant models appropriate to guide information needs and seeking behaviour of HBV and HCV patients in this research.

Both CMIS and UGET have been widely used by scholars and have been empirically tested (Bernadas *et al*., 2018; Basnyat 2018:563; Kim *et al*., 2017:1; Case & Devin, 2016:157; Baker & Pettigrew, 1999:444; Johnson and Case, 2012:41) in the health context as well as media and communication context (Ruppel, 2016:208; Levy & Windahl, 1984:51; Palmgreen, 1984:20). Based on findings from the literature to establish acceptability, the trend of use, methods, and approaches used in previous studies, and examine the criticisms and possibility of future applicability of CMIS and UGET to various studies in different regions, and disciplines and subject specialisations. Both UGET and CMIS models comprise variables that best describe information-seeking actions with the ability to produce information-seeking outcomes and the use of information sources and channels. In addition, CMIS and UGET have testable and

measurable variables (Creswell & Creswell, 2018:12; Cherryholmes, 1992:13; Murphy, 1990:321; Rorty, 1990:1).

CMIS model also reflects the reality of the information-seeking potentials of HBV and HCV patients. Other theories and models were not adopted due to their inabilities to establish how HBV and HCV patients access and use the information and determine the role of healthcare professionals' counselling and education in providing information for HBV and HCV patients. The other theories could not also ascertain factors contributing to information used by HBV and HCV patients or establish the challenges faced to provide information to HBV and HCV patients. Therefore, the constructs of other theories could not meet the objective of the current study and their inability to address the research questions articulated for this study.

Despite the limitations and criticism of CMIS and UGET application to studies in various contexts, they remain suitable models appropriate to guide the information need and to seek behaviour of HBV and HCV patients in this research. CMIS model can be easily applied to information seeking contexts such as HBV and HCV. This observation is because the variables can measure this study's research questions and objectives with a reasonably expected outcome. CMIS model can be improved by adding information needs, access and use of information, a policy guiding information provision, counselling and education for the use of information. The implications have been observed by researchers, proving that CMIS factors have been able to influence information behaviour studies on internet use (Sheng & Simpson, 2015:96), UGET has also influenced several studies to predict e-learning (Mondi, *et al*., 2008:241), social networking in online groups for health (Chunk, 2014:639), as well as Facebook customers (Cornelissen , 2019:13).

The current study only applied UGET’s paradigm of social and psychological origin of needs to examine the information needs of HBV and HCV patients in Ngwelezane hospital, KwaZulu-Natal, South Africa. At the same time, all variables of the CMIS model were used to examine information access and use by patients. Additional constructs were created to determine the existing policies and resources supporting the provision and use of information by HBV and HCV patients. The role of counselling and education by healthcare professionals was measured usinin providing information for HBV and HCV patients; to ascertain the factors contributing to the use of information by HBV and HCV patients and establish the challenges that patients face in providing information for patients.

The CMIS antecedent factors will be applied to guide this study to identify the demographic factors responsible for information seeking by HBV and HCV patients. The variable of UGET is applied to identify the information needs of HBV and HCV patients. The CMIS variable of information carrier factors applied to the research context helped determine how HBV and HCV patients can access and use information sources. Since Johnson (1997; 10) argued that information channel or carrier choice depends on its role in individual patients' lives, the conviction that information source has much influence on patients' information-seeking behaviour is valid (Jennings, 2018:1).

Johnson *et al*., 1997:10) argue that individual information-seeking actions depend on the level of concern or interest in health-related problems such as HVB and HCV patients would do. In that wise, the variable of information seeking action of CMIS was justifiably used to investigate the research question set out by the current study. Also, characteristics of information carrier factors of CMIS were used to determine the role of healthcare professionals' counselling and education in providing HBV and HCV patients information.

3.10 SUMMARY

This chapter discussed the theoretical framework of the study. CMIS and UGET constitute the theoretical framework for the current study due to their relevance to the research objectives and questions. The chapter established that CMIS and UGET had been widely used and empirically tested by scholars in health information seeking, communication and media, scanning health information sources, and internet contexts. The CMIS focused on antecedent factors, information carrier factors, and information-seeking actions, while the UGET focused on needs' sociological and psychological origin. The pragmatic paradigm supported CMIS and UGET because the philosophical assumption allowed researchers to embrace multiple philosophical positions (positivism and interpretivism). However, CMIS and UGET applications to information needs and information seeking by HBV and HCV patients using pragmatic paradigm were explicitly limited in the South African context.

Mixed-methods researchers draw substantially from both quantitative and qualitative assumptions when they engage in research. Other theories that have been empirically tested and widely used discussed include HBM, RISPM, HIAM, Gilberg-Andersen behavioural model, Lazarus and Folkman's stress, appraisal, and coping theory, and Wilson models.

Justifications for adopting CMIS and UGET and reasons for not adopting other theories or models were discussed. The next chapter presents the research methodology of the study.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 INTRODUCTION

This section discusses the research methodology adopted to address the research problems and objectives of the study. According to Creswell and Creswell (2018:61), a methodology is "an approach generally used by a researcher to carry out a study." Babbie and Mouton (2009:49) noted that methodology in a study is the actual methods and techniques used to carry out investigations and the underlying principles and assumptions behind using a specific approach by the researcher. Gray (2009:21) also believed that the choice of the methodology adopted in a study influences the epistemological stance, either through a deductive or inductive approach. Babbie and Mouton (2001:49) identified three methodological paradigms that have dominated the social science research scene. The authors linked the three paradigms to the meta-theoretical tradition, including the quantitative, qualitative, and participatory actions paradigm. The three epistemological stances are very important to this study and were applied at every stage to guide quantitative and qualitative data collection, analysis, discussion, and integration processes to achieve the aim and objectives of the study (Creswell & Creswell, 2018:16).

The researcher ensured that a suitable plan of action, process, and proper approaches were followed for this study. The methodological plan in this study involves using a deductive approach to collect quantitative and qualitative data, analyse, interpret, integrate and discuss the study findings (Babbie, 2016:51). The purpose is to use the methodological plan to achieve the study objectives and questions (Chapter 1, Section 1.5) (Creswell & Creswell, 2018:117). Thus, a research methodology plays an important role in achieving the purpose of this study. The following section discusses the research philosophy and how it is applied to the information needs and seeking behaviour of HBV and HCV patients in the South African context. This chapter is organised into the following sections: philosophical assumptions, research paradigms, research approaches, research design, the population of the study, sampling methods and procedure, data collection methods, data analysis, data integration, and ethical considerations.

4.2 RESEARCH PHILOSOPHY

The term research philosophy has been described in different terms by different authors. Brink et al. (2018:20) defined philosophy in terms of worldviews which denote assumptions, values and beliefs about the reality of knowledge and methods of obtaining knowledge. Creswell and Creswell (2018:5) chose to use the term worldview, which denotes the basic set of beliefs that guide actions that researchers bring to a study. Meanwhile, some scholars popularly use the word paradigms (Creswell & Creswell, 2018:17; Lincoln, Lynham, & Guba, 2011:97), epistemology, ontology or methodology to depict the set of beliefs and values guiding the research process. Scholars emphasised why researchers must understand the assumptions that underlie qualitative and quantitative studies and how they are applied in research.

Interestingly, certain elements common in both definitions are "beliefs," knowledge and assumptions. Many theoretical perspectives are held by epistemologists, such as objectivism, constructivism, and subjectivism (Gray, 2009:16). The researcher observed that objectivism is linked to positivism, with the prospects of discovering the truth. Epistemologists seek a deeper meaning of philosophical perspectives and clarify the whole research structure, from data collection to interpretation (Gray, 2009:17). Although this study followed a methodological process to examine the study, the epistemological stance of the positivism and interpretivism paradigms was adopted because the two stances are critical to achieving the objectives. Both philosophical ideas are essential to this study because numerical values obtained using the quantitative method are essential for gathering data from doctors and nurses.

The researcher learned that the qualitative approach is also essential for gathering information about the challenges patients face when seeking HBV and HCV information and suggestions on the way forward.

4.3 RESEARCH PARADIGMS

Different scholars have described Paradigm in various terms (Brink, De Walt & Rensburg, 2018; Creswell & Creswell, 2018). Brink *et al.*, (2018:19) defined a paradigm as a worldview or a set of assumptions about the basic kind of entities in the world, how they interact, and the proper methods to use for constructing and testing the theories in research. This study

recognises the role and value of individual ontologies and pragmatist epistemologies in improving HBV and HCV patients' information. The study identified patients' information needs and strategies needed to improve patient information seeking. Three research paradigms were explored in this study. The three paradigms recognised by the library and information scientists influence the application of theories to inform a meaningful outcome in this study (Creswell & Creswell, 2018:6). These include positivist worldview, constructivist/interpretivists worldview and pragmatic worldview (Creswell & Creswell, 2018:6). Each paradigm has been applied to studies in different areas of specialisation, specifically social sciences, applied sciences and public health (Antonio Zavala-Gonzalez *et al*., 2018:845; Bonell *et al*.,2018:1; Yee *et al*., 2017:36).

According to Gray, (2009:19), positivism has been known as a dominant epistemological paradigm given that the scholars believe that inquiry should be based on scientific observation and must be empirically tested. Positivist researchers believe that research could discover the truth (Babbie, 2016:34). The research topic needs to be quantified to generalise the results, especially when the sample used involves a large population (Bloomberg & Volpe, 2016:17). A similar paradigm with the same stances is objectivism. Positivism and objectivism share common logical and methodological principles, dealing with facts and numerical data (Gray, 2009). Positivist researchers view enquiry as a series of logically related steps supporting quantitative methods in data collection, analysis, interpretations and discussions. Scholars acknowledged the value of applying the positivist paradigm in research and how it has influenced various studies and supported improvement in social science and public health research (Yee *et al*., 2017:36; Reuzel & Van der Wilt, 2000:383).

This study agreed with the philosophical stance behind the positivist paradigm in collecting quantitative data, analysis, and discussions. The justification is that, despite criticisms by scholars, positivism has proved to be a dominant paradigm, attributed to paradigmatic perspectives and contributions to subject areas and disciplines such as basic and applied sciences, social sciences, public health, and interdisciplinary studies. The Positivist paradigm has been successfully applied in the previous studies and, therefore, can still positively influence and contribute immensely toward this current research. The positivist approach was applied to investigate healthcare professionals' perspectives regarding needed health information and the need for patients to seek health information on HBV and HCV. The

application of the positivist paradigm to this topic was to quantify the results obtained and generalise the research results from the sample to the larger population. The researcher can quantify responses obtained from the participants to generate numerical values through appropriate data collection and analyse the results. Interpretivism is also known as constructivism, and the methods of inquiry are qualitative (Creswell & Creswell, 2018:8). Interpretivism researchers believe in natural and social realities in their research pattern (Creswell, 2018:8; Gray, 2009). Understanding the meaning of objects and views in the world and the ability to interpret them is very important to interpretivism researchers because it helps them understand the situations, especially from the perspective of the study participants (Flick, 2006:88).

This study supports the interpretivism idea in their method of investigation based on the submission that social science scholars have acknowledged the contributions and values of applying the interpretivism paradigm in research (Carlos *et al*., 2017; Richardson, 1995). Scholars suggested that more studies based within an interpretative paradigm be conducted to balance the professional profile of research and help ensure the quality of service and the effectiveness of its delivery (Carlos *et al*., 2017; Richardson, 1995). The study adopts the interpretive idea of research to investigate information needs and seeking behaviour of HBV and HCV patients through a face-to-face, in-depth interview. The purpose was to enable the researcher to understand HBV and HCV patients' information needs and information-seeking to investigate the accessible sources of information used, ascertain the patients' level of awareness of policies guiding information access and use, establish the purpose of counselling and education on hepatitis, ascertain factors responsible for information seeking and use. To develop other challenges facing HBV and HCV in accessing and using health information. The reason is that quantitative data alone cannot produce the desired result and the understanding required for this study.

4.3.1. Pragmatism

Gray (2018:30) posits that pragmatic researchers view the mixing of quantitative and qualitative data in a single study as legitimate and essential. The researchers emphasise research problems and questions and use all approaches available at their disposal to understand the problems (Creswell & Creswell, 2018:19). Pragmatic researchers are not committed to only one research approach because they are free to choose the methods, techniques and procedures

of research that best meet their needs and purposes (Creswell & Creswell, 2018:10). The philosophical assumption behind a pragmatic worldview allows the researcher to adopt multiple philosophical positions: positivism or post-positivism, interpretivism or constructivism, to collect qualitative, quantitative, and mixed methods to develop the data collection instruments and access statistical results (Creswell, 2014:17).

Pragmatic researchers believe that quantitative data provides numerical values in quantifiable numbers in a mixed-methods approach to back up the positivist assumptions. In contrast, qualitative data are collected from participants willing to provide rich information from their experiences to back up the interpretive or constructivist assumptions or findings. Instruments for data collection supported by the positivists include a survey questionnaire, the descriptive method of data analysis, and interpretation. Qualitative data collection instruments, supported by the interpretivists, include interviews, document analysis, and observations. Thematic analysis was used to analyse and interpret the qualitative data for this study. The reason is that the pragmatic paradigm's worldview helped the researcher provide "a broader and more complete vision of a problem" (Almeida, 2018:137). Both quantitative and qualitative data are critical to this study because the strengths and weaknesses of the two paradigms were used to complement each other (Dattilio *et al*., 2010:431).

4.3.2 Justification for Adopting Pragmatic Paradigm

This study adopted a pragmatic paradigm because the philosophical assumption behind a pragmatic worldview allows the researcher to follow multiple philosophical positions, such as positivist and interpretive paradigms, and to develop the data collection instruments, measure variables, access statistical results, analyse, interpret and integrate into the discussion section (Creswell, 2014:17). The pragmatic paradigm supports mixed methods to collect quantitative and qualitative data. The current research used mixed-methods approaches to collect qualitative data from HBV and HCV patients through short profile interview schedule questions. In contrast, the researcher collected quantitative data from doctors and nurses using open- and closed-ended questionnaires. Meanwhile, the pragmatist supports using multiple forms of data, and analysing data by using statistical and texts methods of analysis and interpretations (Creswell & Creswell, 2018:16).

A pragmatic researcher supports using different mixed-methods research designs, including exploratory, explanatory, convergence, case study convergence, sequential, and transformative mixed-methods research designs. However, this study adopted the case study convergence design. A pragmatic researcher ensures the integration of qualitative and quantitative data at different stages of investigations, even if this involves using visual pictures (Creswell & Creswell, 2018:16). The current study considered the pragmatic paradigm the most appropriate and used a mixed-methods approach for qualitative and quantitative data collection, analysis, interpretation, and discussion of findings. Quantitative data provided numerical values in the form of quantifiable numbers from doctors and nurses, while qualitative data provided the experiences of HBV and HCV patients through interviews. The experiences gathered from the patients were interpreted, analysed thematically, and discussed to understand information needs and information-seeking behaviour (Almeida, 2018:137; Dattilo *et al.,* 2010:431).

The pragmatic paradigm provides a platform for innovative investigations of research problems and insight into the mechanisms of organisational change that are not possible with a single method (Creswell *et al*., 2011:33). Mixed-methods approaches provide researchers with a greater scope for investigating educational issues through words and numbers to benefit educational establishments and society (Almalki, 2016:288). Hall (2013:15) evaluated the use of pragmatism in a mixed-methods study and reported that "mixed methods evaluation has a long-standing history of enhancing the credibility of evaluating findings." Johnson and Onwuegbuzie (2004:4) emphasised that "mixed-methods research will be successful as more investigators study and help advance its concepts and regularly practice it." Therefore, this study applied the pragmatic paradigm's mixed-methods approach for its "methodological diversity and flexibility", which frequently results in research superiority compared to "mono-method research" (Johnson & Onwuegbuzie, 2004:4).

4.4 RESEARCH APPROACHES

According to Creswell and Creswell (2018:61), researchers generally use research approaches to inquire or carry out a study. The research methodology is closely linked to quantitative, qualitative, and mixed-methods in social sciences (Gray, 2009:124). Researchers used the three approaches for data collection, analysis, interpretation, and the discussion of study findings (Creswell & Creswell, 2018:185; Gray, 2009:337). Sections 4.5.1 to 4.5.3 of this chapter discuss the quantitative, qualitative, and mixed-methods approaches.

4.4.1 Quantitative Approach

Creswell and Creswell (2018:17), the quantitative approach was described as a positivist worldview that focuses on "experimental design, pre-test and post-test measures of attitudes." In the quantitative approach, the researcher is interested in examining the connections among variables to analyse numerical values obtained using statistical procedures (Creswell and Creswell, 2018:180). In social science research, the research topic is examined quantitatively to generalise results from the research sample to the larger population (Creswell & Creswell, 2018:180; Babbie, 2016:26).

The quantitative method in this study aims to examine the information needs and seeking behaviour of HBV and HCV patients. The results obtained from the investigations can be quantified to obtain numerical values and generalised to the larger population. Therefore, quantitative data was collected using a semi-structured, closed-ended questionnaire to collect data from doctors and nurses (Creswell, 2018) on the "information needs and seeking behaviour" of HBV and HCV patients. Thus, the variables of CMIS and UGET were tested using the quantitative method.

4.4.2 Qualitative Approach

Creswell (2014:3) referred to research as "an approach for exploring and understanding the meaning of individuals or groups ascribed to a social or human problem". Qualitative researchers follow the interpretive worldviews, or constructivism, which includes ethnography and the transformation worldviews, which involve using open-ended questions to collect data from the respondents in an interview, observation data, document data and audio-visual data (Creswell & Creswell, 2018:17). Part of the characteristics of a qualitative researcher is to be present at the site where participants experience the problem by having face-to-face interactions with the participants over time.

Qualitative data was important in this study because quantitative data alone would be insufficient to generate adequate information for the study. Thus, the qualitative method gathers participants' experiences and establishes the best way to answer the problem. Furthermore, the qualitative method in this study aimed to gather the experiences of HBV and

HCV patients in face-to-face interviews and observation during their visits to the clinic. Furthermore, to seek the patients' views regarding their information needs, information seeking, and the challenges they experience when searching for hepatitis-related information. Data could also be obtained by observing the participants' behaviour during engaged activities (Creswell & Creswell, 2018:186).

4.4.3 Mixed-Methods Approaches

Gray (2009:204) believed that mixed-methods researchers are interested in the pragmatic combination of qualitative and quantitative research. The mixed-methods approach includes identifying a research problem, collecting quantitative and qualitative data, data analysis and interpretations, and merging the data in the discussion chapter, depending on the style adopted by the researcher (Creswell & Creswell, 2018:218). The approach also includes integrating the analysis results of the two data sets into the discussion section until the final stage is reached (Creswell & Creswell, 2018:218). The Mixed-methods approach originated by the pragmatists in education, social sciences, sociologists, and health sciences between "the late 1980s and early 1990s" (Creswell, 2018:215). Creswell and Creswell (2018:217) identified different types of approaches used for data collection in mixed methods:

1. Sequential exploratory mixed methods approach
2. Nested strategy mixed methods design
3. Convergent mixed-methods approach.
4. Mixed-methods experimental or intervention design
5. Participatory-social justice design
6. Mixed-methods evaluation design
7. Case study design (Creswell, 2018:231).

4.4.4. Justification for Adopting Case Study Mixed-Methods Approach

A mixed-methods approach is appropriate in exploring the information-seeking behaviour of HBV and HCV patients. This study applied the case study - mixed-methods that include quantitative and qualitative methods in the data collection, analysis and interpretation. The justification for using this mixed-methods approach was to thoroughly understand the information needs and seeking behaviour of HBV and HCV patients. Furthermore, the mixed-methods approach allowed the researcher to compare the quantitative data from doctors and

nurses and the qualitative data from HBV and HCV patients by comparing the two data sets (Creswell & Creswell, 2018:231). The mixed-methods approach provided more evidence for studying the research problem, and the researcher was able to use all the techniques of data collection (Creswell & Plano Clark, 2011:12).

Researchers indicated that four studies have applied case study mixed-methods in various social and health sciences studies (Bustamante, 2019; Guetterman, Fetters & Creswell, 2015; Fetters *et al.*, 2013). For instance, Fetters *et al.*, (2013:2134) applied the case study mixed-methods to "achieve integration in mixed-methods designs." They found that "mixed methods research offers powerful tools for investigating complex processes, especially in health care". The study used a mixed-methods case study to collect, analyse, interpret, and integrate data (Creswell & Creswell, 2018:231; Gray, 2009:212). The researcher collected quantitative data from the doctors and nurses using an open- and closed-ended questionnaire and collected qualitative data from HBV and HCV patients through face-to-face interviews and observation. The results of data analysis were integrated into the interpretation section of the overall results (Creswell & Creswell, 2018:230). The purpose of the data integration was to enable the researcher to draw from the strong points of one approach to minimise the flaws of the other research (Creswell & Creswell, 2018; Ameilda, 2018:137).

4.5 RESEARCH DESIGN

Babbie and Mouton (2009:647) opined that research design should contain a plan or structured framework that the researcher intends to conduct to solve the research problem. The research design in this study considers the objectives set for the study, based on the researcher's requirement that could help achieve a set goal. Types of research design in mixed methods have been discussed in sub-section 4.5.3. The mixed-methods approach is used to investigate the research problem by collecting quantitative and qualitative data, analysing the data, interpreting, and merging the data in the discussion chapter (Creswell & Creswell, 2018:218). The qualitative method was adopted to gather participants' experiences in an interview to understand the best way to answer the problem.

This study adopted case study mixed-methods. Furthermore, the qualitative method in this study aimed to gather the experiences of HBV and HCV patients in face-to-face interviews during their visits to the clinic, while quantitative data were collected simultaneously from

doctors and nurses. The design also involved using questionnaires to collect data from doctors and nurses at the Ngwelezane tertiary hospital. The results were analysed and merged to identify specific cases for comparison (Creswell & Creswell, 2018:230; Flick, 2006:37). The design allows triangulations of two data sources to conclude what constitutes the truth, clarity and better understanding of the phenomenon.

4.5.1. Case Study Research

A case study methods design was considered appropriate for this study to allow the researcher to collect qualitative and quantitative data simultaneously, analyse the data, and merge it for interpretation and discussion, thereby solving the research problem of the current study (Creswell, 2014:341). In a case study, a mixed-methods design to investigate the information needs and seeking behaviour of HBV and HCV patients was an appropriate choice. Based on the submission that the approach is convenient and has the potential for generating convincing evidence for studies in health contexts, such as for HBV and HCV patients (Guetterman & Fetters, 2018; Kellett & Hardy, 2014:452; Heyvaert *et al*., 2010:1; Onghena *et al*., 2019:461). Guetterman and Fetters (2018) maintained that a case study integrates well with mixed methods and seeks a complete understanding by integrating qualitative and quantitative research. The purpose was to understand the patterns of the information-seeking behaviour of the patients adequately. According to Dattilio *et al*. (2010:431), this approach allows information from one method to throw light on the interpretation of the findings from the other method to enable the researcher to understand the individual information needs of HBV and HCV patients and their information-seeking patterns. In a case study design, the procedure for data collection is organised into three phases. First, both qualitative and quantitative data are collected and analysed concurrently. Then, in the second phase, the researcher merged the results from the two datasets (Creswell & Creswell, 2018:230). Finally, the results are interpreted and discussed for comparison (Creswell & Creswell, 2018:231). The design of this study involved collecting qualitative data in an interview with HBV and HCV patients until data saturation was reached at eighteen (18), and the quantitative sample size of the doctors and nurses was 41 at an 85% confidence interval (Table 4.1). The qualitative method in this case study design also allowed the researcher and the research assistant to take notes in an unstructured way about the events and record the interview from the participants' activities using a mobile phone at the hospital in hepatitis clinic. The mixed-methods case study provided the avenue for the researcher to

understand the holistic issues on the information needs and seeking behaviour of HBV and HCV patients.

4.6. TARGET POPULATION

Target population refers to the entire set of elements the researcher would like to generalise (Etika *et al*., 2016; Tongco, 2007). To determine the target population of value, Asiamah *et al*., (2017:7) suggested that the researcher needs to identify and eliminate individuals among the general population who may not have the ability to share experiences and thoughts in sample clarity and depth. The target population for this study was all the HBV and HCV patients who visited the selected medical department during data collection. These include the entire population of HBV and HCV patients who visit the hospital for at least one month. The individual HBV and HCV patients were targeted for qualitative data collection during their hospital visitations. The purpose was to investigate the patient's information needs and seek behaviour through in-depth interviews. Some administrators or senior members of staff were also targeted for interviewed regarding hospital policy related to information use on hepatitis B and C by patients at Ngwelezane District hospital

Also, the entire doctors and nurses who worked in the selected departments providing treatment for the patients at the time of the investigation were targeted for quantitative data collection for this study. These include the entire one hundred and two doctors (102) working in various departments, and six hundred and twenty nurses (620) working in the various medical department in NgweleZane, District hospital (KwaZulu-Natal Department of Health Report, 2019). However, the researcher targeted doctors and nurses working and providing therapies for the HBV and HCV patients in the selected department.

4.6.1 The Accessible Population

Asiamah *et al*., (2017:7) defined the accessible population as the fraction of the entire research population of study accessible to the researcher based on convenience and availability. They are the subset of the target population that the researcher can access based on convenience, availability and willingness to provide information (Etikan *et al*., 2016; Tongco, 2007). The accessible population for this study were the eighteen (18) HBV and HCV patients receiving therapies in the three selected medical departments in the selected district hospital. Another

accessible population was the senior member of the administrative staff. Patients were attended to by their doctors and nurses as soon as they arrived at the clinic with their files and case reports. It is worthy to note that the total number of registered HBV and HCV patients was not available during data collection. Enquiries were made regarding public records of the registered patients based on specific diseases; consequently, specific data were not available.

On the other hand, the accessible population included the doctors and nurses working and providing therapies for HBV and HCV patients in the internal medicine department, family medicine and orthopaedics medicine department at Ngwelezane hospital. Collecting quantitative data from medical doctors and nurses ensured methodical, analytical triangulation. Table 4.1 illustrates the population of doctors and nurses' access to the researcher based on convenience and availability.

Table 4.1:Accessible population of Doctors and Nurses at Ngwelezane Teaching Hospital

	Internal Medicine		Family Medicine		Orthopaedics Medicine		Total
Participants	10		6		2		18
Gender	Male	Female	Male	Female	Male	Female	
Gender Distribution	6	4	4	2	1	1	
Nursing Department	13		5		5		23
Gender Distribution	Male	Female	Male	Female	Male	Female	
Gender Distribution	1	4	3	10	1	4	
Total Participants							41

Table 4.1 above shows the accessible population of doctors and nurses (41) recruited from the target population (doctors =102; nurses = 620; see table 4.2) in the hospital for quantitative data collection. Eighteen doctors and 23 nurses who consented to participate in the study were recruited for quantitative data collection. The selection was based on availability at the time of data collection. Specifically, those providing treatment for the patients in one way or the other

in the three selected departments were recruited. The purpose was to seek their opinion about the patients' information needs and information seeking patterns. The doctors and nurses were recruited from departments such as Internal Medicine (10), Family Medicine (6), and Orthopaedics (2). Other participants include nursing assistants, professional nurses, and staff nurses (23) at the Ngwelezane hospital.

4.7. SAMPLING METHODS AND PROCEDURE

A sample is a set of objects, occurrences or individuals selected from a parent population for a study (Gray, 2009:581). Sampling selects a subset from a larger population to survey (Fricker, 2008:195). It also involves various techniques and procedures for characterising the population of the study (Babbie & Mouton, 2009:647). Two sampling techniques were commonly recognised in social science research: probability and non-probability sampling techniques (Babbie, 2006:205). This study adopted a non-probability sampling technique for the qualitative aspect of the study and probability sampling techniques for the quantitative aspects of the study (Flick, 2006:131; Babbie, 2006:205).

The researcher adopted a probability (Cluster Random Sampling technique) to select participants for quantitative data and a non-probability (homogeneous purposive) sampling technique for qualitative data collections. The probability sampling technique used includes the cluster random sampling technique to recruit doctors such as senior doctors, medical practitioners and interns (key expert in the treatment of HBV and HCV from internal medicine, family medicine, orthopaedic), and nurses (professional nurse, staff nurse and nursing assistant) working with Ngwelezane hospital. Non-probability sampling techniques adopted include the purposive sampling technique to select the categories of the department providing therapy for the patients and patients receiving treatments at Ngwelezane tertiary hospital based on the researcher's judgment, convenience and availability (Flick, 2006:131). The detailed procedure of the sampling techniques is discussed in the following sub-sections 4.8.1 and 4.8.2 of this thesis.

4.7.1. Purposive Sampling

Purposive sampling is a sampling method in which the researcher deliberately selects the subjects from among the entire study population as a representative sample. Babbie and

According to Gray (2009:140); Mouton (2009:184) suggested that researchers can select study samples based on the knowledge of the population, features, and the aim of the study. Etikan and Bala (2017:1) argued that the design is based on the researcher's judgment because the researcher knows best who will provide the best information" to achieve the study's objectives. Purposive sampling techniques have been used in many social sciences and public health study contexts using a qualitative approach (Homayuni *et al*., 2021:1; Nayeri *et al*., 2021:1; Uritani *et al*., 2021). Homayuni *et al*., (2021:1) applied purposive sampling to select individual patients with multiple sclerosis utilizing semi-structured interviews.

Data saturation levels were used in this study to determine the sampling size. According to Guest *et al.,* (2006:59), data saturation is commonly used in qualitative studies for data collection. It is a point at which no new information is observed in the data. Perceptions, beliefs, and needs of seven (7) individuals' patients with knee osteoarthritis during conservative care were investigated using purposive sampling in face-to-face, semi-structured interviews until data saturation was reached (Uritani *et* al., 2021). In another development, seventeen 17 participants with congenital heart disease were selected by a purposeful sampling method. Semi-structured interviews were used for data collection and continued to data saturation (Nayeri *et al*., 2021:1). The sampling technique used in this study was homogeneous purposive sampling (Etikan *et al*., 2016:1). As a case study, the purposive sampling technique selected Ngwelezane District Tertiary hospital, KwaZulu-Natal, South Africa. The justification was that the researcher could judge based on the following criteria: (1) provision of hepatitis B and C therapies for infected patients; (2) provision of healthcare services at the district level; and (3) affiliation to the public sector.

Ngwelezane hospital is one of the largest tertiary hospitals in the District of KwaZulu-Natal, South Africa, providing health and referral services to hepatitis patients and others in the District, Regional and Tertiary Services and communities from Uthungulu, Umkhanyakude and Zululand Districts in South Africa. These criteria were verified by the KwaZulu-Natal Department of Health (2001, 2019). In addition, based on the researcher's judgment, easy access to HBV and HCV patients who are registered to receive treatment and quick access to information from the patients are paramount.

This study considered purposive sampling appropriate for selecting the Departments of Internal Medicine and Family Medicine unit, where treatment and therapies are provided for the HBV and HCV patients were purposively selected from Ngwelezane District Tertiary Hospital. The selected department provides HBV and HCV specific therapies and disease information for this particular group of patients. Other departments different from the selected ones cannot provide information-rich cases related to the phenomenon as a requirement to meet the objectives set for this study. Table 4.2 illustrates the number of departments at Ngwelezane Teaching Hospital, while the highlighted departments indicate where data collection occurs. These include Internal Medicine and Neurological services, Family Medicine, and Orthopedics Department.

Table 4.2: List of Medical and Allied Health Services at Ngwelezane District Hospital, KwaZulu-Natal, South Africa

S.NO.	Medical Services Department at Ngwelezane Hospital
1.	Anaesthesia,
2.	Dental/Maxillo Facial
3.	Emergency and Trauma
4	Ophthalmology services
5.	**Internal Medicine and Neurological services**
6	**Family Medicine**
7	**Orthopaedics**
9	Psychiatry
10.	Radiological
11.	Surgical Services
12.	Urology
13	Nursing Department
14	Thutuzela

15	Other Allied Health Services

Source: *KwaZulu-Natal Department of Health (2001, 2019).*

Based on table 4.2, the purposive sampling technique was used to recruit HBV and HCV patients during their clinic visitation days at Ngwelezane Tertiary Hospital. During the recruitment exercise, the researcher recruited individual patients that consented to participate in the study to provide information during the in-depth interview. The interview schedule was prepared based on the research objectives set for the study. The patients received treatment in the above-highlighted department (Internal Medicine and Neurological services, Family Medicine and Orthopaedics) at Ngwelezane tertiary hospital.

Purposive sampling was also used to select an administrative officer for an interview. The admin officer consented and was recruited to participate in an in-depth interview to provide information based on hospital policy regarding access to patients' information and challenges encountered while providing health information to patients.

4.8.1.1. Procedure for qualitative data selection for interview

The participants for the interview were recruited using a purposively sampling technique. The purposive sampling technique used was based on inclusion and exclusion criteria for HBV and HCV patients (See sub-section 4.8.1.2 - 4.8.1.3). First, permission was sought and obtained from the ethical committee of the Ngwelezane teaching hospital and the Department of Health Pietermoritzburge, KwaZulu-Natal Province; the consent form was provided, read, explained and signed by participants who consented to the in-depth interview. The participants that could not read or understand the English language had the consent form translated to the isiZulu language and read to them by the research assistant (See Appendix 3 of this thesis). The researcher used purposive sampling to recruit twenty-four (24) patients to be participants in this study based on availability on their clinic days (See table 1). Nine (9) patients were recruited for an in-depth interview between November and December 2020. Additional fifteen (15) patients were recruited between September and October 2021.

Meanwhile, the interview of participants continued until data saturation was reached after eighteen (18) interviews. Data saturation is when new information no longer emerges during probing. It is the point at which no new themes or codes ‘emerge’ from data (Braun & Clarke, 2021). Data was collected using a semi-structured interview based on the research questions

set for the study. Twenty-five to thirty minutes (25-30) were allotted for each interview. For the selection to be accurate and free of bias, inclusion and exclusion criteria were used (Etikan, Musa & Alkassim, 2016:1; Tongco, 2007:147). The following inclusion and exclusion criteria used were:

4.8.1.1. Inclusion Criteria

(a). Male and female HBV and HCV patients attending hepatitis clinic on the scheduled date at the hospital, including those referred from other hospitals in the surrounding regions, were eligible to provide information.

(b). Patients 18 years and above are knowledgeable, experienced, and willing to provide relevant information for the study.

4.8.1.2. Exclusive Criteria

(a). Patients with chronic conditions and already at the critical stage with associated diseases were omitted. Chronic conditions are not convenient for patients to respond to queries due to their physical inactivities.

(b). Patients who required emergency care were omitted. Among the ethical requirements is for the researcher to ensure that the study would not interfere with the admission of patients who need critical care or cause further health complications.

(c). Patients who are hepatitis positive and are coinfected with HIV or other co-infections were not eligible.

The researcher focused specifically on patients with HBV and HCV. Table 4.3 illustrates the number and gender of participants in the qualitative in-depth interview.

Table: 4.3 Participants for Qualitative Interview

Patient		Participants per Gender	
Hepatitis B and C		8 males	10 females

Total		18
Administrative officer		1

Table 1: Participants for the qualitative interview based on convenient sampling.

4.7.2. Probability Cluster Random Sampling

Probability cluster random sampling was used to target the group of doctors and nurses providing therapies for HBV and HCV patients at Ngwelezane tertiary hospital, KwaZulu-Natal, South Africa. Cluster random sampling was considered appropriate for recruiting eighteen (18) doctors and twenty-three (23) nurses working and providing therapy directly for HBV and HCV patients in the department of internal medicine, family medicine and orthopaedic department (See table 1). The justification for using random cluster sampling was that the study population comprises clusters of people who have an equal chance of being part of the sample. The random cluster sampling used includes the total number of staff working in the unit providing therapy, given that the unit staff population was tiny.

Based on the submission by Bernard (2012), who asserted that if the study population is less than 200, the entire population can be used for the study. Previous studies investigating information needs and information-seeking behaviour in other contexts have used the entire population for a study, such as Lucky and Adeh (2020:71) and a study by Muokebe, Enweani, and Nwankwo (2018:8). The study sampled the Departments of Internal Medicine, the Family Medicine unit, where treatment and therapies are provided for HBV and HCV patients. In addition, the study comprises clusters of medical doctors who are experts doctors, intern doctors, and male, female nurses (staff nurses, professional nurses, nursing assistants) were represented (See table 1).

Probability cluster random sampling techniques have been commonly used to investigate studies in social science, public health subject areas and multidisciplinary studies, specifically in the recently conducted studies (Li *et al.*, 2021:1; Mansouri-Tehrani *et al*., 2021; Zang *et al*., 2021:1). A study by Li *et al*., (2021:1) used random cluster sampling to investigate the relationship between occupational stress, job burnout and quality of life among surgical nurses in china. The study found that surgical nurses have a high level of occupational stress, burnout, and low quality of life scores.

Wu *et al*., (2021:569) investigated sexual orientation and sleep problems among Chinese college students using cluster random sampling techniques. The study found out that sexual minority students were at a higher risk of poor sleep quality. Table 4.4 illustrates the cluster distribution of doctors and nurses and the gender distribution for quantitative data collections.

Table 4.4: Distribution of Doctors and Nurses by Category and Gender

Cluster of participants	**Senior Doctors**		**Medical Practitioners**		**Interns**			**Total**
Participants	4		4		10			18
Distribution	3 male	1 female	2 female	2 male	6 male	4 female		
Category of Participants	Nursing Assistants		Professional Nurses		Staff Nurses			
Participants	5		13		5			23
Gender Distribution	1 male	4 female	3 male	10 female	1 male	4 female		

Table 4.4: Cluster distribution of doctors and nurses selected at Ngwelezane Teaching Hospital, Kwazulu-Natal, South Africa.

The entire population of doctors and nurses were recruited at the time of data collection and were used for the study. The individual participants, doctors and nurses, were recruited from the departments where HBV and HCV patients were given therapies. These include doctors and nurses in the units such as internal medicine, family medicine and orthopaedics. The

categories of nurses that responded to the open and close-ended questionnaire include nursing assistants, professional nurses, and staff nurses (Table 4.4).

Doctors and nurses were recruited on their clinic days. The justification for selecting both doctors and nurses was, firstly, doctors and nurses are secondary sources of information about patients' views and perceptions. During a diagnostic exchange with patients, doctors and nurses can point out and understand how patients perceive and view the sicknesses they are suffering from. Patients' questions and worries can also point out their needs. Secondly, for unknown reasons, patients tend to give misleading information to a third party. It was reasonable to include doctors and nurses as additional informers as they are more trusted by patients and healthcare professional bodies (Medical Association, public health information managers).

As information providers, it is only reasonable and essential that the primary health information providers understand the information needs of their patients (Ilogho *et al*., 2020; Langbecker, Janda, & Yates, 2013) perspectives of healthcare professionals (doctors and nurses) are among the first significant factors to be considered regarding patients' information needs and preferences before providing health information for them (Langhecker *et al.*, 2013:179: Haase, Thomas, Gifford, & Holtslander, 2019). It is equally important that health professionals guide patients to reliable health information sources to avoid making mistakes (McMullan, 2006:24). We drew our conclusions after confronting these four sources of information. The researcher administered questionnaires to the participants who agreed and consented to fill the semi-structured open-ended questionnaire.

4.7.3. Sample Size

Babbie and Mouton (2009:647) referred to sample size "as the list of units comprising the population from which a sample is selected". In contrast, the sample frame comprises the actual list of sampling units from which the sample or some stage of sample is selected." This means that the list of the sample size must include all members of the population of the study. Based on Creswell and Creswell's recommendation for sampling qualitative interviews (2018:186), "no precise number of participants can be given regarding qualitative interview". Creswell and Creswell (2018:187) recommended between six to eight participants for qualitative interviews using open-ended questions to seek the views and opinions of participants. According to the selected CI, 41 healthcare providers (18 doctors and 23 nurses) participated in the study.

The sample size calculation for confidence interval was used for doctors and nurses in this study. The use of confidence intervals for scientific research is widespread among social science and health researchers. The confidence interval method has been used in scientific studies, such as social and health science or clinical studies (Zou, 2007:399; Mantha *et al*., 1993; Brahman, 1991). Zou (2007:399) maintained that "confidence intervals are widely accepted as a preferred way to present study results" because the method has been proved to "provide an estimate of the magnitude of the effect." Brahman (1991:1) used it to assess clinical and statistical significance. The study reported that confidence intervals could address clinical and statistical significance. Mantha *et al*. (1993:1041) used a confidence interval method to measure pain management and found that the "approach seems to provide more information than conventional hypothesis testing in the interpretation of data for pain measurement." Table 4.5 illustrates the sample size calculation for doctors and nurses at Ngwelezane Hospital according to four confidence intervals (CI).

4.8.3.1. Sample size calculation for quantitative data

In this study, the sample size was calculated referring to the total population of the doctors and nurses in the Ngwelezane Hospital. This information was obtained from the hospital administrative records. During the data collection period, there were 620 nurses and 102 doctors in total. In the next lines, these numbers will be referred to as N1 and N2, representing the total population of nurses and doctors, respectively. The sample size was calculated following four confidence interval (CI) levels: 95%, 90%, 85%, and 80%. The CI is related to the margin of error desired for the sample size calculation. For example, the margin of error associated with the CI of 95%, 90%, 85%, and 80%, are 5% (or 0.05 in decimal), 10% (or 0.1 in decimal), 15%, and 20%, respectively. The sample size calculation followed the steps described below.

Step 1: calculating Cochrain number (n_0)

The Cochran number represents a sample size for large populations. It is calculated using the expression below:

$$n_0 = \frac{Z^2 \times P \times (1-P)}{E^2} \qquad \text{Equation (1)}$$

In the above expression, "n_0" is the Cochran number. *Z* is a parameter linked to the Confidence Interval used. According to Yamane (1967), Z = 1.96 (when CI= 95%); 1.65 (CI= 90%); 1.44 (CI= 85%); and 1.28 (CI=80%). *P* is the default prevalence, usually set at 0.5. *E* is the margin of error (in decimal).

Thus, for a CI of 85%, *Z* = 1.44; *P* = 0.5; and *E* = 0.15. For illustrative purposes, the values in Equation 1 were replaced, to arrive at 23.04 as described below:

$$n_0 = \frac{1.44^2 \times 0.5 \times (1-0.5)}{0.15^2} = 23.04$$

The obtained number (23) represents a Cochran sample size. For a CI of 85% (allowing an error of 15%, *E* = 0.15), the sample size is 23. The Cochran sample size can be used in cases where the study's total population is unknown. Nevertheless, in this case, the total population of the study is known as doctors and nurses. In order to get a more refined sample size, it was necessary to use the finite sample size formula (In Equation 2), which is somehow a kind of adjustment of the Cochran formula.

Step 2: Finite Sample size calculation (*Ss*)

This is the last stage of sample size calculation which uses the Cochran number in Equation 1 and the total population of the study. In this case, the study referred to N1 (= 620 nurses) and N2 (102 doctors) as the total population. The finite sample size is calculated using the expression below (Equation 2):

$$Ss = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \qquad \text{Equation (2)}$$

In the above expression, *Ss* is the final sample size value which is obtained by using the Cochran number (n_0) and the total population of the study (*N*).

For the purpose of illustration, a fixed CI of 85%, *Z* = 1.44; *P* = 0.5; and *E* = 0.15, the calculated Cochran number was 23.04 (This is n_0). Let now replace this number in Equation 2 by considering the total population of nurses (620). We will obtain:

$$Ss = \frac{23.04}{1 + \frac{(23.04 - 1)}{620}} = 22.4$$

The obtained number is the final sample size obtained at the CI of 85% using the total population of nurses. When rounded, this number corresponds to the one presented in the table

below, where CI=85% for nurses. All other numbers obtained in the Table below emanate from the Finite sample size formula, using the values of *Z*, *P*, and *E* that correspond to the involved CI. These formulas were developed by Glenn (1992).

Table 4.5: Sample size calculation According to four Confidence Intervals (CI).

Staff category	Total number of staff in the hospital	Number of staff in the Unit providing therapy at the time of data collection	Sample size calculation following Confidence Intervals (CI)			
			CI 95%	CI 90%	CI 85%	CI 80%
Nurses	620	23	237	61	22	10
Doctors	102	18	81	40	18	9
Total	722	41	318	101	40	19

Mantha *et al*. (1993:1041) used a confidence interval method to measure pain management and found that the approach provided more information than conventional hypothesis testing in the interpretation of data for pain measurement. Table 4.5. The sample size calculation for doctors and nurses at Ngwelezane Hospital is illustrated according to four confidence intervals (CI).

4.7.4. Data Collection Method and Procedures

Various instruments are used for data collection: questionnaires, interviews, observation, and standardised tests. Semi-structured open-ended, and closed-ended questionnaires were used for the quantitative data collection, while for the qualitative data, face-to-face interviews were utilised (See Appendix one and appendix two).

4.7.4.1. Survey Method

Creswell (2014:3) referred to the survey method as a method of collecting quantitative data with the purpose of testing objectives and theories by investigating the relationship among variables. Researchers use quantitative survey methods to gain detailed understandings from

respondents about an investigation into research topic. Responses obtained from quantitative survey questions are analysed, and a study report is generated based on quantitative data to gather numerical data to determine statistical results. Variables can be measured typically on instruments to analyse numbered data using statistical procedures. Creswell and Creswell (2018:17) viewed the quantitative survey method as a positivist worldview that focuses on various strategies such as experimental design, pre-test, post-test and measures of attitudes. This study applied a quantitative method to obtain numerical values, using a semi-structured, open and close-ended questionnaire to collect data from doctors and nurses (Creswell & Creswell, 2018:219). The purpose of collecting quantitative data was to determine the dependent and independent variables in the study.

4.7.4.1.1. Questionnaire

The questionnaire is one of the instruments used for data collection in a study applying quantitative methods. Aslam *et al*., (2020:97), Marshall *et al*., (2013:11), Jack and Clarke (1998:176) justified the questionnaire as an instrument for data collection. The questionnaire has been widely used in social sciences, health or public health research, and other allied sciences (Aslam *et al*., 2020:97; Marshall *et al*., 2013:11). An open and close-ended questionnaire was used for collecting quantitative data from doctors and nurses. The closed-ended section of the questionnaire was used to find out the doctors' and nurses' bio-data (age, gender, and department). The bio-data section was measured to obtain numerical values. The open-ended section was used to seek the opinion of the doctors and nurses in the hospital regarding patients' information needs based on specific diseases (HBV and HCV).

Healthcare professionals' perspectives (doctors and nurses) are among the first significant factors regarding patients' information needs and preferences before providing health information (Langhecker *et al*., 2013:179). It was imperative to seek the opinion of doctors and nurses regarding the specific health information needed by patients and establish suitable sources of information for patients to use. As healthcare providers, it is only reasonable and essential that the primary health information emanates from doctors and nurses to understand the information needs of their patients (Ilogho *et al*., 2020). It is equally important that health professionals guide patients to reliable health information sources to avoid making mistakes (McMullan, 2006:24).

In addition, the hospital policies regarding information provision, the method of communicating with patients, their role in counselling and educating patients, and the challenges they face in providing information and counselling patients during their visits to the hospital were investigated. The use of a questionnaire in a study for data collection is cost-effective. It also has the advantage of being used as an instrument for measuring the validity and reliability of a study (Jack & Clarke, 1998:176). Marshall (2005:132) suggested using a validated questionnaire to save time and resources. He believed that a questionnaire developed by a novice researcher might not have reliability and validity like the one that has been rigorously tested during the design phase (Marshall, 2005:132). This study adopted a validated questionnaire by Owolabi (2016:430). The questionnaire used various themes to investigate the topic at hand.

An open and close-ended printed semi-structured questionnaire was used for quantitative data collection from doctors and nurses. The questionnaire was self-administered by the researcher and field assistant. Ten to fifteen minutes were allotted by the researcher to attend to each participant. The justification for choosing an open-ended questionnaire was to use the research instrument to acquire information that could be analysed descriptively and represent a broader target population and standardised information. In addition, Aslam *et al.*, (2020:97), Marshall (2005:131) and Jack and Clarke (1998:176) believed that questionnaire is cost-effective, more economical, and efficient, especially for a large population. Moreover, a questionnaire can yield high-quality, usable data and achieve reasonable response rates when administered to the target audience.

4.7.4.1.2. Questionnaire Structure

The questionnaire for this study was designed to reflect the respondents' views, values, and perceptions. The importance of a well-structured questionnaire in terms of the nature and wordings of the questionnaire is to achieve the desired objective of the study (Gray, 2009:338). According to the research questions outlined in chapter one, section 1.4 of this thesis, the questions were organised into seven themes. The questions were divided into two sections; the bio-data section A comprises the information based on gender, age, and economic status of the respondents, while section B comprises questions measuring the perspectives, the views and opinions of the doctors and nurses about the information needs and seeking behaviour of the HBV and HCV patients.

The variables measured by the instruments are organised as follows: Section A comprises four "closed-ended questions" and two "open-ended questions", while section B comprises eight "open-ended and closed-ended questions" (Gray, 2009:335). Section B comprises a mixture of open-ended and closed-ended questions on a Likert scale of one to five (scale of 1-5, where 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree). Open-ended questions provided an opportunity for qualitative data and analysis, while closed ended-questions offered respondents a list of responses or pre-defined replies (Gray, 2009:338).

- The bio-data of HBV and HCV patients, doctors and nurses.
- Information needs of HBV and HCV patients.
- Information Seeking of HBV and HCV Patients.
- HBV and HCV patients access and use information.
- Counselling and educating of HBV and HCV patients.
- Challenges with the information provided for the patients.
- Strategies for improving information provision, access and use.

The researcher personally administered the questionnaire to members of staff who are doctors and nurses at the hospital immediately after morning briefing while the research assistant assisted in distributing the questions to participants.

4.7.4.2. Qualitative Method

Creswell (2014:3) defined a qualitative method as "an approach for exploring and understanding the individual problems." Qualitative researchers observe participants' behaviour to understand the actions and beliefs, the history and the contexts of the study" (Creswell & Creswell, 2018:181; Babbie & Mouton, 2009:269). Also, Denzin and Lincoln (2011:3) in Gray (2009:7) argued that qualitative researchers study things in their natural setting, trying to make sense of or interpret the meanings people to bring to them. The qualitative inquiry aims to " reveal hidden realities, through various approaches such as case study, ethnography, phenomenology, grounded theory, participatory action research, narrative, cultural and gender studies" (Gray, 2009:7; Babbie & Mouton, 2009:269; Flick, 2006:97).

Various methods of collecting qualitative data, such as "interview, observation, focus groups, documents, video and photographs life histories and research diaries" (Gray, 2009:249; Flick,

2006:97). Methods of validity and reliability in the qualitative approach include triangulation, extensive field notes, peer-reviewed, and member checks (Babbie & Mouton, 2008:269; Gray, 2009:249). Qualitative studies have been used in social sciences research and health information seeking research (Bylund *et al*., 2020:1; Wahid *et al*., 2020:1; Rich *et al*., 2020:921). For example, Bylund, *et al*., (2020:1) explored the perspectives of the health-policy makers in the health context. The study found "the need for research to adopt health policies and health programmes to solve challenges of delivering care for adolescents." Argentieri *et al*., (2020:1) used a grounded theory approach to analyse and interpret interview data related to "psychosocial research in epidemiological" studies.

The quantitative data collection method is an essential approach in data collection in any research. The study further emphasised, "the need for high-quality, longitudinal studies that can investigate the subject and effort by epidemiologists to broaden or harmonize the measures they use across cohorts" (Argentieri *et al*., 2020:1). A similar study by Anastario et al. (2020:1) used a multi-phase, mixed quantitative and qualitative methods design and semi-structured interviews within a community based participatory research framework to illustrate the legacy of colonial violence in an epidemiological study. The quantitative method "validated observations from the semi-structured interviews revealed that child sexual abuse is related to sexual risk behaviour among youth".

Qualitative data is essential because quantitative data alone was insufficient to provide adequate information for this study. Apart from using a structured printed questionnaire, an interview is another alternative method adopted by this study through a face-to-face discussion recorded using a mobile set to gather qualitative data from individual HBV and HCV patients during their clinic days at the hospital. The purpose of the interview is to investigate the experiences of HBV and HCV patients with information needs and seeking patterns related to the disease (HBV and HCV).

4.7.4.2.1. Interview

The interview method of data collection is very common among social scientists and health researchers (Anastario *et* al., 2020:1). According to Gray (2009:369), an interview is a conversation between people in which one person has the role of a researcher. There are different approaches used for interviews, depending on the aim and objective of the research (Babbie & Mouton, 2009:249; Gray, 2009:370). Examples of interviews are structured

interviews, semi-structured interviews, non-directive interviews, focused interviews, qualitative interviews, depth interviews and informal conversational interviews (Gray, 2009:370; Babbie & Mouton, 2009249). Some characteristics of the interview include; exploring the stories and perspectives of the informant (Gray, 2009:370). Anastario, *et al.*, (2020:1) used semi-structured interviews to gather qualitative data in an epidemiological study in a community context. It was discovered that the method was very effective as an instrument for data collection.

A similar qualitative study by Bazyar *et al*. (2020:1) focused on "policy analysis on health insurance using face-to-face interviews." The study noted that the method provided the participants "ample opportunities to express their deep understandings of the context and raised the results' credibility, confirmability, and reflexivity." Additionally, a qualitative study focusing on patients' voices at a comprehensive cancer centre using semi-structured interviews and focus group discussions by Brunelli *et al*. (2020:1) noted that "listening to "patients' voices" in terms of symptoms, emotional status and experiences with care, is crucial for patient empowerment in clinical practice." Brunelli used a qualitative interview method (2020:1) to investigate "students' understanding and experiences of access and success at a higher education institution." The study recorded "convincing evidence that the method produced improved symptom control, patients' well-being and was cost-effective.

The study reported that the approach was holistic because they understood "students' experiences with access, success and how student-centeredness is intricately linked to becoming university students." This study considered a face-to-face, in-depth interview, with short profile semi-structured open-ended questions appropriate for this study. The purpose was to collect qualitative data from HBV and HCV patients (Gorman *et al*., 2005:1). Also, the researcher sought to establish the information needs and seeking behaviour of HBV and HCV patients based on the theme of scheduled questions, namely information needs and seeking behaviour of patients, access and use of information by HBV and HCV patients, factors contributing to the use of information, challenges they face using the information, as well as suggestions regarding the way forward. The researcher recorded the interview. 25 -30 minutes duration was allotted to interview each patient.

4.7.4.2.2. Triangulation

According To Gray (2009:582), triangulation is the use of methods or data sources to examine a specific phenomenon, simultaneously or sequentially, to improve data reliability. On the other hand, to validate the qualitative data collection instrument to eliminate bias and increase the researchers' truthfulness and trustworthiness, triangulation of the two databases (Qualitative data and Quantitative data) in a convergent approach was carried out. Based on submission by Mathison (1988:13), triangulation is typically a method (test) for improving the validity and reliability of qualitative research instruments to be trustworthy. Triangulation of the two approaches (qualitative and quantitative) has been considered the best way to ensure rigour and trustworthiness (Golafshani, 2003). Patton (2001) advocates triangulation to strengthen a study by combining two methods. Reliability and validity are conceptualized as trustworthiness.

Hussein (2009:1) submitted that triangulation aims to increase study credibility. Triangulation uses multiple methods, mainly qualitative and quantitative methods, to study the same phenomenon. Every single approach/method used for investigations has its weak point, but when two approaches are utilised, the more robust approach complements, the weaker one. This study uses triangulation to enhance the analysis and interpretation of findings to ensure the consistency and trustworthiness of data collection instruments (Bekhet & Zauszniewski 2012:3).

There are various methods of triangulation used in social sciences research. Examples are data triangulation, theoretical triangulation, investigator triangulation, and analysis triangulation, depending on the purpose and objectives of the study (Hussein, 2009:1). Social science scholars believe in triangulation in different aspects of their studies (Bekhet & Zauszniewski, 2012:3; Hussein, 2009:1). The justification is that methodical triangulation help the researcher identify common themes and ensures rigour in this study. It also helps the researcher to improve the overall confidence in the findings of this study. This study applied methodology triangulation for this study (Bekhet & Zauszniewski *et al*., 2012).

Methodological triangulation was applied through applications of quantitative approach, through a collection of quantitative data from doctors and nurses for credibility and validity, to investigate information needs and seek the behaviour of HBV and HCV patients. (Bekhet & Zauszniewski, 2012:3). Therefore, this study also applied analysis triangulation to check for

any possible errors and inconsistencies in the data collection instruments. In order to ensure the integrity and consistencies of the data collection instruments, the validity and reliability of the instruments were proved using various methods. This study's integrity, validity, and reliability have been analysed in section 4.9 of this thesis.

4.8. ENSURING INTEGRITY THROUGH VALIDITY AND RELIABILITY IN THE STUDY

Validating the data collection instrument: Validity is how the measurement procedures accurately reflect the concept being studied (Case, 2012:208). It can also be referred to as the degree to which the research data are accurate and credible (Gray, 2009:582). The most common types of validity used in social sciences research are internal validity, external, criterion, construct, content, predictive, and statistical validity. This study applied construct validity for the quantitative data collection instruments (questionnaire). Construct validity was used to ensure the accuracy of the semi-structured printed questionnaire used as the instrument for quantitative data collection for the study.

The construct validity used has two major components: convergent and discriminant reality. Firstly, the discriminant validity evaluates how variable (A) differs from other variables. Discriminant validity (or divergent validity) ensures that the constructs have the exact opposite result or do not have any relationship. Secondly, convergent validity refers to how two constructs should be related theoretically. Several methods can be used to evaluate these two components of construct validity. To verify the two methods in construct validity (discriminant and convergent validity), a factor analysis needs to be conducted using principal component analysis (PCA) with the varimax rotation method (Kaiser, 1958:187).

Construct validity has been used to ensure data collections instruments in previous studies by testing the convergent and discriminant validity (Rauta, Salanterä, Vahlberg, & Junttila, 2017: Taherdoost, 2016:31). Carlson and Herdman (2012:17) applied convergent, and discriminant validity methods in the instrument used to collect data. A study by Rosenberger & Loomis (2000:1097) also used convergent validity to determine convergent validity, noting that the method is promising and slightly more robust to changes than other methods. The study suggested that researchers should be encouraged to develop and report convergent validity data in their method of investigation.

Evaluating the validity of data collection instruments: Evaluating the quantitative data instrument for validity (discriminant and convergent validity) is also crucial in ensuring the credibility and consistency of methods applied (Franke, 2015). Franke (2015:496) identified three methods that could be used to assess discriminant validity for multi-item scales: Q-sorting, which can be used in the early stages of research, being more exploratory; Chi-square difference test; and the average variance extracted analysis. These tests were recommended for the confirmatory stages of research (Zaiţ & Bertea, 2011:217).

This study used the Chi-square difference test to evaluate the construct validity test applied to assess quantitative data collection instruments' (discriminant and convergent validity) from doctors and nurses (Zaiţ & Bertea, 2011:217). The Chi-square test adopted allowed for comparing two models, one in which the constructs are correlated (information needs), and the other in which they are not (information-seeking). Each model presented a value for Chi-square and degrees of freedom. The two research subject categories are information needs and information-seeking. One variable was selected in the first category, while four variables were considered in the second category. The variables were then coupled to test the convergent and discriminant validity. Table 4.7 below presents the results of the Chi-square.

Table 4.6: Construct Validity Verification

N°	Scaled variables	Df	X-squared	p-value
1	Health-related information needs and health information seeking	3	2.25	0.5222
2	The need for health-related information and accessible sources of health information use	12	11.25	0.5076
3	The need for health-related information and policies supporting information provision and use	12	18.75	0.0947

4	The need for health-related information and factors affecting information use	15	12.375	0.6505

Table 4.6: Chi-square test between 4 couples of categorical variables. The degree of freedom (Df), the Chi-square value (X-squared), and the statistical parameter (p-value) are given for each comparison. Convergence/divergence of variables is reported at a 95% confidence interval. Table 4.6 indicated that the p-values of considered variables were 0.5222, 0.5076, 0.0947, and 0.6505. All these values were, therefore, more than 0.05. According to Franke (2015:496), if the Chi-square difference is not significant, or the confidence interval includes 1.0, then the discriminant validity of the two scales is in doubt. In other words, the convergent validity is verified.

Consequently, Table 4.6 confirms that the single variable emanating from the first category of the study (health information needs) is statistically convergent with four categorical variables emanating from the second category of the study (health information-seeking). This finding implies that the hypothesis of independence of the Chi-square test was verified. We can conclude that the variables are independent of each other, and no statistical relationship between the categorical variables. Therefore, the convergent validity is proven. Consequently, the data collection instruments used in this study were appropriate for verifying the expected hypothesis of convergence of the following main group variables of the study: "*information needs*" and "*information-seeking behaviour*".

Reliability of data collection instrument: The reliability of study instruments as defined by Gray (2009:158) as "an indication of consistency between two measures of the same thing" as in the measurement of the same instrument administered by two different people. Creswell and Creswell (2018:201) suggested that researchers document their case studies' procedures. Internal consistency relates to how a test or questionnaire is homogenous and allows a reliability coefficient. (Black, 1999). The reliability of the data collection for this study was ensured by adopting a well-tested questionnaire using the internal consistency of standardised semi-structured "open-ended and closed-ended questions" to ensure uniformity in the data collection.

Internal consistency is measured with Cronbach's alpha, a statistical parameter calculated from the pairwise correlations between items. Internal consistency ranges between negative infinity and one. The following formula was used in this study to calculate the Cronbach's alpha:

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k} \sigma_i^2}{\sigma_t^2}\right)$$

Where *k* is the number of items in a scale, σ^2_i is the variance of the i^{th} item, and σ^2_t is the variance of the scale (total) scores (Cronbach, 1951:297).

Coefficient alpha will be negative whenever there is greater within-subject variability than between-subject variability (Knapp, 1991:457; cited in https://en.wikipedia.org/wiki/Internal_consistency). A commonly accepted range for describing internal consistency is as follow (George & Mallery, 2003:232):

Table 4.7: Cronbach's Alpha Value Interpretation Scheme.

Cronbach's alpha value	Internal consistency interpretation
Above 0.9	Excellent
Within 0.8 and 0.9	Good
Within 0.7 and 0.8	Acceptable
Within 0.6 and 0.7	Questionable
Within 0.5 and 0.6	Poor
Below 0.5	Unacceptable

Table 4.7: Cronbach's alpha value interpretation scheme.

Generally, very high reliabilities (0.95 or higher) are not necessarily desirable because it indicates that the items may be redundant (Streiner, 2003:99).

Cronbach's Alpha is a function of the number of items, so shorter scales will often have lower reliability estimates. In this study, so many variables were considered when defining patients' information needs and seeking behaviour. Some of them included:

> *gender of respondents, qualification, work experiences, information access, information use, information policy, information provision, information resources, information format, counselling facilities, educational programme, the programme format, and factors of use of information*, among others.

These items could have played in the minimisation of Cronbach's alpha. In addition, within each variable, several sub-options described quantitative variables. This factor could also have played in the minimisation of Cronbach's alpha. Furthermore, Cronbach's alpha was calculated after reconverting categorical modalities (observations) to numeric modalities. Thus, Cronbach's alpha decreases when more generic and broad constructs are measured. This phenomenon argued against using objective cut-off values for internal consistency measures (Peters, 2014:56). From the above, considering the complexity of variables of the present study, the researcher considered that the reliability of the questionnaire used in this context of study remains alleviated.

4.9. DATA ANALYSIS

Data analysis in the mixed-method convergent study is usually done concurrently. The classification of data, such as categorical and quantifiable data, must be done by the researchers before analysis (Gray, 2009:451). Categorical data use non-parametric or inferential statistics, while quantifiable data are measured numerically using descriptive statistical methods (Gray, 2009:451). The data analysis for quantitative and qualitative data was done in three phases. First, the researcher analysed the qualitative dataset by coding and collapsing it into broad themes. Secondly, the quantitative dataset was analysed descriptively to generate a statistical result. Thirdly, the mixed-method data analysis was integrated with two databases. The integration stage comprised merging the results from the qualitative and the quantitative findings. The qualitative aspect of data was analysed using thematic analysis. The quantitative data were analysed using the FISHER correlation test (Fisher's Exact Test Calculation, 2019). The Chi-square test explained the relationship between different modalities of HBV ages and HCV patients, doctors, and nurses.

4.9.1 Descriptive Statistics

Quantitative data in this current study were analyzed descriptively using Fisher's Exact Test Calculation (FISHER) (Fisher's Exact Test Calculation, 2019:4) and the Chi-square test to describe the relationship between different modalities of ages of HBV and HCV patients, doctors, and nurses. Quantitative data analysis was performed to support and test the results of the qualitative observations. This analysis method described the following variables: *age range* (both for patients, doctors, and nurses), gender and *number of years of working experience* (especially for doctors and nurses). Sorting and ordering R scripts were used within GGPLOT2 packages to highlight the most dominant factors and challenges provided by patients and doctors (GGPLOT2 is an open-source data visualization package for the statistical programming language R.

The graph was generated using ggplot2 to replace the base graphics in R and contained several defaults for web and print display of standard scales). Using Fisher's exact test, Yi, *et al.*, (2019:555) can be more straightforward. It also has specific theoretical and practical value to contribute to studies in other contexts. This method has been very effective for analysing social science research and can be applied to this study. It was used to analyse breast cancer patients' demographics and potential risk factors (Hahamoff *et al*., 2019:604). Quantitative data was analysed using descriptive methods to analyse and describe the demographic sections of doctors, nurses, and patients' biographical details, supporting and testing the results of the qualitative findings.

The open-ended questions contained in the questionnaire were analysed and merged with the quantitative information to identify the factors influencing information seeking, use of the information, and information needs and seeking behaviour of HBV and HCV patients. The analysis was based on the following variables: age range (patients, doctors and nurses) and years of working experience (as indicated in the bio-data of the doctors and nurses), Gender, and professional qualification. For these quantitative variables, the test of correlation of Fisher (Fisher 2019:4), the test of Spearman (Astivia *et al*., 2017:347), and the non-parametric correlation of Pearson was applied to determine and explain the relationship between different modalities of the ages of HBV and HCV patients, doctors, and nurses.

Qualitative modalities were analysed using thematic analysis. This quantitative reformulation was used to perform the non-parametric test of WILCOXON (The Wilcoxon test is a nonparametric statistical test that compares two paired groups and comes in two versions the Rank Sum test or the Signed Rank test (Desai *et al*., 2018:130). The test was run under the following expression:

$$\in = \frac{|S_x - E|}{\sqrt{(V)}}$$

Where:

$\in$: Expression WILCOXON test;

S_x : Represents a known distribution under Gaussian law;

E : Gaussian mean distribution;

V : The variance of coupled quantitative and qualitative variables.

The test of SHAPIRO-WILK (Gonzalez-Estrada, *et al*., 2019:3258) was used to test the theoretical distribution of quantitative variables against the normal distribution. This test allowed the study to understand how the obtained results differ from the generally predominant expectations of this study. The SHAPIRO-WILK test was provided using the following expression:

$$W = \frac{(\sum_{i=1}^{n} a_i \, x_{(i)})^2}{\sum_{i=1}^{n} (x_i - \overline{x})^2}$$

Where:

W: Designate the SHAPIRO-WILK test;

x_i : Represent the smallest number *i* of samples;

i et j: are natural integers ranging from 1 to n ;

$\overline{x}$: Represent the mean of the samples;

n : total number of patients/doctors/nurses ;

$\sum$: Sum symbol;

a_i : A constant;

The differences observed between the two groups (HBV and HCV) were evaluated using the STUDENT test. This allowed the researcher to highlight factors linked to the differences in the severity of each sickness involved. The student test was run using the following expression:

$$\textbf{STUDENT TEST} = \frac{\overline{x}_1 - \overline{x}_2}{\sqrt{(S^2\,(\frac{1}{n_1} + \frac{1}{n_2}))}}$$

The term *S* is the standard error of the involved variables of the two categories of sickness (HBV and HCV) compared, and n_1 and n_2 are the numbers of patients/doctors/nurses investigated in each category of HBV.

4.9.2 Thematic Analysis

According to Gray (2009:692), thematic analysis "is a method for identifying and analysing patterns (themes) in qualitative data." Data analysis in qualitative research involves laid down procedures, including collecting data, writing or organising the reports, and aggregating data into themes. It is a process that involves searching for themes or patterns to fit different epistemological and ontological positions of the study (Braun & Clark, 2006:77). This study organised the qualitative data, interpreted the theme, and related them to the study's theoretical framework. It is also essential that data collected are safely stored in PDF files and Google drives with a password for safe custody. The codes from the generated data were stored in a computer file for safety. Data were proofread, organised and prepared for analysis (Creswell & Creswell, 2018:182; Gray, 2009:179).

4.10. ETHICAL CONSIDERATIONS

According to Babbie (2016:62), ethical issues in social science research are related to what is morally right or wrong. Given that social research requires that people reveal their personal information: about themselves, friends or associates, participants must be aware that participation in such exercise is voluntary (Babbie, 2016:62). Creswell and Creswell (2018:89) supported the need to inform participants about the study's general purpose and what it entails. In addition, it is essential to provide consent forms, build trust, and convey the extent of participation in the study. The researcher read the University of Zululand's policy and

procedures on research ethics, policy, and procedures for managing and preventing acts of plagiarism, and the researcher understood the contents. “My supervisor and I have considered and discussed the ethical issues that arose from this research, and these were dealt with as highlighted below.” Given the University of Zululand guidelines on ethical issues and policies regarding plagiarism, I observed the following in this research:

- The ethical requirements at the national level for South Africa were observed and complied with.
- I applied for ethical clearance from the “Department of Information Studies in the Faculty of Arts, University of Zululand South Africa.”
- I applied for ethics approval from Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa.
- I also applied for ethical approval from the Department of Health, Pietermaritzburg, KwaZulu-Natal Province, South Africa.
- A consent form, which included “a cover letter” stating the intention and “purpose of the research,” was given and clearly explained to HBV and HCV patients and medical professionals in the tertiary health institution selected for the study.
- The participants were requested to sign the “consent form” for the face-to-face interview and the open-ended printed questionnaire.
- The participants in the interviews permitted the interviews to be recorded.
- All issues were treated with confidentiality.
- All authors cited in this study were referenced accordingly.

I declare that to the best of my knowledge:

- *The research did not create any conflict of interest, real or perceived*
- *I was not involved in or associated with any project or activity that will become the subject matter of my research, nor are any of my family members, close friends or associates involved in any way.*
- *Except as might be disclosed in this proposal, I did not have any direct or indirect financial interest in conducting this research, nor did any of my family members or close friends or associates.*
- *I abided by the general principles set out in the University‘s policies and the policies' obligations to me.*

In particular, I

- *I respected the dignity, safety and well-being of the respondents. I will respect anonymity and confidentiality.*
- *Considered and was sensitive to different cultures, languages, beliefs, perceptions, and customs of persons who participated in the research.*
- *Conducted the research and produced my thesis on my own, subject to regular supervisory and collegial assistance*
- *Acknowledged and attributed to others the ideas, designs and writings that are not original*
- *I referenced my work accurately according to the approved reference style.*

4.11. SUMMARY

This chapter discussed the research methodology adopted to guide this study. The study considered the pragmatic worldview the most suitable paradigm because the philosophical assumption allowed a researcher to adopt multiple philosophical positions, such as positivism and interpretivism, to investigate the study's research objectives. A mixed-methods approach, including quantitative and qualitative research methods, was most appropriate for data collection, analysis, interpretation, and discussions. Several social science researchers widely use the mixed-methods approach. A mixed-methods case study design was deemed appropriate for the study because it enabled the researcher to develop a case based on the convergent core design. Purposive and convenient sampling techniques were adopted for this study. The instruments for data collection, methods of data analysis, validity and reliability of data collection instruments, and the ethical considerations were discussed. The next chapter discusses the data analysis and interpretation.

CHAPTER 5: DATA ANALYSIS AND PRESENTATION

5.1. INTRODUCTION

This chapter contains two data sets organised according to sections A and section B. Section A presents the qualitative data collected through in-depth interviews with HBV and HCV patients in Ngwelezane Tertiary hospital, KwaZulu-Natal province of South Africa. The data analysis is presented according to the research objectives and aligned with the interview questions (see appendix one). The data collected was interpreted, coded, collapsed into broad themes and presented in sections according to research objectives. Among the interviewed participants regarding patients, information policies was a key senior staff who is knowledgeable about health information policy in the hospital setting. References were made to the hospital policies in the document made available to the researcher before data collection (See Appendix 5 and 6).

Section B of this chapter also contains the analysis of quantitative data collected from the doctors and nurses at Ngwelezane hospital, KwaZulu-Natal, South Africa, through open and close-ended questionnaires. The purpose of collecting quantitative data was to triangulate and complement the qualitative findings in section A of this chapter. The analysis of the quantitative data collected from doctors and nurses is organised in sub-sections (Bio-data) and sections (information needs and seeking behaviour of HBV and HCV patients) of the research instruments. Section B contained quantitative data, analysed using the test of correlation of FISHER and Chi-square test to explain the relationship between different modalities of respondents' bio-data (doctors and nurses). The data analysis is presented according to the research objectives. The study's main aim was to seek the opinion of doctors and nurses based on the types of information needs that doctors and nurses considered important for the patients, which can also be useful for the individuals living in the Ngwelezane community, the rural dwellers, as well as the KwaZulu-Natal Province in South Africa.

The study's main aim was to investigate the information need and information-seeking behaviour of HBV and HCV patients at Ngwelezane Hospital in South Africa through in-depth interviews. The specific objectives were to determine HBV and HCV patients' information needs and information-seeking behaviour, access and use the information, hospital policies and

resources available to support the provision and use of information for patients. In addition, the study aimed to establish the role of healthcare professionals' counselling and education in providing information for HBV and HCV patients. Factors contributing to the use of hepatitis information by patients are crucial. It is equally essential that this study find out challenges faced by Ngwelezane District Hospital in South Africa, providing HBV and HCV patients' information and use and guidelines for information provisions for HBV and HCV patients in a tertiary health institution in South Africa are recommended.

SECTION A:

5.2. QUALITATIVE DATA ANALYSIS AND PRESENTATION: HBV AND HCV PATIENTS

This section presents the data analysis collected through the interview of the participants. It was noted that nine (9) patients were initially recruited between November and December 2020, using semi-structured interviews. The data collection process was challenging due to Covid-19 restrictions that prevented easy movement and regular visitations to the hospital facilities. Therefore, the researcher returned to the field to recruit additional participants until data saturation was reached at 18 interviews between September and October 2021. 'The initial group of participants were excluded from the new group. The interview was initially conducted in both English and the isiZulu language, with many difficulties due to the language barrier.

The use of isiZulu as a medium for collecting data for the study was necessary since the majority of the participants were only able to communicate in their original dialects (isiZulu); however, with the assistance of a professional translator, the documents (interview responses), was carefully transcribed into the English language, coded and analysed. In addition, references were constantly made to hospital policy on confidentiality of patients' information (See Appendix 5 and 6). Therefore, patients were recruited and interviewed purposively based on availability and convenience. Every effort made to obtain a total number of registered patients was declined and unsuccessful due to the unavailability of such records in the hospital's electronic database.

Besides, for the convenience of the participants, the interview data collection was done at the hospital premises in Ngwelezane during their clinic visitations. The following sub-sections present the alignment of the research objective and the interviews.

Table 5.1: Alignment of research objectives and interview questions

NO	INTERVIEW OBJECTIVE	INTERVIEW QUESTIONS
1	Theme One: Information Needs and Information-Seeking of HBV and HCV Patients (Objective 1).	*What type of health-related information do you think is needed to improve your health condition?* *Do you independently seek health-related information on hepatitis B and C through any source?* *Could you ascertain your purpose in seeking health-related hepatitis B and C information?* *How frequently do you seek hepatitis B and C related information?* *What method do you usually use when seeking hepatitis B and C related information?*
2	Section C: Access and Use of Information HBV and HCV Patients (Objective 2)	*What information sources are accessible to you when seeking health information on HBV and HCV?* *What characteristics of information sources influence your decision to seek information on hepatitis B and C through that source?* *How important is your information source to meet your information needs on hepatitis B and C?* *Would you say that you are satisfied with the health information you received?*

3	Aligning Information Policies and Resources to Support Information Provision and Use on Hepatitis B And C. Objective 3.	*Are you aware of any policy related to information use on hepatitis B and C by patients at Ngwelezane District hospital?* *Are you aware of the counselling and education programme organised for hepatitis B and C patients in Ngwelezane hospital?* *What format of instructions for information dissemination are they using if you are aware?* *Are the instructions provided relevant to your health problems?*
4	Counselling and Education. Objective 4.	*What role has healthcare professionals' counselling and education played in providing information for HBV and HCV patients at the Ngwelezane Hospital, KwaZulu-Natal, South Africa?*
5	Factors Contributing to the Use of Information By Hepatitis B and C Patients. Objective 5.	*What factors motivated you to seek information on hepatitis B and C?* *Based on your experiences of the diseases, how important is information seeking related to your use of information?* *Do you believe in the usefulness of hepatitis B and C related health information?*
6	Challenges That HBV and HCV Patients are Facing In Seeking and Using Information. Objective 6.	*What challenges do you normally face when seeking hepatitis B and C related information?*
7	Recommended Guidelines for Information Provision	*In your own opinion, what guidelines would you recommend for the hospital management to follow in providing disease information for patients as the way forward?*

	For HBV And HCV Patients Objective 7.	

Table: 5.2. The Bio-Data of the Participants for qualitative interview

Participants	Participants Per Gender		Economic Status		Age Group	
HBV and HCV Patients	Male	Female	Employed	Not Employed	20-29	1
	8	10	3	15	30-39	5
					40-49	6
					50-59	6
Total	8	10	3	15		18
Senior staff/ Administrator	1		1-10 yrs. working experience		40-49	1

Table 5.2: Participants for the qualitative interview based on purposive sampling.

5.2.1. Bio-Data of Participants: HBV and HCV Patients

Table 5.2 above shows the bio-data of the participants using the interview as means of data collection from the population group. Majority of the participants were female (n=10; 55.6%), others were male (n=8; 44.4%). The majority of the participants were not employed (n-=15; 83.3%), against a few that were employed (n=3; 16.7%). On the other hand, the age range of majority of the participants were between 40 – 49 years (n=12; 66.7%), followed by 30 – 39 (n=5; 28%), and 20 – 29 (n=1; 5.6%). The data collected from HBV and HCV Patients were based on information needs and information-seeking behaviour. A key participant who was a senior staff member was interviewed regarding patient information policies and challenges that healthcare providers are facing in providing information. The key participant was knowledgeable about health information policy in the hospital setting. The data collected were coded and analysed as it is. The following are the developing themes.

5.2.2. Information Need (IN) and Information Seeking (IS)

Table 5.3: Information Need and Information Seeking by HBV and HCV Patients

Research Question	**Patients Responses**
Research Question *1* *What type of health-related information do you think is needed to improve your health condition?*	*"I need information for the treatment of my health problem. I need the information to prevent infection in my body. I need the information to identify the mode of contracting the infection. Yes, I know the information is good but I am unsure if I need it. Am not sure. I need the information to know the danger involved in getting infected".* *"Yes, I need the information to have the general knowledge of the disease".* *"Yes, I need the information to identify the good type of diet for me".* *Yes, I need the information to prevent the disease".* *"Yes, I need information just to know about the disease".* *"Yes, I need the information to general knowledge of the disease.* *"I need information about the type of medication good for my health.* *"I need the information to know the type of good treatment for me".* *"I need the information to know about the new treatment". "I need the information to prevent getting infected with diseases". "Yes, I need the information to help prevent me from getting an infection from the disease". "I need the information to get appropriate diets for my health".*

Do you independently seek health-related information on hepatitis B and C through any source?	*"Yes, I seek health information about my sickness. Yes, I seek information. Yes, but not regularly. No, unless I need it. Yes, I independently seek health information".* *"No, unless I need to seek health information. yes, I seek health information. No, unless I need to seek health information. Yes, I independently seek health information".*
Could you ascertain your purpose in seeking health-related hepatitis B and C information?	*"The purpose of my seeking health information is to improve my health condition and to get better health. The purpose of my seeking health information is to prevent disease infection.* *I seek for health information to help me protect my family and friends from contracting disease".* *"I seek health information because I am not sure exactly about my state of health. I seek for health information to gain health knowledge. I seek for health information to acquire knowledge of good health".* *I seek health information because I am not sure if my health condition. I seek health information because I have a problem with my health. I seek for health information to know my right to treatment. I seek for health information to get good health".* *I seek for health information to get access to better health. I seek information to know the type of disease I am suffering from. I seek for health information to know the chances of my survival. I seek for information to stay well informed.* *I seek for information to have access to better treatment. I seek health information so that I can get healed. I seek health information so that I*

	can get better treatment. I seek health information. Maybe I can get hope to improve my health. I seek information maybe I can get better treatment
How frequently do you seek hepatitis B and C related information?	*"Although not frequent, sometimes I do seek health information. Yes, I seek information all the time. I seek information weekly. Not frequently, but I seek information.* *Yes, I frequently seek information. Yes, I seek information but not frequently. Yes, I sometimes seek information".* *"Yes, at least twice a month.* *Yes, I seek information very frequent* *Yes, I sometimes seek information* *Yes, two to three times a month* *At least every week.* *I seek information weekly.* *No, I seek information just every three months".*
What method do you normally use when seeking hepatitis B and C related information?	*"I normally browse through the internet. I normally read about diseases from books. I normally read books. I normally watch television programs. I normally use my mobile phone. I normally read my newspapers".* *"I normally watch television programs. I normally use my mobile phone. I normally read my newspapers. Asking questions during morning briefing in the hospital. I normally read my newspapers".* *"I normally ask nurses at the hospital during my visits to the hospital. I normally ask questions from health professionals. Asking questions to doctors during consultations, I normally ask people questions. I normally go to the hospital to find out. I normally ask questions from the nurses".*

5.2.3. Access and Use of Information by HBV and HCV Patients

Table 5.4: Access and Use of Information by HBV and HCV Patients

Research Question *2* *What information sources are accessible to you when seeking health information on HBV and HCV?*	*I access health information through social media discussions. I access health information through websites. I access health information through Internet sources. The accessible health information source to me are doctors and nurses.* *I access health information through doctors and nurses. I access health information through friends, doctors, using Google. I access health information through my phone. The accessible health information source to me is media sources: TV.* *The accessible health information source to me is only doctors and nurses. I access health information by reading newspapers. I do not have a source. I access health information through doctors and nurses. I access health information through nurses.* *I access health information sources during my hospital visits. I access information through nurses. I access information during counselling from health professionals. I access health information through the internet.* *I access health information through Television and radio. I access health information sources through my magazines. I access health information sources through my Television. I access information during counselling from health professionals.* *I access health information through doctors and nurses. I access health information through doctors and nurses. I access health information sources through doctors and other health professionals.*

What characteristics of information sources influence your decision to seek information on hepatitis B and C through that source?	*"I was influenced by the fact that social media sources are very accessible to me. I was influenced because websites are very accessible to me. I was influenced because the Internet is very accessible to me, and information is always available".* *"I was influenced because doctors and nurses are knowledgeable, and I trust them. I was influenced because I had access to them. I was influenced because they are straightforward and always available. I was influenced because they can listen to me and solve my problems".* *I was influenced because using a mobile phone is easier for me and always available. I was influenced because I trusted in the information they provided. I was influenced because newspapers are easily accessible to me. Honestly, I do not know why, and I have no idea.* *I was influenced because doctors and nurses are easily accessible to me. I was influenced because they are knowledgeable and trustworthy. I was influenced because the information provided is relevant to my need for information. I was influenced because I had access to them.* *I was influenced because I was able to understand all information they provided. I was influenced because I have access to information through the Internet. I was influenced because I have access to my sources. I was influenced because the information sources were easily accessible.* *I was influenced because the information sources were easily accessible. I was not influenced, but I understood all information provided. I was influenced because I have access to accurate information. I was influenced because they are very reliable. I was influenced because the information sources were easily accessible.*
How important is your information source to meet	*"The source of information is very important to me because information received must be reliable. My source of information may not be too critical, but I can use it for my health needs. My source of information is*

your information needs on hepatitis B and C?	*essential to me because it must be accessible. Information source is significant to me because they must be accessible. Information source is vital to me.* *Information source is essential to me because they must be accessible. Information source is very important to me. Information source is very important to me. Information source is essential to me because they must be accessible. My information source is essential for record purposes.* *"I have no information source. Information source is essential to me. Information sources are essential to me because they help me be well informed. Information source is critical to me. Information source is significant because the information they provide is relevant to my needs.* *I Information source is essential to me because the information source is very reliable. Information source is essential to me because they are very simple. Information source is essential because it must be understandable.* *Information source is essential to me because I was able to understand them. Information source is essential to me because it was easily accessible.* *I Information source is essential to me because the information source is very reliable. Information source is critical to me because they are easily accessible. Information source is significant because they are understandable. Information source is essential to me because they are reliable.*
Would you say that you are satisfied with the health information you received?	*"Yes, I can say that I am satisfied with the information received".* *"Yes, I can say that I am satisfied, but not all the time".* *"Well, I cannot say that I am satisfied".* *"I am not satisfied".*

	"Yes, I am satisfied".

5.2.4. Policies and Resources Supporting HBV and HCV Information Provision and Use.

Table 5.5: Policies and Resources Supporting Information Provision and Use on HBV and HCV

Research Question *3* *Are you aware of any policy related to information use on hepatitis B and C by patients at Ngwelezane District hospital?*	*"Yes, I am aware that patient information is very confidential".* *"Yes, I am aware only doctors can use it".* *"No, I am not aware".* *"No, I am not aware."*

5.2.5. Counselling and Education for HBV and HCV Patients at Ngwelezane Tertiary Hospital

Table 5.6: Counselling and Education Program for HBV and HCV Patients

Research Question *4.* *Are you aware of the counselling and education programme organised for hepatitis B and C*	*"I am not aware of any format of information dissemination*." *"Yes, I am aware".*

patients in Ngwelezane hospital?	
What format of instructions for information dissemination are they using, if you are aware?	*I am aware because I received counselling from health professionals. I received counselling from health professionals. I am not aware of a program, but I still receive counselling from doctors and nurses every morning. I am not aware of any format of information dissemination.* *Sometimes the doctors come to give us instructions face to face. I am not sure. I always read information from posters and notice boards in the hospital. I listen to counselling from doctors during my visits. Although I am not aware of the instructions formats, I only listen to counselling from doctors during my visits.* *Although I am not aware of any program, I always listen to counselling from doctors during my visits. I do not know about any program, but I listen to counselling from doctors during my visits. I read about health information through the posters and notice boards in the hospital* *I also listen to information from doctors and nurses during a morning briefing. I also listen to information from doctors and nurses during the morning briefing*
Are the instructions provided relevant to your health problems?	*Yes, the instructions are very relevant to my health needs. I am not sure if they are very relevant to my health needs. I am not sure.*

5.2.6. Factors Contributing to the Use of Information by HBV and HCV Patients

Table 5.7: Factors Contributing to the Use of Information by HBV and HCV Patients

Research Question *5* *What factors motivated you to seek information on hepatitis B and C?*	*I have trust in the information provided. I am not sure. I want to gain health knowledge. I want to improve my health condition. I have trust in the information received. The most important motivating factor is that health information is vital to my health needs.* *My motivating factor is that I want to gain health knowledge. I was anxious about my state of health. I was curious to know my health condition. I am not sure, but health information is essential to my health needs.* *My motivating factor is that I want to improve my health condition. I seek health information because I trust that information will help me. I am unsure, but health information is vital to my health needs.* *I seek health information to stay well informed. I seek health information because I believe it will help me get healed. I seek health information to help me evaluate the danger involved in not getting treated. I only seek for information to increase my chances of survival.*
Based on your experiences of the diseases, how important is information seeking related to your use of information?	*Seeking Information is very important for improving my health. Seeking Information is very important for me to stay informed. Seeking Information is very important for me to seek better treatment.*
Do you believe in the	*"I believe health information is useful for my health".*

usefulness of hepatitis B and C related health information?	*"Yes, I believe health information is useful for my health".*

5.2.7. Challenges with HBV and HCV Patients Information Seeking and Use

Table 5.8: Challenges Patients are facing in Seeking and Using Information

Research Question 6 *What challenges do you normally face when seeking hepatitis B and C related information?*	*I don't have any challenges. First, I am a very shy person, so I find it difficult to ask questions from doctors and nurses. I find it difficult to ask questions from doctors and nurses.* *My only challenge in accessing information is just the delay on the line before I can see the Doctors. I could not communicate the way I wanted because I was timid.* *I do not dare to ask questions from doctors and nurses about my problem. I could not access my hospital files. I could not access information in the hospital.* *I usually experience a delay in meeting my doctors during visit days. I sometimes don't have access to my hospital file to know precisely my problem.*

5.2.8. Guidelines for HBV and HCV Patients Information Provision, Access and Use

Table 5.9: Guidelines Recommended for HBV and HCV Patients Information Provision, Access and Use Patients

Research Question *In your own*	*Hospital management to improve on information provision to patients. "Hospital management staff should make information available to*

opinion, what guidelines would you recommend for the hospital management to follow in providing disease information for patients as the way forward?	*patients about their health problems. Doctors and nurses must be patient and nicer to their patients".* *"In my own opinion, patient care is good, but I think we also need to avoid delays on the line. The doctor-patient relationship should be improved. Hospital staff should provide health information, especially about the disease. In my opinion, patients' queries should be attended to without delay".* *"I don't have any recommendation. Hospital staff should provide enough information to patients. Doctors always explain the risk of disease infection to patients, no matter how bad. Doctors and nurses are to ensure the privacy of patients' information and make information available to them".* *"Doctors are always to make information available and discuss the risk involved in spreading diseases. Hospital staff are to provide the necessary information and make it accessible to patients".* *"I have no suggestion because I am well treated. Doctors and nurses are to make information available to patients to improve communication and understanding".*

5.3. QUALITATIVE DATA ANALYSIS AND PRESENTATION: SENIOR STAFF/ADMINISTRATOR

5.3.1. Bio-Data of Participant: Senior Staff/Administrative Officer

Data were collected from a key participant who consented and availed himself of an interview. The participant was a senior staff member employed by Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa. The participant was a male staff between the age of 40- 49 (See table 5.2), interviewed based on policies guiding patients' information provision access and use. Other questions were based on healthcare providers' challenges in providing information. The critical participant was knowledgeable about health information policy in the hospital

setting. The data collected were coded and analysed precisely as it is. The following are the developing themes.

5.3.2. Policies and Resources Supporting Information Provision and Use on HBV and HCV

Table 5.10: Policies and Resources Supporting Information Provision and Use on Hepatitis B and C (Senior Staff/Admin)

Research Question	*Responses*
Are you aware of any policy related to information on hepatitis B and C by patients at Ngwelezane District hospital?	*Yes, I am aware that hospitals have a policy guiding patients' information to protect patients information. They also provide information to patients from time to time to prevent the spread of disease and control infections. Sometimes information is provided in a bulletin, or you can find them on the noticeboard or the hospital website.'*

5.3.3. Challenges that Health Professionals are Facing in Providing Information

Table 5.11. Challenges that Health Professionals are Facing in Providing Information

Research Questions	**Patients Responses**
What challenges do you usually face when providing information to patients?	*The challenge I usually have about information provision for patients is that some are sometimes less cooperative, while*

	some patients want information in their local language. Apart from these, I do not have any challenges with patients. I also do not have any challenges accessing patients' information or how to use patients' information.

SECTION B:

5.4. QUANTITATIVE DATA ANALYSIS AND PRESENTATION: DOCTORS AND NURSES

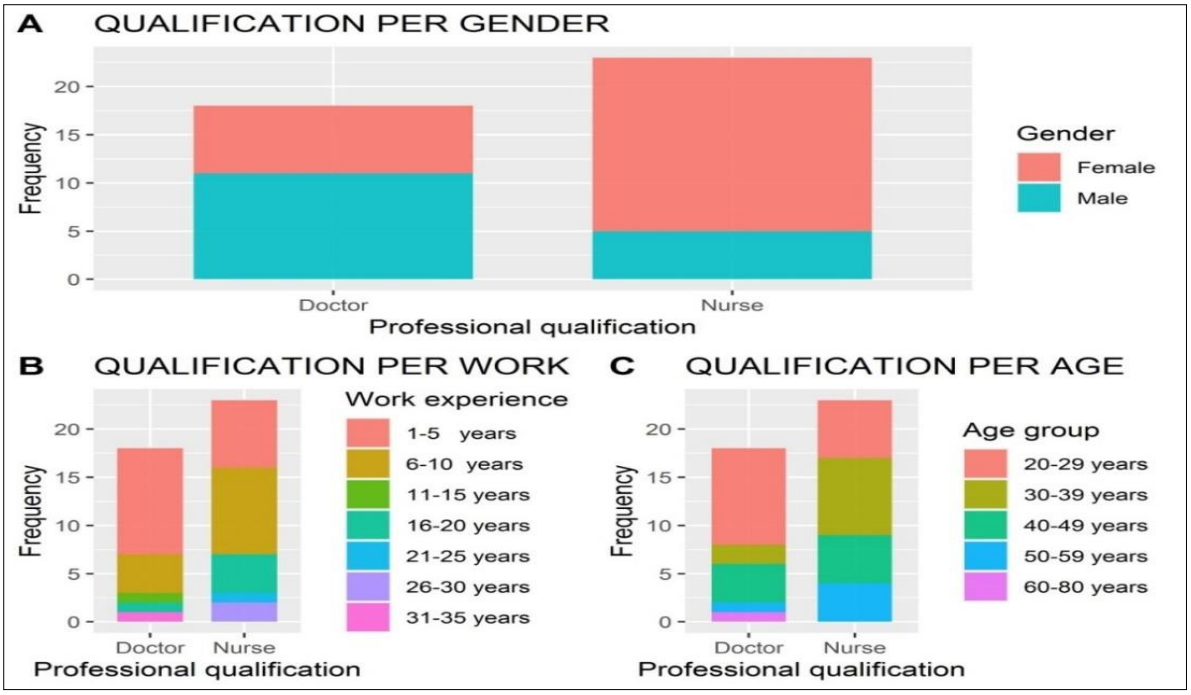
5.4.1. Bio-Data of Respondents: Doctors and Nurses

This section comprises the total number of respondents targeted for cluster sampling. A group of forty-one respondents who consented and availed themselves of the study were recruited for quantitative data collection. These include 18 doctors and 23 nurses based on 85% confidence interval (CI). Table 4.5 (page 109) illustrates the sample size calculation for up to four confidence intervals (CI) and the total number of participants. Among the respondents that consented to complete the self-administered were 18 doctors and 23 nurses. This medical personnel were recruited in the specific units providing treatment for the HBV and HCV patients. This was in line with the estimated sample size's 85% confidence interval (CI).

The researcher sought to determine the bio-data of the doctors and nurses who consented and availed themselves to filling the questionnaire. The analysis shows that 18 (44 %) doctors and 23 nurses (56%) filled out the self-administered questionnaire. The “ggplot geometric” bars display a comprehensive repartition of the professional qualification of respondents (Figure 5.2.1A). However, gender distribution was disproportionate. Eighteen female nurses (78%) against five male nurses (22%). There were more male doctors, 11 (61%) than female doctors, 7 (39%) [Figure 5.1A]. The distribution of the professional qualification (doctor and nurses) per work experience revealed that the dominant work experience groups for both doctors and

nurses were 1-5 years and 6-10 years (Figure 5. 1B). Doctors and nurses with over ten years of work experience were not many. All work experience groups were represented by doctors, while there was no representation for work experience between 31 and 35 years for patients. More than 11 (60%) doctors and nurses were aged between 20 and 39 years old. The age distribution per qualification was nearly equitable, but doctors had one representation in the largest age group (60-80 years old), unlike patients (Figure 5. 1C). Figure 5.1 presents gender, work experience, and age group distribution per respondents' qualifications (Doctors and Nurses)

Figure 5.1: Doctors and Nurses' Gender, Work Experience, and Age Distribution

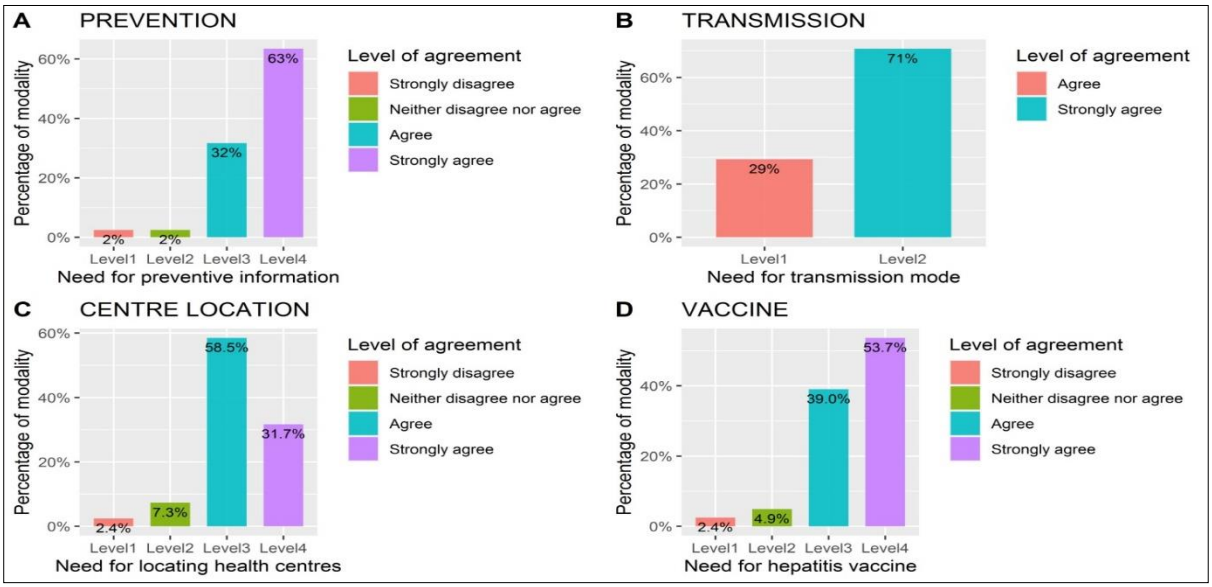


5.4.2. Information Needs and Seeking Behaviour

The researcher sought to determine patients' information needs and seek behaviour from doctors and nurses using self-administered questionnaires. The analysis shows that patients need information on "prevention" (n=11; 63%), which indicates that both doctors and nurses strongly agreed that prevention is crucial information needed by patients. Only 26 (32%) agreed, and only a few 1(2%) disagreed (Figure 5.2A). Concerning the need for information on the "transmission mode of hepatitis," 29 (71%) participants (doctors and nurses) strongly agreed that patients need this information. Only 11 (29 %) agreed, and no participants disagreed (Figure 5.2B). The views of doctors and nurses about the need for patients to know the location of relevant healthcare centres were mitigated. Only 13(31.7%) of participants strongly agreed

that patients need this information. Meanwhile, 24 (58.8%) agreed that it is needed. Only 7.3% objected (Figure 5.2C). Regarding vaccines, 22 (53.7%) participants strongly ascertained that the vaccine information details are needed for patients, and there were only a few objections (1; 2.4%) (Figure 5.2D). Figure 5.2 illustrates doctors' and nurses' views about the need for HBV and HCV information regarding prevention, transmission, centre location, and vaccine. Figure 5.2 illustrates the perspectives of doctors and nurses about the need for information by patients regarding prevention, transmission, centre location and vaccine

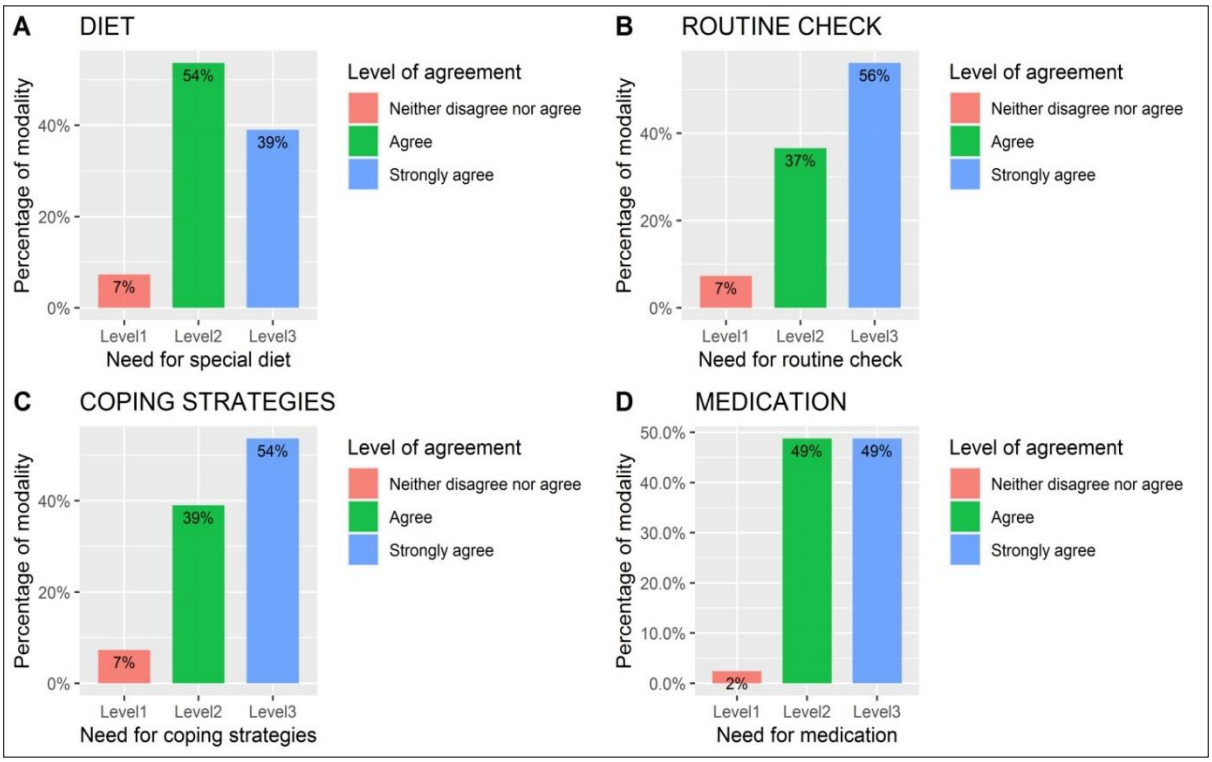
Figure 5.2: Perspectives of Doctors and Nurses' about the Need for Health Information



Source: *Generated by the researcher*

Concerning diet, 22 (54%) and 15 (39%) participants, respectively, agreed and strongly agreed that diet information details are very important for patients to know (Figure 5.3A). Routine check-ups were also judged important by 23 (56%) participants (Figure 5.3.3B). Similarly, for coping strategies, 22 (54%) participants strongly agreed that patients need information on coping strategies (Figure 5.3C). Finally, about medication, 20 (49%) participants strongly agreed, and 20 (49%) agreed that patients need information concerning regular medication (Figure 5.3D). Figure 5.3 illustrates doctors and nurses' views about the need for information regarding diet, routine checks, coping strategies, and medication. Figure 5.3 illustrate the responses received based on the perspectives of doctors and nurses about patients information seeking information regarding diet, routine check, coping strategies, and medication.

Figure 5.3: Perspectives of Doctors and Nurses' based on Patients Information Seeking



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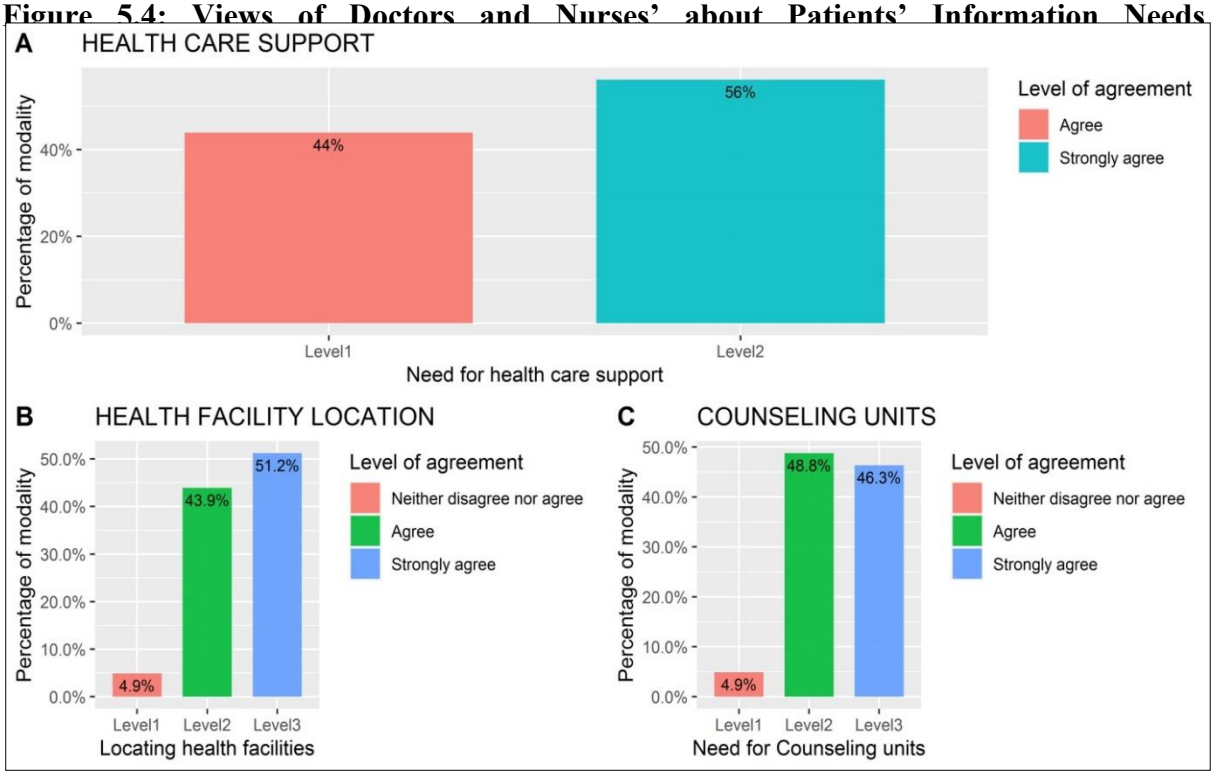
Furthermore, analysis shows that regarding healthcare support, 23 (56%) participants strongly agreed that patients need to receive proper healthcare support. Only 18 (44%) respondents agreed, and they have no objection (Figure 5.4A). Health facility location and counselling units had comparable trends; close to 21 (50%) participants strongly agreed that these pieces of information are important and needed by the patients. Figures 5.4B and 5.4C illustrate doctors and nurses' views that patients need information on healthcare support, health facility location, and counselling units.

Figure 5.4: Views of Doctors and Nurses' about Patients' Information Needs



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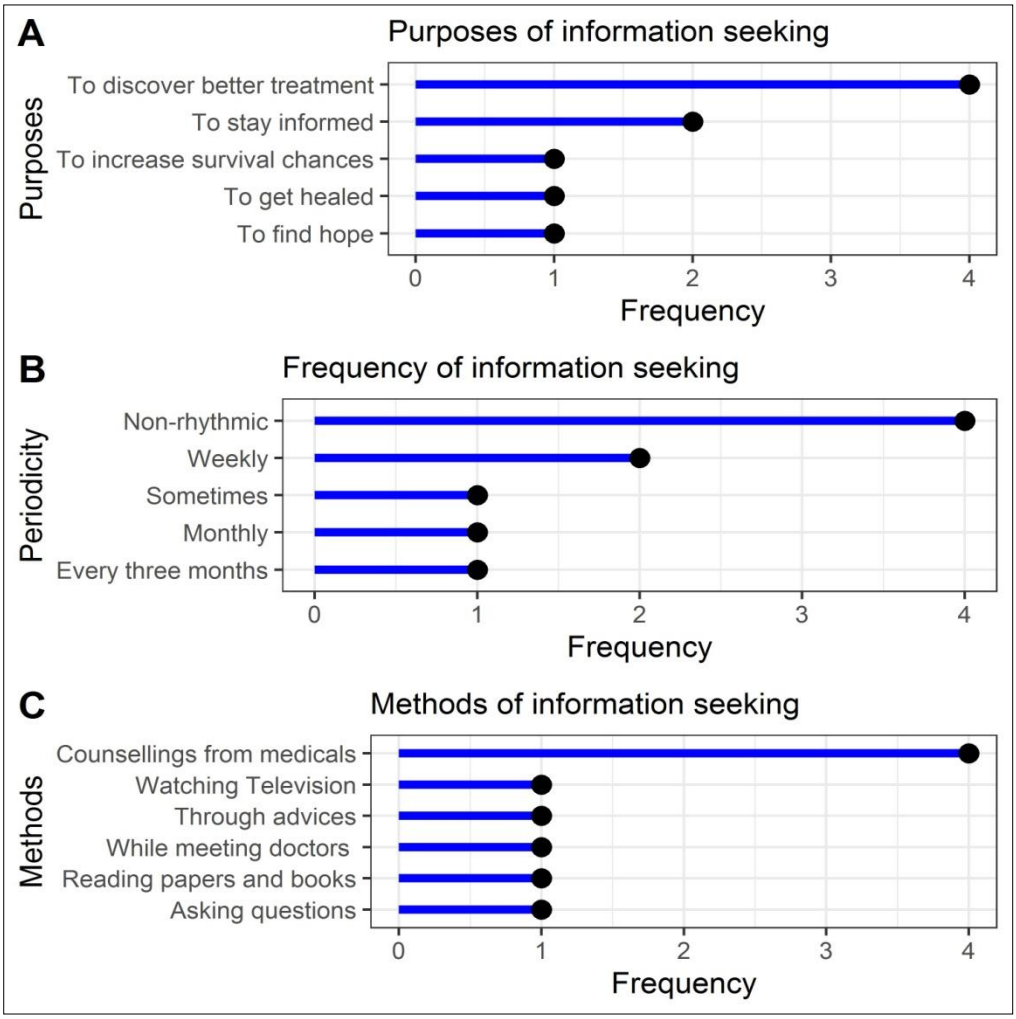
5.4.3. Information Access and Use by Doctors and Nurses

5.4.3.1. Purposes of Information Use

The researcher sought to establish information access and use. Doctors and nurses had many purposes for using patients' information. For example, they used patients' information to guide the management of diseases (25; 61%) [Figure 5.5A], to diagnose medical problems and illnesses (12: 58.5%) [Figure 5.5B], for enquiry and academic purposes (13; 34.1%) [Figure 5.5C], to decide for patients' treatment (18; 43.9%) [Figure 5.5D].

Figure 5. 5: Purposes of Information Use by Doctors and Nurses



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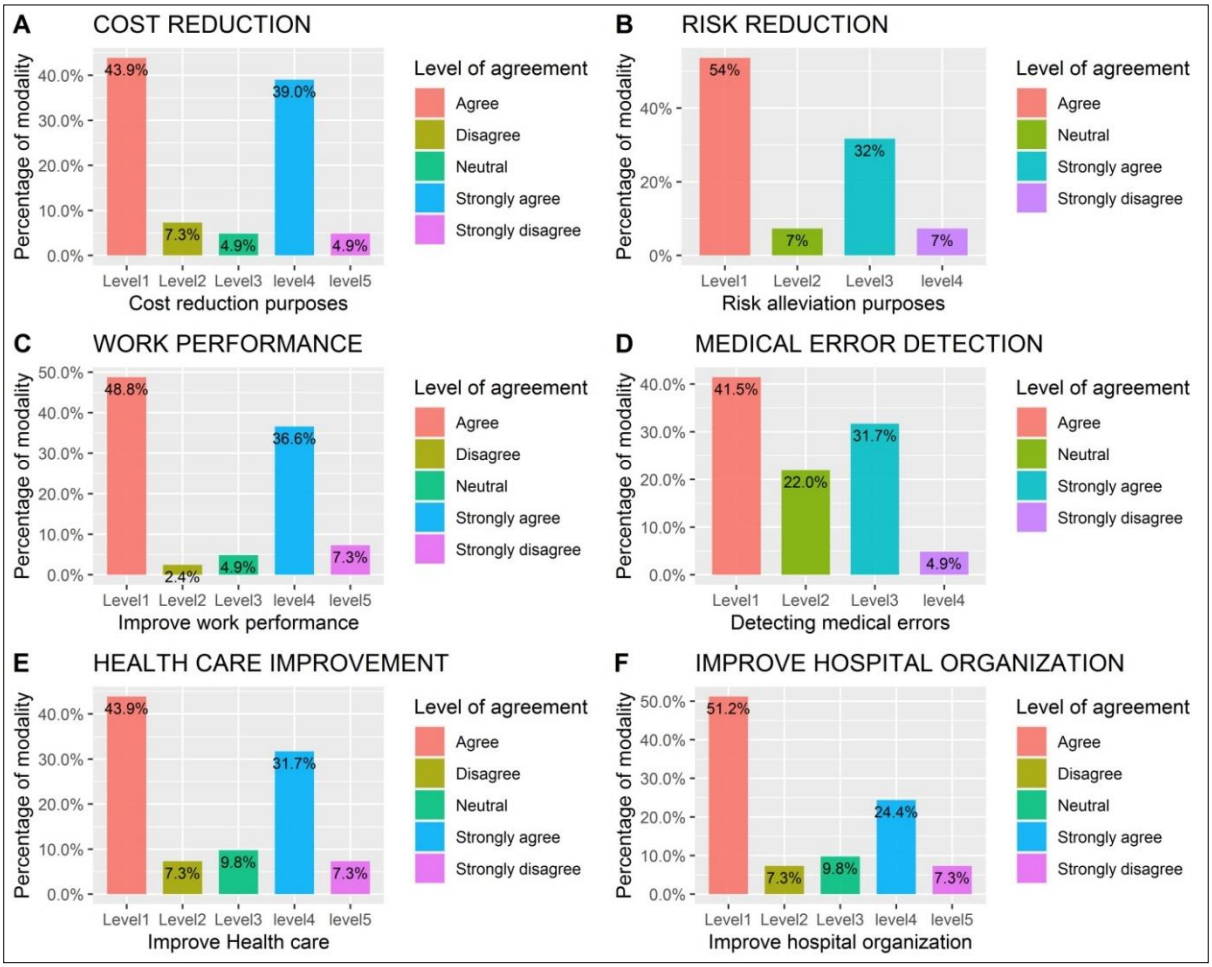
Information is needed to determine the affordability and costs of hospital management and to improve personal and professional communication between patients and doctors (18; 43.9%) [Figure 5.6A]; to ensure the care and treatment of patients whose lives are at risk (22; 54%) [Figure 5.6B]; to improve work processes and speed up work performances (20; 48.8%) [Figure 5.6C]; to detect adverse events and medical errors (17; 41.5%) _ [Figure 5.6D]; to improve the effectiveness of healthcare delivery and services provided to patients within the community (18; 43.9%) [Figure 5.6E], and finally to organise hospital procedures and protocols and administrative functions (21; 51.2%) [Figure 5.6F].

Figure 5.6: Purposes of Patients' Information Use by Doctors and Nurses

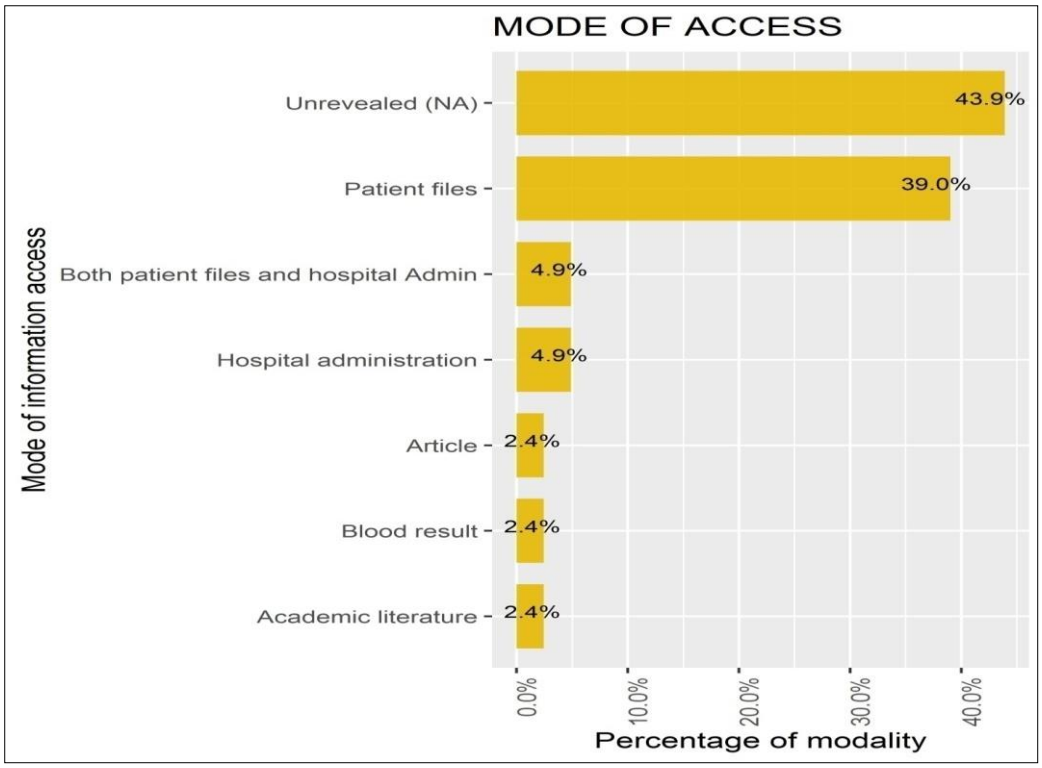


Source: *Generated by the researcher*

5.4.3.2. Sources of Patients Information Accessed and Used

Many sources of patient information were accessed and used by doctors and nurses for health-related information. The majority of the medical professionals used patients' files (n=16; 39%), while others accessed and used the hospital administrative staff (n=2; 4.9%). Sources also include articles from journals (n=1;2.4%), laboratory blood tests results (n=1;2.4%), and academic literature (n=1; 2.4%). However, (n=18;43.9%) respondents did not reveal other modes used to access patients' files (Figure 5.7). The empty (blank) entries were dominant.

Figure 5.7: Modes of Information Access Used by Doctors and Nurses

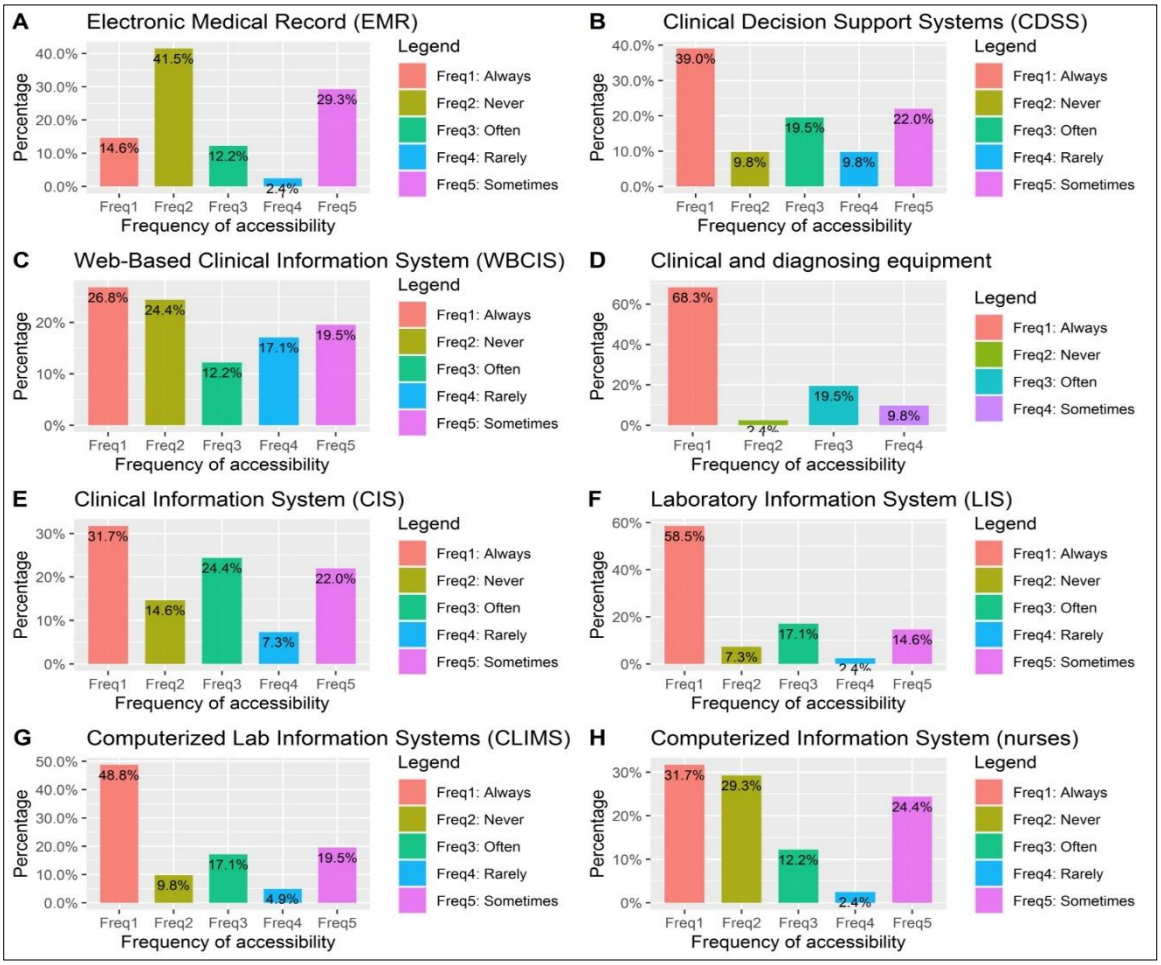


Source: *Generated by the researcher*

5.4.3.3. Types of Information Sources Accessible to Users

The types of information system that were the most accessible and used by doctors and nurses were in decreasing order: Clinical and diagnostic types of equipment [Always accessible at 28(68.3%) [Figure 5.8D], Laboratory Information system [always accessible at 24(58.5%) [Figure 5.8F], Computerised lab Information system (always available at 20(48.8%) [Figure 5.8G], Clinical Decision Support Systems (always accessible at 16(39%) [Figure 5.8B], Clinical Information System [always accessible at (13(31.7%) [Figure 5.8E], and Nurse's Computerised Information system [always accessible at 13(31.7%) [Figure 5.8H]. However, there was only one Information system that were not accessible or available by doctors and nurses. They include Electronic Medical Record (never accessible at 17(41.5%) [Figure 5.8A].

Figure 5. 8: Accessibility Information Systems by Doctors and Nurses



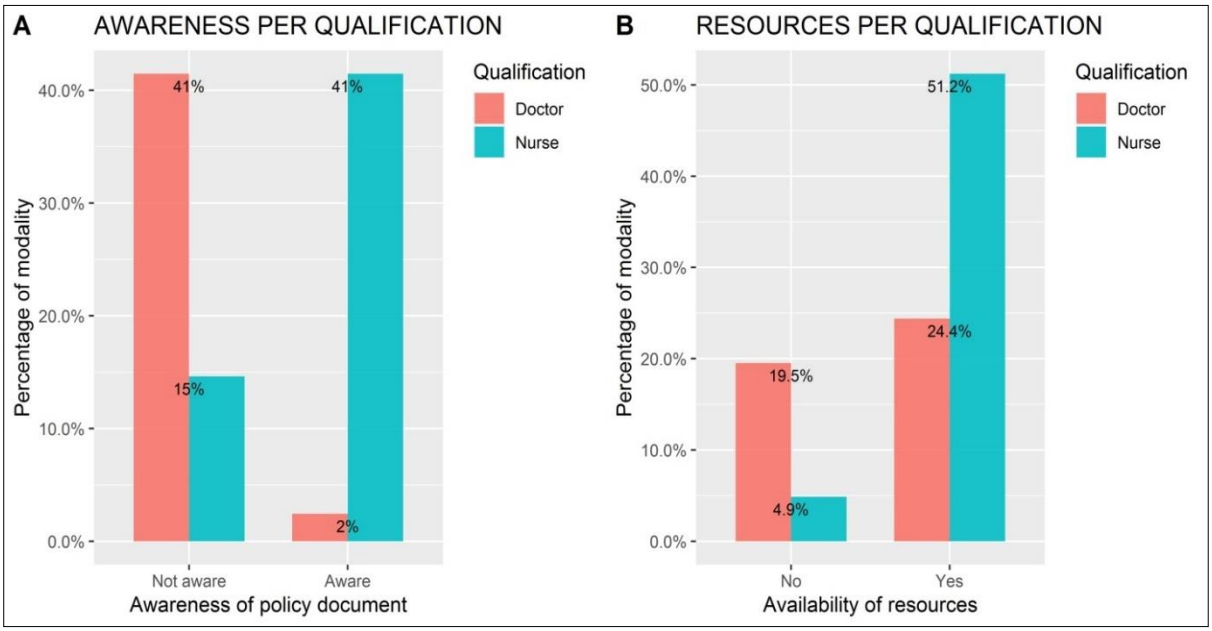
Source: *Statistically generated by the researcher*

5.4.4. Policies and Resources Supporting HBV and HCV Information Provision Access and Use

The researcher sought to establish awareness about the availability of hospital policy on patients information, available documents and resources guiding HBV and HCV patients' information provision, access and use. There were variations between the views of doctors and nurses. Only 17 (41%) doctors were not aware of the existence of the hospital's policy documents to support the use of information, while 17 (41%) of nurses were aware (Figure 5.9A). Only 1 (2%) doctor was aware of such documents. A similar gap was observed in the availability of resources per qualification. Only 10 (24.4%) doctors had information resources (that will help patients to cope with social or psychological challenges while receiving treatment), whereas 21 (51.2%) nurses had the information resources (Figure 5.9B). Figure 5.

9 illustrates the awareness of the hospital policy, documents (A) and availability of resources (B) pre-qualification.

Figure 5. 9: Awareness of the Hospital Policy on Information Provision and Access



Source: *Generated by the researcher*

5.2.4.1 Analysis Of Influences Between Categorical Variables

The researcher sought to justify the outcome of awareness of information policy, documents and resource availability using a Chi-square test. A Chi-square test was used for six couples of quantitative variables to ascertain possible influences between them. It was revealed that four couples of variables had a "p-value" parameter that was inferior to 0.05 (Table 5.1; hatched lines with a red asterisk). Table 5.6 shows the summary of chi-square test between 6 couples of categorical variables, the degree of freedom (Df), the chi-square value (X-Squared), and the statistical parameter (P-Value) for each comparison.

Table 5.12: Summary of Chi-Square Test between 6 Couples of CV, (Df), X-Squared, and P-Value

N°	Coupled Variables	Df	X-squared	P-value
1	Qualification and awareness of policy	1	16.483	000004*
2	Qualification and availability of resources	1	5.1933	0.0226 *
3	Gender and awareness of policy	1	2.6522	0.1034
4	Gender and availability of resources	1	1.4186	0.2336
5	Department and availability of resources	7	18.677	0.0092 *
6	Department and awareness of policy	7	23.347	0.0014*

Source: *Generated by the researcher*. Stressed (*) and hatched lines denote a statistical difference in compared variables.

5.2.4.2 Awareness of Hospital Policy Documents by Gender

The analysis shows that the gender of participants did not have any influence on awareness of policy or their knowledge of the available hospital's resources. Figure 5.10 below displays a "mosaic plot" of the Chi-square test to compare qualification and awareness of the policy. Findings show that doctors are statistically not aware of the hospital policy documents compared to nurses. Figure 5.10 illustrates a mosaic plot of the Chi-square test comparing statistical differences between modalities of qualification of participants and awareness of the policy.

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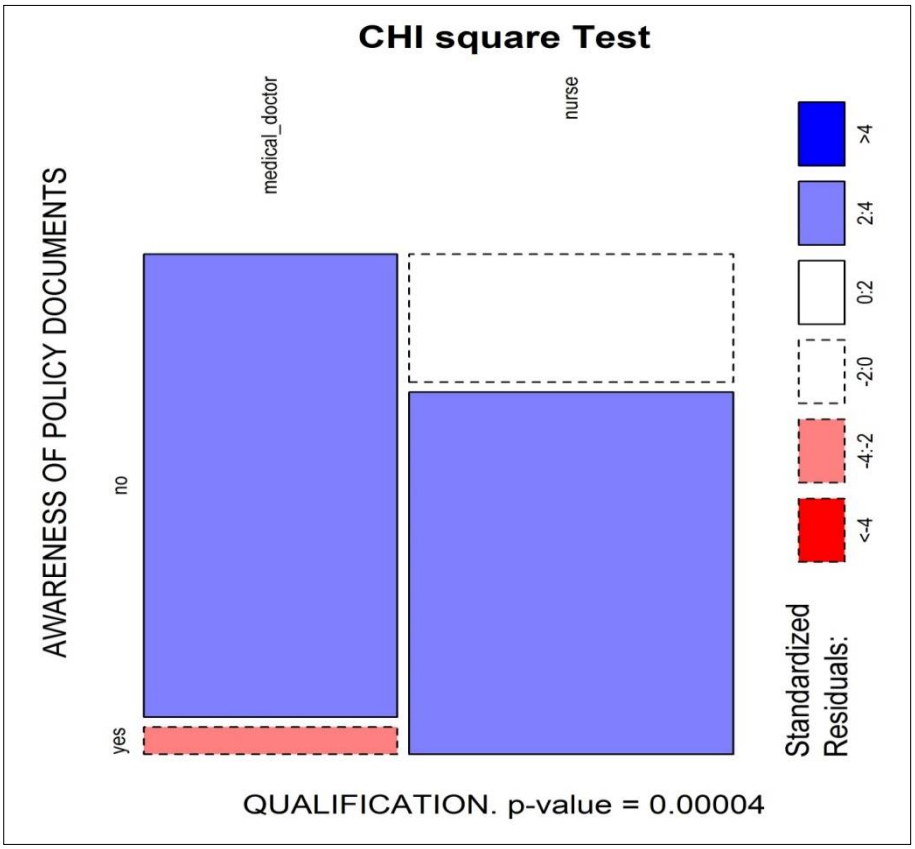
Figure 5.10: Differences between Modalities of Qualification of Respondents and Awareness of Hospital Policy



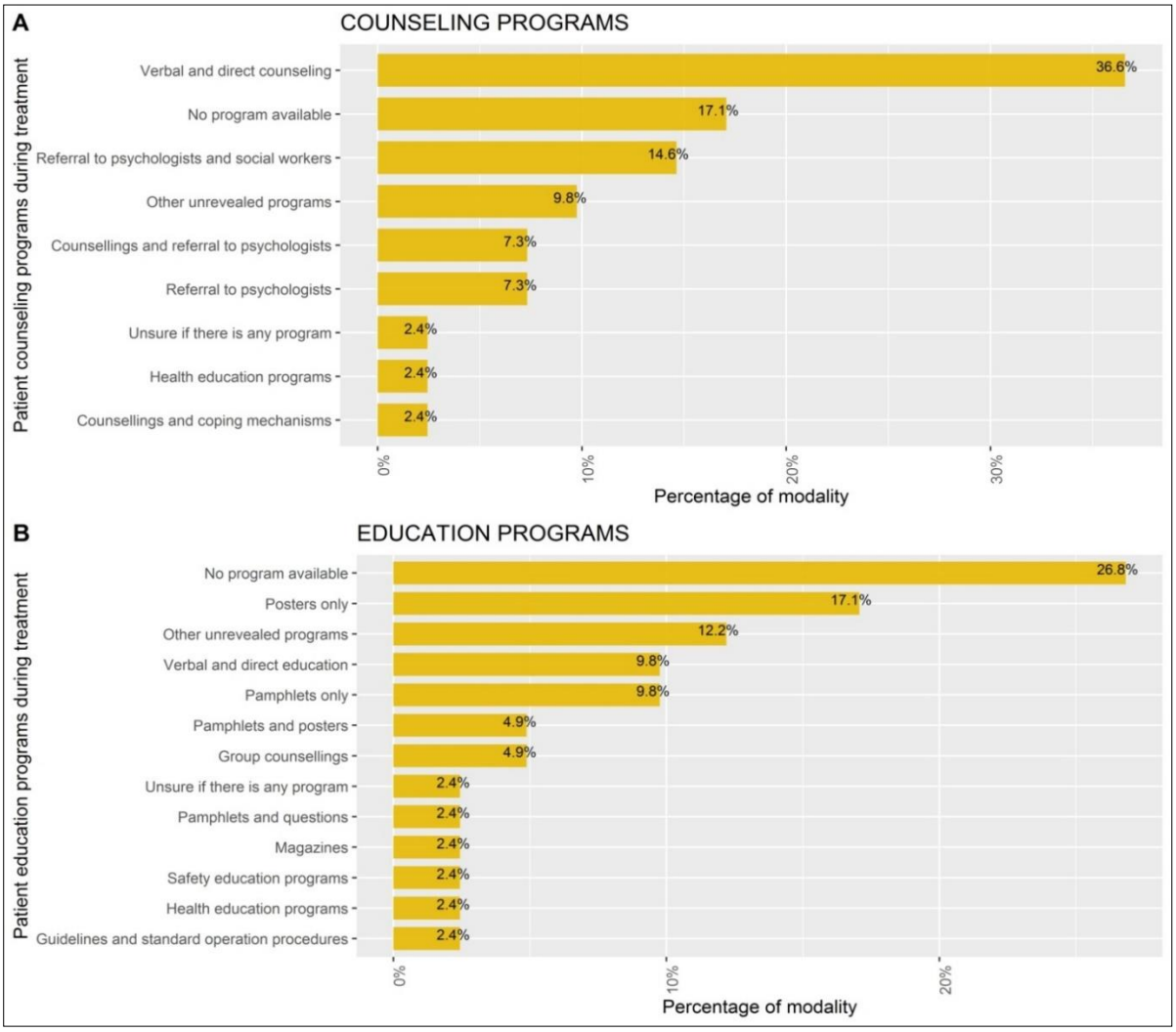
Source: *Generated by the researcher. Mosaic Plot of Chi-Square Test Comparing statistical differences between modalities of qualification of participants and awareness of the policy.*

5.4.5. Counselling and Education by Healthcare Professionals on HBV and HCV Patients' Information

The researcher sought to determine the role of healthcare professionals' counselling and education for patients receiving HBV and HCV therapy at Ngwelezane Hospital. The analysis shows that the majority (n= 15; 36.6%) of the doctors and nurses used verbal and direct counselling to provide information during consultations and treatment [Figure 5.11A]. This was followed by "referral to psychologists and social workers" (n=15;14.6%), some also used "both counselling and referral to psychologists" (n=3; 7.3%), "health education programme" (n=1;2.4%), and "both counselling and other coping strategies" (n=1;2.4%). Most respondents admitted no education

programme was available in the hospital (n=11; 26.8%) [Figure 5.11B]. However, posters were the most recurrent available education program (n=1; 17.1%). In addition, other education programmes were mentioned, such as the use of pamphlets (n=2; 4.9%), group counselling (n=2; 4.9%), and magazines (n=1; 2.4%). Figure 5.11 illustrates the available counselling and education programmes for patients.

Figure 5.11: Available Counselling and Education Programs Provided for Patients

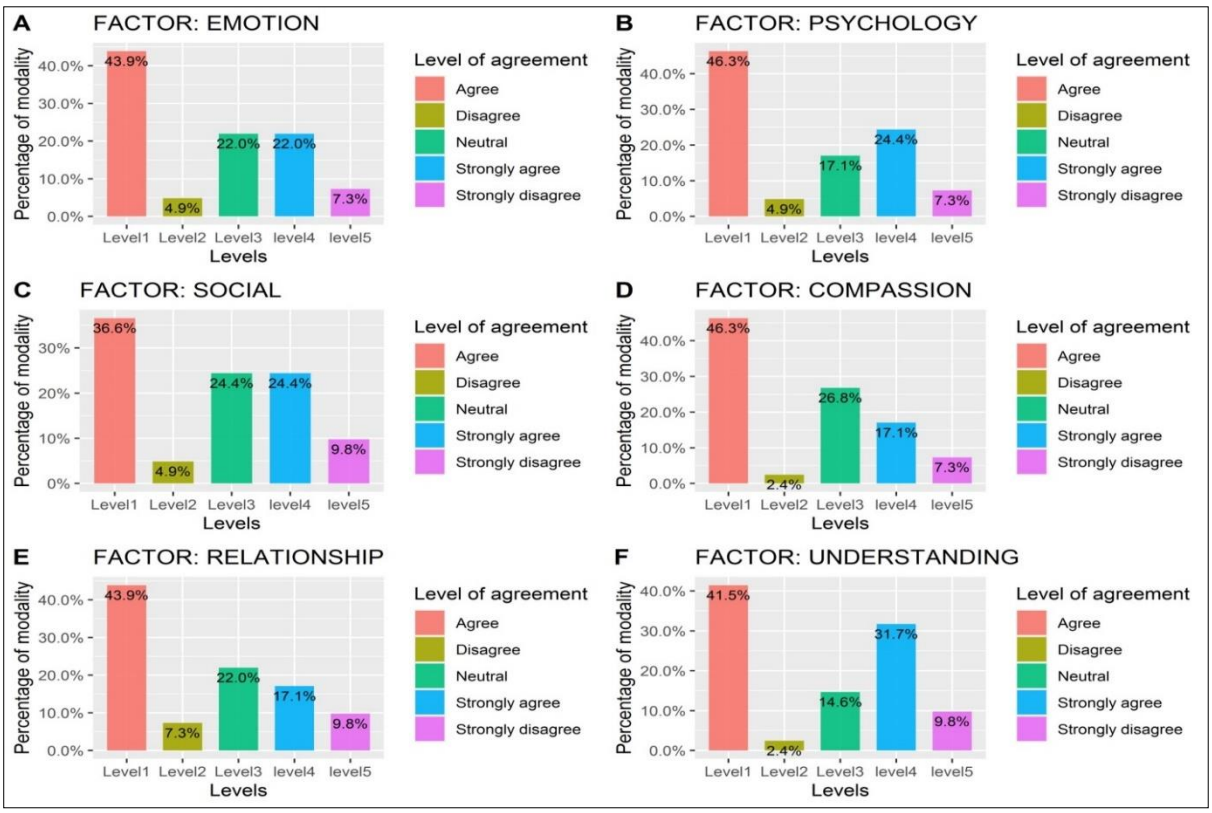


Source: *Generated by the researcher*.

5.4.6. Factors Contributing to HBV and HCV Patients' Information Use

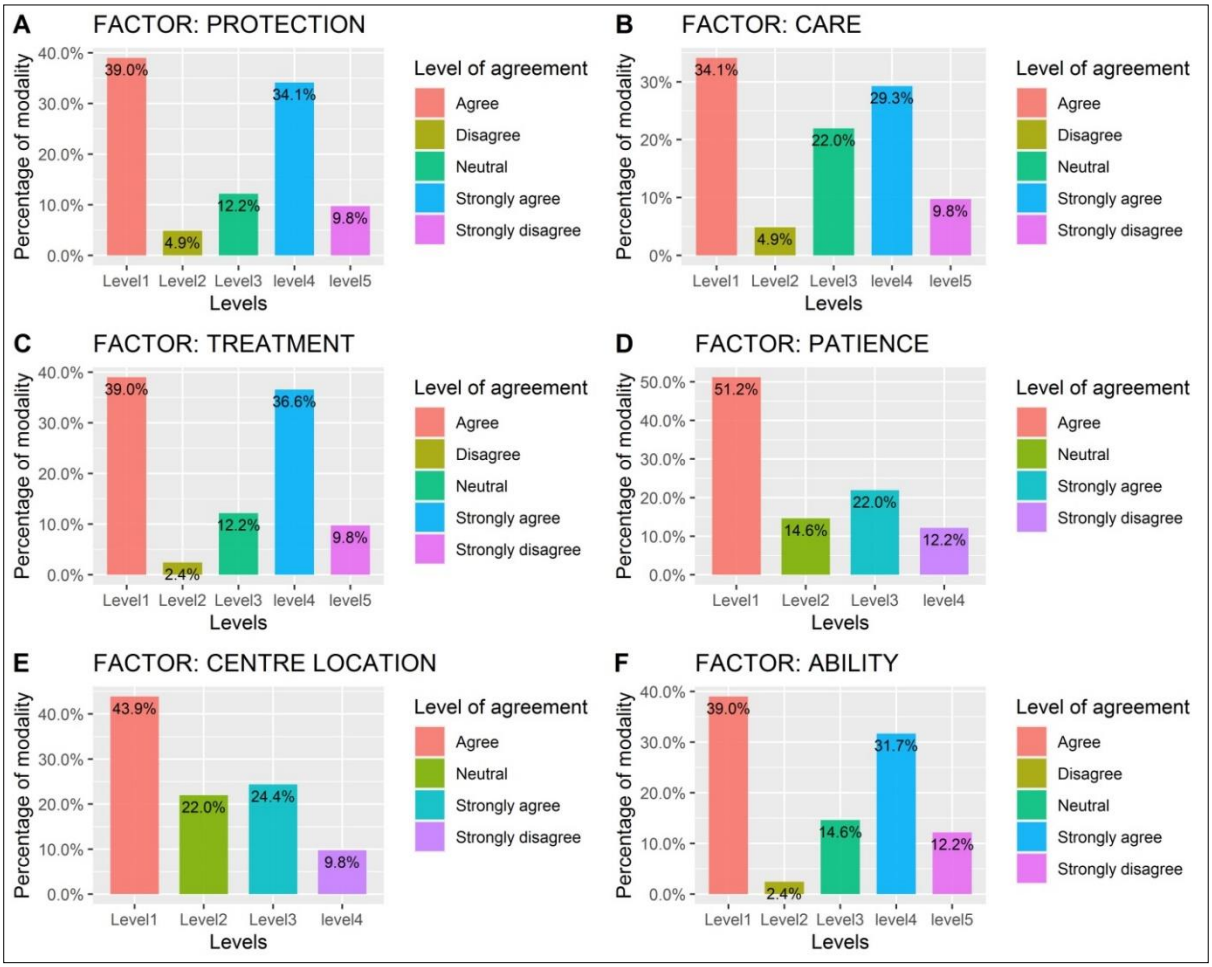
The researcher sought to ascertain the factors contributing to the use of information by HBV and HCV patients. According to the medical professionals (doctors and nurses), 12 factors contributed to the use of information by patients. In a decreasing order, the factors are patience when giving medication (n=21; 51.2%) [Figure 5.13D]; compassion and empathy (46.3%) [Figure 5.12D]; psychological support (n=19; 46.3%) [Figure 5.12B]; emotional support (n=18; 43.9%) [Figure 5.3.12A]; improvement of interpersonal relationship (18; 43.9%) [Figure 5.3.12E), health centre location (18; 43.9%) [Figure 5.3.13E]; understanding the nature of disease (17; 41.5%) [Figure 5.12F]; protection against other infections (n=16; 39.3%) [Figure 5.13A], ability (n=16; 39%) [Figure 5.13F]; treatment (n=16; 39%) [Figure 5.13C]; social support (n=15; 36.6%) [Figure 5. 12C], and care (n=14; 34.1%) [Figure 5.13B]. Figure 5.12 illustrates the factors contributing to the use of information by HBV and HCV patients at Ngwelezane Hospital (part A).

Figure 5.12: Factors Contributing to HBV and HCV Patients' Use of Information



Source: *Generated by the researcher*.

Figure 5.13: Factors Contributing to HBV and HCV Patients' Use of Information



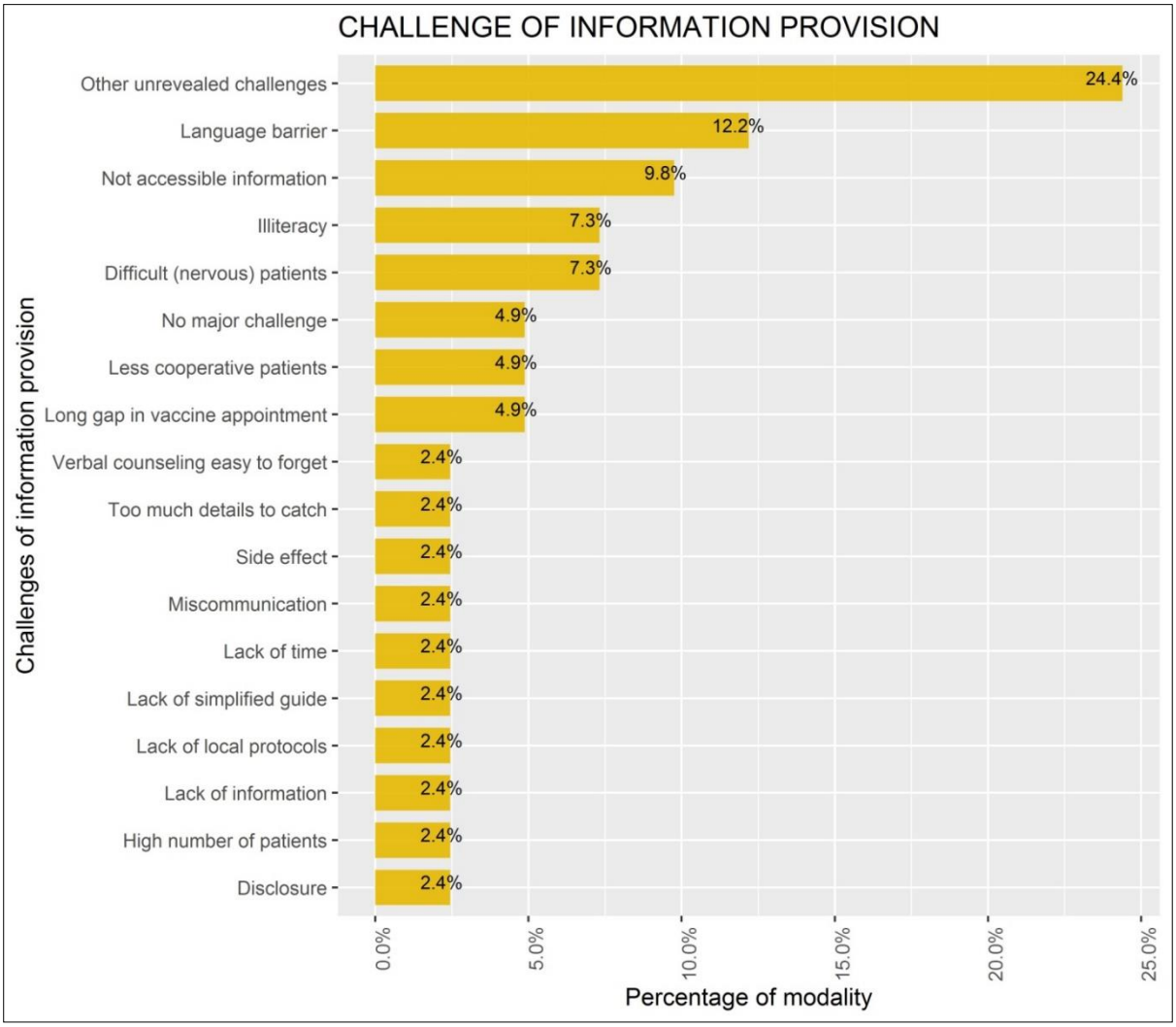
Source: Statistically g*enerated by the researcher*.

5.4.7. Challenges with Information Provision for HBV and HCV Patients' Use

The researcher sought to establish the challenges that doctors and nurses encountered in providing HBV and HCV information to patients. The challenges, in decreasing order of occurrence, were language barrier (n=5; 12.2%), inaccessibility of information (n=4; 9.8%), illiteracy of patients (n=3; 7.3%), the nervousness of patients (n=3; 7.3%), less cooperative patients (n=2; 4.9%), a long gap for vaccine appointment (n=2; 4.9%), oral counselling (n=1; 2.4%), and other minor challenges (Figure 5.14). Unrevealed challenges were dominant (n=10; 24.4%). In contrast, doctors and nurses encountered many challenges in accessing HBV and HCV patients' information. These included, in decreasing order of frequency, inaccessibility of information (n=4; 9.8%), language barrier (n=2; 4.9%), the confidentiality of patients' files

(n=2; 4.9%), and other minor challenges (Figure 5. 15). The majority of respondents revealed no challenges or issues with the information provided to patients (n=20; 48.8%).

Figure 5.14: Challenges Facing HBV and HCV Patients' Information Provision and Use among Doctors and Nurses

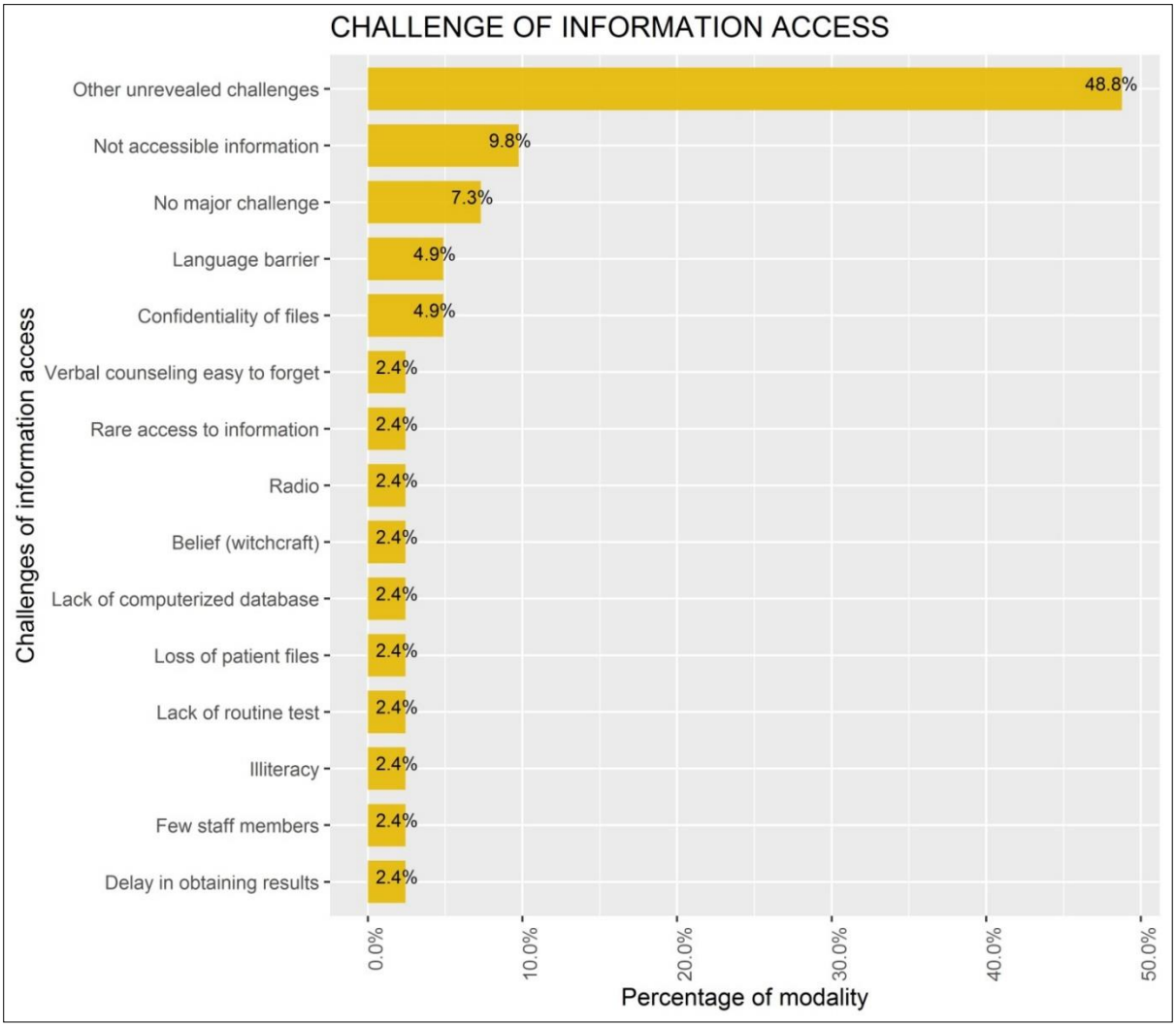


Source: *Generated by the researcher*.

Doctors and nurses also faced the challenge of inaccessibility of information. Four (n=4; 9.8%) respondents declared that there was no structured and computerised database for patients' health-related information. In addition, they noted that manually sorting patients' files is very traumatic and time-consuming. Some other challenges reported are loss of patients' files and the insufficiency of staff members (n=1; 2.4%) [Figure 5.15]. Patients' beliefs and perceptions were also part of the limitations of information provision. For example, believing that

medication won't work because one was bewitched makes it difficult for patients to learn. Figure 5.15 illustrates the challenges of information access by doctors and nurses in percentages.

Figure 5.15: Challenges Facing Information Access and Use among Doctors and Nurses



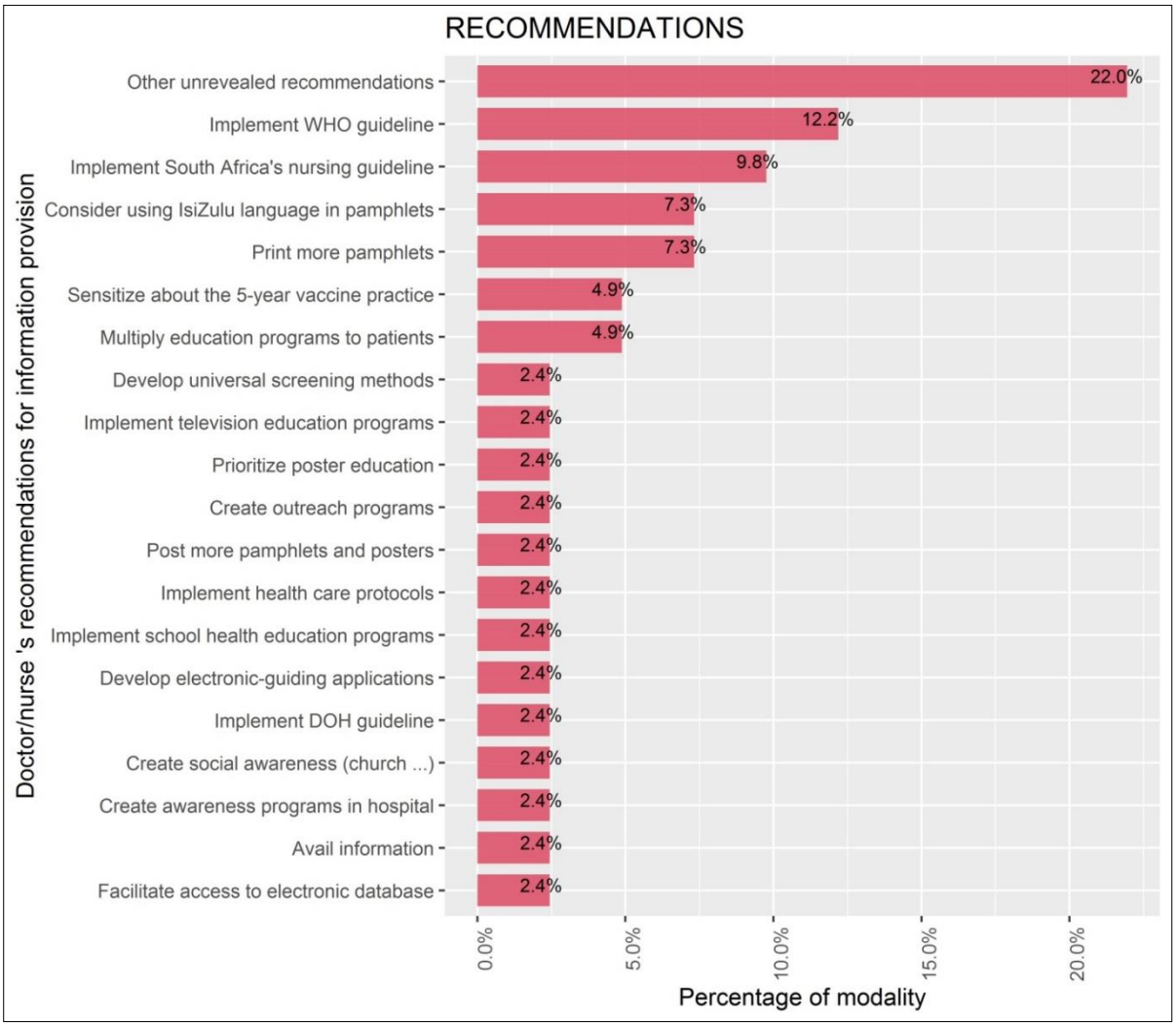
Source: *Generated by the researcher*.

5.4.8. Guidelines Recommended for Improving HBV and HCV Patients' Information Provision and Use

The researcher sought to determine the guidelines recommended for HBV and HCV patients' information provisions to meet patients' information needs, information seeking and use. Based on the challenges mentioned early, doctors and nurses recommended the following to sustain the provision of information to patients and facilitate information use and access according to WHO guidelines. The WHO guideline is widely defined as any information published by WHO that incorporates clinical practise or public health policy recommendations (World Health Organization, 2021). The recommendations are statements intended to assist end-users in making informed decisions about whether, when, and how to carry out specific actions such as clinical interventions, diagnostic tests, or public health measures to achieve the best possible individual or collective health outcomes. One of WHO's primary duties is the establishment of worldwide standards to ensure the proper use of evidence.

This study implements the World Health Organization guideline for the provision, use, and access of information as the most recommended solutions (n=5; 12.2%); implements South Africa's nursing guideline (n=4; 9.8%) [Figure 5.16]; and produces pamphlets in the local language, isiZulu, (7.3%). Other additional recommendations included implementing the Department of Health guideline (n=1; 2.4%), creating social awareness (n=1; 2.4%), creating an electronic database (1; 2.4%), creating awareness programme in the hospital (n=1; 2.4%) and churches (n=1;2.4%), and developing electronic guiding applications, among others (Figure 5.16).

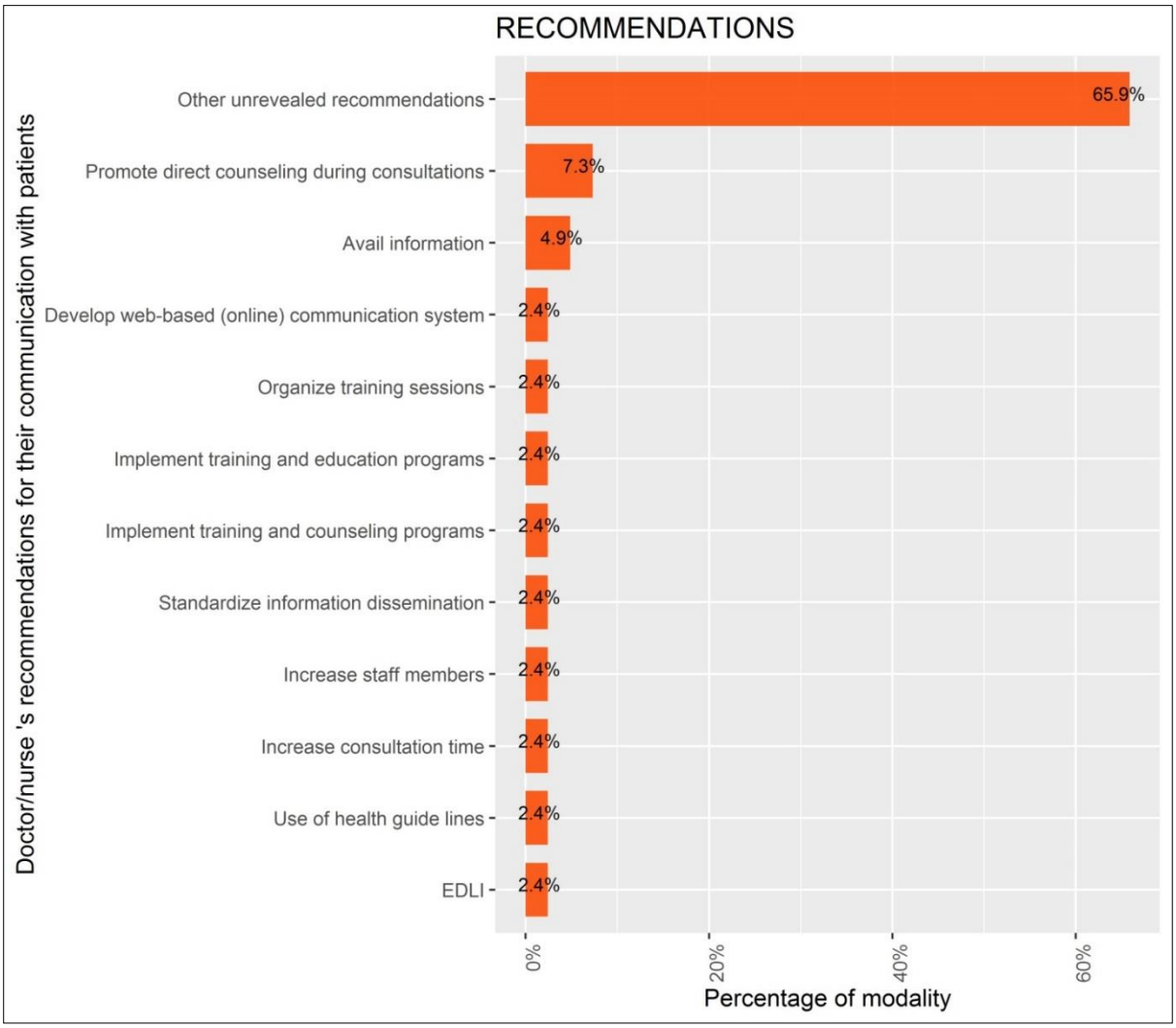
Figure 5.16: Guidelines Recommended for Improving Information Provision for Patients' Use



Source: *Statistically generated by the researcher*.

Regarding communication between patients and doctors/nurses, the following recommendations were made in decreasing order of occurrence: promoting direct counselling (n=3; 7.3%), supplying information (n=2; 4.9%), developing a web-based communication system (n=1; 2.4%), and organising training sessions in the hospital (n=1; 2.4%) [Figure 5.17]. Figure 5.17 presents doctors and nurses' recommendations regarding information provision, access and use.

Figure 5. 17: Guidelines Recommended for Improving Information Communication with Patients.



Source: *Statistically generated by the researcher*. *Each recommendation is presented in percentage of its occurrence.*

5.5. SUMMARY

This chapter presents and analyses the qualitative data collected through the interview with HBV and HCV patients, qualitative interview data collected from the senior staff and administrator, and quantitative data collected from doctors and nurses through the open and

close-ended questionnaires. Qualitative data were coded and analysed and presented in a thematic order according to themes and objectives of the study, while quantitative data were analysed descriptively and presented according to the study's objectives. Findings indicated that most of the patients were motivated by personal reasons, such as the desire to survive and the expectation to hear about new healing treatments. Despite some challenges that patients face when accessing needed information, the hospital management provided direct counselling during consultations with doctors/nurses. Recommendations were made for the hospital management staff should make information available to patients about their health problems.

Doctors and nurses also challenged information access, which hinders effective communication with patients, especially on health-related treatment and vaccines. Furthermore, doctors and nurses had divergent knowledge about available resources and policies to support patients. This divergence was due to their departmental affiliations. Among the general recommendations formulated by doctors and nurses are creating a computerised database for better access to patients' information and increasing health-related educational programmes in the hospital. Chapter six of this thesis focuses on the discussion of findings.

CHAPTER 6: DISCUSSION OF FINDINGS

6.1 INTRODUCTION

This chapter discusses the findings of the data obtained from Qualitative and quantitative data (Creswell & Creswell, 2018:231). The qualitative data obtained from HBV and HCV patients, observation reports and quantitative data obtained from doctors and nurses were analysed, interpreted, merged and discussed using side by side comparison (Creswell & Creswell, 2018:231; Terrell, 2012:268). The purpose of merging was to confirm or disconfirm the results (Creswell & Creswell, 2018:220). Consequently, the strengths and weaknesses of the two approaches were used to complement each other (Dattilio *et al*., 2010:431). The discussions were done according to the study's main purpose and specific objectives. The study was to determine the information needs and information-seeking behaviour of HBV and HCV patients in Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa, to establish how HBV and HCV patients access and use information in a tertiary health institution in South Africa.

To establish how tertiary health institutions in South Africa have aligned policies and resources to support the provision and use of information by HBV and HCV patients. To determine the role of counselling and education by healthcare professionals in providing information for HBV and HCV patients to ascertain factors contributing to the use of information by HBV and HCV patients. To establish the challenges faced in seeking and using health information when providing HBV and HCV patients information, to recommend a guideline for providing information for HBV and HCV patients in a tertiary health institution in South Africa.

6.2. DISCUSSION OF FINDINGS: HBV AND HCV PATIENTS

This section discusses the qualitative interview findings obtained from HBV and HCV patients. The discussions of findings are organised according to the s specific objectives of the study. The following section discusses the bio-data of HBV and HCV patients interviewed.

6.2.1. Bio-Data of Participants

This section discusses the bio-data of the HBV and HCV patients interviewed at Ngwelezane hospital Kwazulu-Natal, South Africa, including gender, age, economic status, and health status. The purpose of gender distribution in this study was to enable the researcher to identify the gender group that consented and participated in the study at Ngwelezane Hospital KwaZulu-Natal. The study location is one of the most extensive tertiary healthcare facilities and a referral hospital providing services to District, Regional, and Tertiary Services and communities from Uthungulu, Umkhanyakude, and Zululand Districts in South Africa. Findings revealed that out of eighteen (18) participants in the in-depth interview, the majority of the HBV and HCV participants were female (*n*=10; 55.6%), and others were male (*n*=8; 44.4%).

Findings based on patients' economic status revealed that the majority of the patient participants were not employed (n-=15; 83.3%), against few that were employed (n=3; 16.7%). The percentage of unemployed patients was higher (n-=15; 83.3%) than the few who were employed (n=3; 16.7%) (see Table. 5.2). The employment status of the patients were unfairly distributed with the health status, which is somehow the true reflection of the trend reported in the literature.

Age range: The majority of qualitative in-depth interview participants were between 40 – 49 years (*n*=12; 66.7%), followed by 30 – 39 (*n*=5; 28%), and 20 – 29 (*n*=1; 5.6%). The data collected from HBV and HCV Patients were based on information needs and information-seeking behaviour. The most affected age group was patients between 40 and 49 years and patients aged 30 and 39. Compared to patients' results, about 60% of both doctors and nurses were between 20 and 39 years old. The age distribution per qualification was nearly equitable, but doctors had one representation in the largest age group (60-80 years old), unlike patients (Figure 5.1C).

Patients' health status: The same trend was observed in the frequency distribution of patients' health status. All the recruited patients were suffering from HBV and BCV. Consequently, the unequal distribution of patients' health status is not a factor that can influence the results of this study. This result is validated by the report by WHO (2020), which estimated that in 2016

alone. About 27 million people (10.5% of all people estimated to be living with HBV) were infected, while 4.5 million (16.7%) of the people diagnosed were on treatment against an estimated 71 million people with chronic HCV infection. At the same time, an estimated 887 000 deaths occurred in 2015, mostly from cirrhosis and hepatocellular carcinoma (primary liver cancer) due to infections and complications from HBV. In 2016, about 399 000 people were said to have died from HCV infection (WHO, 2020).

Besides, based on WHO (2020) key facts reports, HCV was the most severe and the most common type of hepatitis worldwide. Therefore, it is possible to have a higher representation of patients suffering from HCV during the researcher's random selection for this study. Besides, both HBV and HCV attack the liver, and the conventional treatment protocols are the same. Therefore, regarding the above, patients' expectations regarding the need for information would not be affected by the type of hepatitis involved.

6.2.2. Information Needs and Information-Seeking Behaviour

The subsection discusses findings based on HBV and HCV patients' information needs and information-seeking behaviour. Case and Given (2016:6) emphasised the importance of need assessment of patients in various study contexts to determine how best to provide relevant information to meet their information needs. Knowledge is inadequate if it's unable to satisfy the need of the one seeking health-related information (Dervin, 1999:727). In general, Ford (2015:35) acknowledged the importance of acquiring relevant health-related information to solve existing health problems. Patients' information needs have been examined in various health contexts (Lowenstein *et al*., 2019:1; Chimonas *et al*., 2019:632; Tran, Lamprell *et al*., 2019:1; Lavallee, Grogan & Austin, 2019; Reid *et al*., 2010:682; Smith *et al*., 2019:1). Findings indicated the need for patients to acquire information related to health and general problems related to diseases affecting them. Such information can help them understand the best strategies to adopt for treatment, pain management, and the need for risk assessment or decision-making. They will also evaluate the benefits of treatment strategies employed by their doctors, nurses or therapists, especially the types of drugs needed and adherence to treatment choices (Smith *et al*., 2019:1).

Patients: The participants were asked; *what type of health-related information do they think is needed to improve their health condition?* The in-depth qualitative interview revealed that most

participants responded that they needed the information to prevent infections in their bodies. Others said they needed the information to identify the mode of contacting infections. Based on findings, patients were eager to respond to questions related to patients' information needs with the hope that the information could improve patients health.

The findings from the above information can be a useful infrastructure that underpins society's effective and efficient operation. Scholars like Patel (2015:20), Okwilagwe (2000), and Losce (1990) contributions to the development of knowledge and information society emphasised that knowledge or information can be transmitted or received about specific events. In support of this, Okwilagwe (2000) considers the information to be a crucial input that aids in reducing or eliminating the risk associated with the decision-making process. Everyone, including the deaf and dumb, is reliant on information. Knowledge or facts regarding a phenomenon are referred to as information.

Other participants acknowledged that they needed information to know the danger involved in getting infected; some noted that they needed to need the information to have the general knowledge of the disease, to identify the type of diet that is good for them, while others needed to know how to prevent the disease.

Marchionini and White (2007:205) describe basic activities involved in information seeking. These include recognising a need for information, taking action to fulfil the need, figuring out the nature of the need, "expressing the information needs through a search system, and examining the search results". In the context of HBV and HCV patients, the first step in preventing such diseases is by encouraging them to search for health-related information (Lalazaryan & Zare-Farashbandi, 2014:193). Knowing patients' information-seeking behaviour can provide health information experts with valuable information to improve patients' health. Lambert and Loiselle (2007:1006) maintained that "seeking information about one's health is a key coping strategy in health-promotion activities and psychosocial adjustment to illness".

> *"I need the information to know about the new treatment". "I need the information to prevent getting infected with diseases". "Yes, I need the information to help prevent me from getting an infection from the disease". "I need the information to get appropriate diets for my health".*

Due to the impact of HBV and HCV disease on victims, findings show that the victim or patient is constantly seeking information about the disease to find new treatment and further prevent them from other kinds of diseases infection such as TB and gather the information that could help them live better. The prevalence of HBV and HCV diseases has become a threat to human existence in many countries worldwide, given the possibility that infected individuals "develop cirrhosis, hepatic decompensation, and hepatocellular carcinoma" (HCC) (Mast *et al*., 2006:1; Bosch *et al*., 2005:191). Concerns about HBV and HCV diseases have put a severe burden on both patients and their caregivers due to the health implications resulting from "acute and chronic liver diseases, hepatic decompensation, hepatocellular carcinoma (HCC), cirrhosis, and primary liver cancer" (WHO, 2019:1; Chonco, & Rangiah, 2019:65; Lok & McMahon, 2000:661).

> *"I need the information to know the new treatment methods. I need the information to know when to go for medical check-ups. I need the information to get myself some proper diet. I need the information to get some new treatment up-dates".*

Given the epidemic nature of HBV and HCV in many countries, as shown in the literature, the need for adequate information regarding the impact of the spread of the disease must be communicated to the patients and the public. This is to create awareness about the health, social, psychological and economic implications" of the continuous spread of the disease (Winter *et al*., 2008:66). Despite the value of information in the life of patients and caregivers, remarkably, many authors have reported a lack of information and awareness of the modes of transmission (Adebayo, 2019; Olayinka, 2018; Hours *et al*., 1991:255). The need for preventive measures, access to testing and diagnostic centres, vaccination centres for the prevention of the continuous infection of the disease (Caballero *et al*., 2012:1547) and with the rates of complications that is capable of leading to liver cancer and mostly hepatocellular carcinoma (WHO, 2018:1; Ward *et al*., 2000:277).

> *"I need the information to help prevent me from disease infections". "I need the information to know the new treatment methods". "I need the information to know about the new treatment".*

Importantly, poor understanding of the complications of the disease, and poor knowledge of the value of testing and treatment regarding HBV and HCV may be responsible for the refusal of treatment and medication and awareness regarding "prevention and treatment of the disease" (Cacoub *et al*., 2008:6195). Besides, during the interview, the researcher observed the frustrations expressed regarding patient information, information provision and communication regarding the disease's mode of contact, and the prevention and management strategies. The above understanding is in line with the information from the world health organisation (WHO, 2019:1), which has become imperative for patients to have access to information and communication regarding the mode of contact of the disease and the prevention and management strategies. More so, considering the socio-psychological, emotional, and health impact of the disease on the general populace (WHO, 2018:1; Patel, 2015:20), information communication regarding the effect of the disease on the patients, caregivers, and the general public is very crucial (Shimakawa *et al*., 2017:688).

Exploring the theme of information-seeking of HBV and HCV patients, the participants were asked the following interview question if they independently seek health-related information on hepatitis B and C through any source? Due to the prevalence of HBV and HCV diseases occurred in different regions worldwide, such as the Eastern, European, American regions, Western Pacific, Southeast Asia, and Africa. The world health organisations indicated that the prevalence rate of HBV and HCV in the African region was high, while there is variation in the mortality rate in different regions due to poor and inaccurate data. An example was West Africa with a hyper-endemic in HBV infection, and Nigeria may be the highest in sub-Saharan Africa (Musa *et al*., 2015:163). In the North-Eastern African country, the prevalence rate was between 5% to 60% of the countries' population (Nelson *et al*., 2011:571; Aceijas & Rhodes, 2007:352).

The findings from the participants indicated that some patients independently seek health information about their sickness or disease, others seek information but not regularly, while the rest don't seek it unless when they need it. They seek health-related information independently.

> *"Yes, I seek health information about my sickness. Yes, I seek information. Yes, but not regularly. No, unless I need it. Yes, I independently seek health information".*

The research conducted in the Southern African countries by Chonco & Rangiah, 2019:65; Semugoma *et al*., 2017:1116) shows the prevalence rate of hepatitis B patients was reported to be 69.8%, with the prevalence rate higher in adults than children. The findings show that in South Africa, there is "a higher rate of prevalence in rural areas than in urban areas" was reported with a patient suffering from HBV and HCV diseases (Kungoane, 2018:68; Semugoma *et al*., 2017:1116), while others reported the "endemic nature of HBV as well as a high level of co-infection" (Chonco, & Rangiah, 2019:65; Kungoane, 2018:68; Platt *et al*., 2016:797). Other findings from the participants show that they do not seek information unless it is essential for the theme to look for health-related information. Some participants indicated that they seek independently seek health information. The majority of the participants noted that;

> *"No, unless I need to seek health information. Yes, I seek health information. No, unless I need to seek health information. Yes, I independently seek health information".*

Given the concern and frustrations experienced regarding the "lack of awareness of the dangerous nature of the disease, lack of information about the mode of infection", prevention, treatment, and management, and the socio-psychological, emotional, and health impact. Rosenstock, 1984:179; Stein *et al*., 2012:20). Information-seeking actions involve using strategies by information seekers (Godbold, 2006:6). Johnson *et al. (*1997a:70) argued that individual information-seeking actions depend on the level of concern or interest in health-related problems, just as HVB and HCV patients would do. Johnson (1997a:70) agreed with the theory of uses and gratification because users are goal-oriented information seekers when the source of information is easily accessible (Robson & Robinson, 2013:175).

Previously, studies found that information-seeking actions were related to "monitoring, browsing, accidentally encountering, and active and passively seeking for information by information users (Savolainen, 2016:657; Johnson & Case, 2012:40; Wilson, 1999:232). Other information users also engage in actions by "creating information, spreading/sharing information, avoiding, and destroying information" (Godbold, 2006:6) and seeking information. However, seekers must have a specific goal (Spink & Cole, 2006:25).

Findings based on the information sought from HBV and HCV patients were presented and analysed in chapter five. The participants were asked if they could ascertain their purpose of seeking health-related hepatitis B and C information under this theme of information-seeking of HBV and HCV patients. Wilson (2000), who defined information behaviour as "the whole of human behaviour in respect to sources and routes of information, further states that it encompasses both active and passive information-seeking and information usage. The scholar further defined information-seeking behaviour as "purposive information searching due to a need to satisfy some purpose." Findings from the participants show their behaviours towards information seeking as they noted that their purpose for seeking health-related information is to improve their health condition and to get better health. Others indicated that their purpose in seeking health-related information is to prevent disease infection. According to the participants;

> *"The purpose of my seeking health information is to improve my health condition and to get better health. The purpose of my seeking health information is to prevent disease infection. I seek for health information to help me protect my family and friends from contracting disease".*

Information-seeking behaviour is the micro-level of behaviour used by the searcher to engage with various information systems, whether it is between the seeker and the system or the pure process of establishing and reporting back on a search. It investigated the impact of emotions, notably uncertainty, in the information-seeking process, indicating that many searches are abandoned due to an excessively high level of ambiguity (Kuhlthau, 2011).

> *"I seek health information because I am not sure exactly about my state of health. I seek for health information to gain health knowledge. I seek for health information to acquire knowledge of good health".*

During the interview section with other participants, they indicated that they *seek health information when they are not sure of their health condition*;

I seek health information because I am not sure of my health condition. I seek health information because I have a problem with my health. I seek for health information to know my right to treatment. I seek for health information to get good health".

Information needs and seeking behaviour applies to HBV and HCV conditions, hence the need for a study to investigate "the information needs and seeking behaviour" of HBV and HCV patients. Scholars such as Adebayo (2019), Ek & Heinstro (2011), Wilson (2000) believe that the practice or activity of attempting to gather information in both human and technology situations is known as information seeking. Adebayo (2019, noted that the way humans search for and use information is referred to as information-seeking behaviour.

> *I seek for health information to get access to better health. I seek information to know the type of disease I am suffering from. I seek for health information to know the chances of my survival. I seek for information to stay well informed.*

As this study aimed at examining the information needs and seeking behaviour of patients with hepatitis B (HBV) and C (HCV), it looked at hepatitis B (HBV) and C (HCV) patients in Ngwelezane Hospital, KwaZulu-Natal, South Africa, as the main the focus. Findings show that the people seek information for different but specific reasons and, through different platforms, have made an informed decision;

> *I seek for information to have access to better treatment. I seek health information so that I can get healed. I seek health information so that I can get better treatment. I seek health information; maybe I can get hope to improve my health. I seek information maybe I can get better treatment*

Information seeking may comprise recognising and interpreting an information problem, developing a search strategy, conducting the search, evaluating the results, and repeating the process if necessary. There are numerous sources of health information available to those looking for it. Individuals may seek information from personal experience, followed by peer sources, and main persons similar to themselves. The study reveals that a patient seeking information related to HBV and HCV disease may consult a variety of sources, including confidential sources such as health care personnel and peer groups, as well as electronic ones such as television, the internet, and radio. Other sources include hospitals, non-governmental organisations, information centres, and print sources such as books, periodicals, pamphlets, and handbills. Decision making may be linked to information seeking.

Based on information seeking of HBV and HCV patients, the research question that was asked under this theme is how frequently do you seek hepatitis B and C related information? It is noted that both standardised and subsidised comprehensive national policy orientation towards universal healthcare. This ensures that HBV and HCV patients enjoy unlimited access to

information and counselling delivered after diagnosis by healthcare providers (Chabrol *et al*., 2019:1). Coping with the effect of HBV and HCV, reducing of disease burden, screening, and simplifying the whole therapeutic package by healthcare providers and policymakers should be efficiently implemented (Chabrol *et al.*, 2019:1). A pro-active policy is another useful strategy for reducing any possible incidence of HBV and HCV (Turcanu *et al*., 2019:37). The participants indicated that though they do not frequently seek information, they sometimes do seek health-related information; others acknowledged that they seek information all the time, while other participants noted that they seek information weekly;

> *"Although not frequent, sometimes I do seek health information. Yes, I seek information all the time. I seek information weekly. Not frequently but I seek information.*

Actions were usually performed to ensure that the "information gap" is closed or bridged in diverse contexts (Godbold, 2006:6). It is also noteworthy that information-seeking actions are influenced by the characteristics of information carriers, such as "easy accessibility, availability of information, immediate solutions and problem-solving, and the currency of information" (Johnson *et al*., 2001:339). Actively seeking information positively leads to a desirous outcome or behavioural changes in individuals (Jennings, 2018:1; Han, Wise, Pingree & Hawkins, 2010:367).

> *Yes, I frequently seek information. Yes, I seek information but not frequently. Yes, I sometimes seek information".*

Some of the participants were specific with their search frequency for information relating to their health condition.

> *"Yes, at least twice a month.*
> *Yes, I seek information very frequent*
> *Yes, I sometimes seek information*
> *Yes, two to three times a month*
> *At least every week.*
> *I seek information weekly.*
> *No, I seek information just every three months".*

Robson and Robinson (2013:174) opined that both credibility, authoritativeness and accuracy of information sources influence the perception of information seekers about information seeking. Johnson supported Lee and Kim's study (2015:285) and linked health information seeking to behavioural outcomes (positive or negative). Wilson's (2000:52) contributions to information behaviour supported Ellis's (1989:237) model of information-seeking actions such as "starting, chaining, browsing, differentiating, monitoring, extracting, verifying and ending." Information-seeking actions lead to positive or negative outcomes in information behaviour studies. However, based on findings, most participants do not see why the information should be frequently sought about diseases, while others believe in the importance of seeking information.

The research question is: what method do you usually use when seeking hepatitis B and C related information? Findings from the participants show that some of them prefer browsing the internet to find health-related information while others read about diseases from books. It was also discovered that some people prefer watching television programs, while others use their mobile phones. Access to information can be achieved through various sources as opined by many scholars (Jacob *et al.*, 2017:5; Tanaka *et al*., 2013:779; Marco *et al*., 2006:256; Spink & Cole, 2006:28), and through channels or carriers of information (Spink & Cole, 2006:28). Spink and Cole (2006:28), stated that information sources can also be referred to as information channels or carriers of information. Sources of HBV and HCV information include newspapers, doctors, nurses, mass media, the Internet, friends, and family members (Jacob *et al*., 2017:5; Tanaka *et al*., 2013:779; Marco *et al.*, (2006:256).

> *"I normally browse through the internet. I normally read about diseases from books. I normally read books. I normally watch television programs. I normally use my mobile phone. I normally read my newspapers".*

Different types of information sources could easily be accessed by HBV and HCV, regardless of their ethnic backgrounds or demographic characteristics (Tanaka *et al*., 2013:779). Sources of information used are discussed in the literature review section; however, the study finds that the Internet has more fantastic available information accessible to individuals. Jacob *et al*., (2017:5) revealed that "a greater percentage of health information seekers used the internet for health information than family/friend/co-workers, health care professionals, and traditional

media". Some participants noted that they rely on the information media such as television programs and newsprint.

> *"I normally watch television programs. I normally use my mobile phone. I normally read my newspapers. Asking questions during morning briefing in the hospital. I normally read my newspapers".*

To confirm the above findings, the study conducted by Maslen and Lupton (2018:916) focusing on women using online health and medical information in Australia found out that "women used online source for information search, actively and creatively, in diverse ways when seeking face-to-face medical expertise." Tanaka *et al*., (2013:779) discovered that "29.5% of the 726 HBV patients used the Internet as a source of information and relevant psychosocial factors." The study also reported "a significant association between the internet and newspapers as a source and their educational level" because 35.5 % of the 726 HBV internet-user patients who identified the Internet as their source of HBV information had college degrees. Kamran *et al*. (2015:15) argued that patients preferred to search websites for health information despite that they cannot always trust those websites. Furthermore, the study finds that some patients are comfortable seeking information from nurses during their visits to the hospital.

Some of the participants indicated that they normally ask questions from health professionals; others noted that asking questions from doctors during consultations is more convenient for them, while others prefer asking people questions who are more knowledgeable than them. Others indicated that they usually ask questions from the nurses at the hospitals.

> *"I normally ask nurses at the hospital during my visits to the hospital. I normally ask questions from health professionals. Asking questions doctors during consultations, I normally ask people questions. I usually go to the hospital to find out. I normally ask questions from the nurses".*

Hence the patients prefer asking health professionals in their quest for information, it is recommended that the health professionals help guide information search by the patients, if possible, with specialised keywords and reliable information sources. Marco *et al.* (2006:256) added that information sources such as "ask-the-expert" through the internet resource for hepatitis could be a good model for giving valid, widely sought information to patients in an anonymous, convenient, and timely manner way, and it is in great demand. A study by Okada

et al., (2020:15) indicated that apart from recommendations received from physicians commonly used by patients, "friends, family, and work colleagues provide recommendations that could be used as guidelines for decision-making to support information use regarding hepatitis screening, examination, and treatment. Tanaka *et al*. (2013:779) reported that 38.8% out of the 726 participants of the study received HBV information from friends. However, it is important to note that in a digital age, Jacob *et al*., (2017:5), indicated that information technologies have opened more opportunities for health information seeking than what family, friends, and co-workers can provide if the users have the skills to explore information technologies.

These findings indicated that CMIS has been used in the previous studies to examine online information seeking (Bernadas *et al*., 2019:7), interactive cancer information systems (Han, *et al*., 2010:367), scanning health information sources (Ruppel, 2016:208), and health information seeking using mobile apps and internet (Kim *et al*., 2017:1). Sheng and Simpson (2015:96) applied CMIS to investigate variables such as demographics, trust in online health information, and perceived usefulness of the internet by users. However, CMIS have not been applied to HBV and HCV information seeking in South African context at Ngwelezane tertiary hospital. In this study, CMIS have been discovered to influence HBV and HCV patients information seeking.

6.2.3. Access and Use Information HBV and HCV Patients

What information sources are accessible to you when seeking health information on HBV and HCV?

Several HBV and HCV prevalence studies show that health professionals (doctors, nurses, and other healthcare professionals and para-professionals) (Okada *et al*., 2020:2973; Kamran *et al*., 2015:15; Cinar *et al*., 2015:343; Teague *et al*., 1999:201) were used as sources of information for HBV and HCV patients. Okada *et al*. (2020:2973) added that "primary care physicians and public health nurses' recommendations" are the "most commonly used and influential sources of information among patients' for decision-making regarding hepatitis screening, examination, and treatment". Also, Okada, *et al.,* (2020:2973) also investigated the sources (factors) of information used by HBV and HCV patients to raise awareness about comprehensive treatments. The study found that "recommended information from primary healthcare physicians were used" (Okada *et al*., 2020:2973). Many participants noted that they access

information on the internet by engaging in discussion on social media while others rely on television and radio programmes, google searches, and others have no specific source of information (Peacock *et al*., 2017; Dickerson *et al*., 2004). The majority of the participants rather seek information from doctors and nurses;

> *I access health information through social media discussions. I access health information through websites. I access health information through Internet sources. The accessible health information source to me are doctors and nurses.*

> *I access health information through doctors and nurses. The accessible health information source to me is media sources: TV. I access health information through friends, doctors, using Google. I access health information through my phone.*

Having access means "the act of approaching" (*Collins Online English Dictionary*, 2021), or ability to obtain. This implies that access to HBV- and HCV-related information depends on the ability of individuals to obtain information needed at a particular time. Meanwhile, access to HBV and HCV patient information depends on information seekers' actions and the degree of health information the patients and their relatives can obtain about their illnesses (Cros *et al*., 1998:51).

> *The accessible health information source to me is only doctors and nurses. I access health information by reading newspapers. I don't have a source. I access health information through doctors and nurses. I access health information through nurses.*

The previous studies examined the worldwide prevalence of HBV and HCV, the clinical implications, healthcare facilities for the treatment and prevention of HBV and HCV, challenges, and information provision in Africa and sub-regions, with a specific focus on South Africa (Finhaber *et al*., 2008:54).

> *I access health information sources during my hospital visits. I access information through nurses. I access information during counselling from health professionals. I access health information through the internet.*

Authors such as Howell *et al*. (2021:535), and Cros *et al*. (1998:51), believes in the importance of information and how adequate information is linked to the prevention of endemic HBV and HCV, patient self-care, adherence to prescribed medication, timely diagnosis, emotional and psychological well-being, coping with anxiety, and the anticipation of a speedy recovery from the disease. A study by Cros *et al*. (1998:51) revealed that "a vast majority of the patients affected by HBV and HCV have a deficient level of information concerning the means of transmission, leading to the high rate of interfamily infection cases." Therefore, patient information regarding mode of infections, prevention, and treatment, among others, must be accessible at the right time.

> *I access health information through Television and radio. I access health information sources through my magazines. I access health information sources through my Television. I access information during counselling from health professionals.*

Doctor's prescriptions are in paper format, radiology use image format, and EMRs hold data in the form of rows of textual and numeric data" (Jena & Kar, 2019:48). However, before doctors and nurses could gather patients' information, such as age, gender, health status, educational level, economic status, and place of origin, and sometimes tribes, culture, and origin, the patients must pass through some rigours or a very long process of clerking (Jena & Kar, 2019:48). At times, doctors might need to wait for some days or weeks to obtain just a test result for patients before making decisions (Jena & Kar, 2019:48; Belle *et al*., 2015:1). Consequently, the lack of organisation in record keeping and data management systems and the unstructured methods of data documentation led to many challenges and inconsistencies (Jena & Kar, 2019:48). Therefore, an effective information management system, easy access to information by healthcare providers, and communication practices will greatly assist healthcare industries to overcome the challenges of HBV and HCV patients to access and use health information (Johnson & Case, 2012:16).

> *I access health information through doctors and nurses. I access health information through doctors and nurses. I access health information sources through doctors and other health professionals.*

To confirm the reliability of the information provided by health professionals, a similar study by Kamran *et al.*, (2015:15) demonstrated that health care professionals provided useful

information for patients at the time of chronic diseases management. Tanaka *et al*., (2013:779) reported that 39.3% of the 726 HBV patients learnt about HBV screening from physicians. This finding implies that "physicians had the strongest direct effects on screening behaviour." Seeking information regarding HBV from physicians are highly associated with the perceived risk of contracting HBV and a higher level of self-efficacy (Tanaka *et al*., 2013:779). The physicians and other health professionals have undoubtedly contributed immensely to HBV and HCV information use for effective management of the diseases and decision-making.

There is a positive link between access to patients' information, such as demographic data (primary data), results of disease diagnosis from either laboratory tests or through the use of modern diagnostic equipment or technologies, and effective utilisation. The characteristics of information sources determine the choices of information sources used by patients because information access influences the effective utilisation of health information sources to produce a desirable goal.

What characteristics of information sources influence their decision to seek information on hepatitis B and C through that source?

The participant was asked during the interview section what characteristics of information sources influence their decision to seek information on hepatitis B and C through that source? Some of the participants admitted that they were influenced by the fact that social media sources are very accessible to them, others claimed that they were influenced by internet websites that are very accessible to them and the information they needed is always available. The responses are as follows;

> *"I was influenced by the fact that social media sources are very accessible to me. I was influenced because websites are very accessible to me. I was influenced because the Internet is very accessible to me, and information is always available".*

Research shows that healthcare information is always "diverse and complex" and requires multiple procedures to access (Jena & Kar, 2019:48; Ward *et al.*, 2000:277). For past decades, access to health information was possible through traditional methods of record-keeping that are very cumbersome or through electronic medical records (EMR) from "different departments such as radiology and pharmacy" (Jena & Kar, 2019:48). Patient information was

also accessible in various formats such as “texts, numeric, images, digital, video, and multimedia.

> *“I was influenced because doctors and nurses are knowledgeable, and I trust them. I was influenced because I have access to them. I was influenced because they are very easy and always available. I was influenced because they can listen to me and solve my problems”.*

Some of the participants were influenced because doctors and nurses are knowledgeable and they trust them. Okada *et al*., (2020:2973) investigated the sources (factors) of information used by HBV and HCV patients to raise awareness about comprehensive treatments. The study found that “recommended information from primary healthcare physicians were used” (Okada *et al.,* 2020:2973). Some participants noted that they were influenced by using their mobile phones to search for information online.

> *I was influenced because using a mobile phone is easier for me and always available. I was influenced because I trusted in the information they provided. I was influenced because newspapers are easily accessible to me. Honestly, I don’t know why, and I have no idea.*

When information gathered are utilised, it yields a lot of positive benefits for problem-solving, innovation, and learning (Wilson, 2000:50; Taylor, 1986:184). In the context of HBV and HCV patients, information use has become imperative to identifying transmission methods of viral infections in healthcare workers, pregnant women, youths, and adults. Therefore, knowledge and information regarding sources of infections, preventive methods, treatment, and follow-up procedures are very important. Researchers continue to emphasise the provision of sufficient information to improve the utility of antiviral therapy for chronic HBV and favourable therapeutic effects (Yamagiwa & Masaki, 2018:1049).

> *I was influenced because doctors and nurses are easily accessible to me. I was influenced because they are knowledgeable and trustworthy. I was influenced because the information provided is relevant to my need for information. I was influenced because I have access to them.*

> *I was influenced because I was able to understand all information they provided. I was influenced because I have access to information through the Internet. I was influenced because I have access to my sources. I was influenced because the information sources were easily accessible.*

Others claimed that they were influenced because I have access to the information they needed online. More participants acknowledge that they were influenced because the information is very easy to access and always available. Virtually all the participants claimed they were influenced because the health professional can listen to them and solve their problems. A similar study by Kamran *et al*., (2015:15) demonstrated that health care professionals provided useful information for patients at the time of chronic diseases management. Tanaka *et al*., (2013:779) reported that 39.3% of the 726 HBV patients learnt about HBV screening from physicians. This finding implies that "physicians had the strongest direct effects on screening behaviour."

> *I was influenced because the information sources were easily accessible. I was not influenced but I was able to understand all information provided. I was influenced because I have access to real information. I was influenced because they are very reliable. I was influenced because the information sources were easily accessible.*

In connection with the study conducted the patients recognised media sources such as TV commercial messages and other health programmes (Hopwood *et al*., (2015:156). Other sources of information include the mass media, such as TV/radio broadcasting (Meillier *et al*., 2015:3558; Niederau, 2014: 11595; Cormier, 2005:4, Otu, 2003:311). Tanaka *et al.*, (2013:779) found out that a "higher percentage of patients (39.8 %) obtain HBV information from the newspaper and TV (31.7 %). Other sources of information include patients' associations (Kamran *et al*., 2015:15) and interactive services (Marineau *et al*., 2007:147).

How important is the source of your information to meeting your information needs on hepatitis B and C?

In response to the research question by the participants reveal that the source of information is seen to be important to some, while others do not care about the information. This is in line

with information behaviour scholars, who have also used computerised educational programmes (Corrarino *et al*.,1999:151; McCoy, 1998:388) to create awareness about chronic diseases and other sources such as health literacy and educational materials specifically for HBV and HCV patients (Meillier *et al*., 2015: 3558).

> *"The source of information is very important to me because information received must be reliable. My source of information may not be too important, but I can use it for my health needs. My source of information is very important to me because it must be accessible. Information source is very important to me because they must be accessible. Information source is very important to me.*

In connection with the study conducted by Hopwood *et al*., (2015:156), which revealed that HCV patients preferred information sources delivered by "hepatitis; lesbian, gay, bisexual, transgender, and intersex (LGBTI); and HIV organisations". However, the patients recognised media sources such as TV commercial messages and other health programmes. Other sources of information include the mass media, such as TV/radio broadcasting (Meillier *et al*., 2015:3558; Niederau, 2014: 11595; Cormier, 2005:4, Otu, 2003:311).

> *Information source is very important to me because they must be accessible. Information source is very important to me. Information source is very important to me. Information source is very important to me because they must be accessible. My information source is very important for record purposes.*

> *"I have no information source. Information source is very important to me. Information source is very important to me because helps me to be well informed. Information source is very important to me. Information source is very important to me because the information they provide is relevant to my needs.*

According to other some studies, online health resources and educational materials on the internet (Gulati *et al*., 2016:558; Crutzen *et al.,* 2012:45) have been widely used and accessible. For efficient use of information to be ascertained, the role of counselling and education cannot be ignored to improve information used by the HBV and HCV patients, which is discussed in the next section.

> *I Information source is important to me because the information source is very reliable. Information source is very important to me because they are very simple. Information source is very important because it must be understandable.*

Methodological use involves the use of quantitative, qualitative and mixed methods. Mixed methods have been applied to various aspects of health services research (Kaur, 2016:93; Zhang & Creswell, 2013:51) and behavioural and social science research (Peterson *et al*., 2013:217; Hayes *et al*., 2013:8). Saab *et al*. (2018:410) used a "meta-narrative systematic review to appraise qualitative, quantitative and mixed-methods studies that explored men's information-seeking behaviour on cancer prevention and risk reduction".

> *Information source is important to me because I was able to understand them. Information source is important to me because it was easily accessible.*

Even though many patients believed that adequate medication and support would reduce the diverse burden of the disease on their lives, being aware of prevention with the right information at the right time is equally very important (Yamagiwa, & Masaki, 2018:1049). Studies revealed that there are different approaches to using information, whether theoretical, methodological or conceptual, depending on the contexts of the study.

> *I Information source is important to me because the information source is very reliable. Information source is very important to me because they are easily accessible. Information source is very important because they are understandable. Information source is important to me because they are reliable.*

According to Liu *et al*. (2019:1), "Mobile app-assisted self-care interventions can be effective tools for managing chronic diseases" such as HBV and HCV. Furthermore, mobile apps have been tested for monitoring the health and medication of other patients living with chronic diseases such as diabetics and hypertension, which applies to the context of this study. The reason is that their use "facilitates remote management of health issues and data, provision of personalised self-care recommendations, automated feedback, personalised goal-setting, reminders, education materials, data visualisation, patient-care provider communication, and decision-making " (Liu *et al*., 2020:1: Bashi *et al*., 2020:5; Sundararaman, 2017:488).

Would you say that you are satisfied with the health information you received?

The participants were asked how satisfied they were with the health information they received, some of them acknowledged that they were highly satisfied while others claimed the contrary. Findings from studies revealed that urgent efforts are needed to provide information resources to educate people to understand how to reduce the spread of contagious diseases in Africa and globally (Yang *et al.*, 2017:103). Hence, it is important for everyone to have access to health-related information and to satisfy the patients with well-tailored services to help facilitate their healing experiences (Ren *et al*., 2017:37). The scholars further noted that "given the burden of the chronic HBV and HCV on patients and family directly, the quality of their life has been indirectly affected," which equally required a functional and effective health information policy to be used in the "development of community-based management and intervention of chronic hepatitis patients". The participants noted the following;

"Yes, I can say that I am satisfied with the information received".

"Yes, I can say that I am satisfied but not all the time".

"Well, I cannot say that I am satisfied".

Buntin *et al*., (2011:464) emphasised the "value of health information technology" as "improving the health of individuals and the performance of providers; yielding improved quality, cost savings, and greater engagement by patients in their health care". The value also helps to "guide physicians, hospitals, and other key entities as they adopt electronic health records to achieve meaningful use, as spelt out in federal regulations and policies". Lohr *et al*., (1998:1) maintained that "evidence-based medicine focuses on the use of the best available clinical (efficacy) evidence to inform decisions about patient care".

"I am not satisfied".

"Yes, I am satisfied".

Yeung *et al*. (2018:103) believes that "policy should be established to make healthcare system affordable and accessible for users." Van der Meulen *et al*., (2008:857) believed that strategies are needed to psychologically prepare patients for treatments, rehabilitation, and recovery from traumatic experiences, such as stigmatisations, which can lead to depression, anxiety, and

complications of HBV or HCV disease (Javadi *et al*., 2014:17). To eliminate HBV and HCV diseases, there is a need for medical professionals to provide information for HBV and HCV patients (Cinar *et al*., 2015:343). Previous studies have applied CMIS and UGET to investigate various studies in other contexts, however, limited studies have applied CMIS and UGET to HBV and HCV patients access and use of information. This application of CMIS and UGET in this stud have influenced patients' accessible sources of information through doctors and nurses given that majority of patients indicated that the most accessible sources of health information for them was through doctors and nurses.

6.2.4. Policies and Resources Supporting Information Provision and Use on HBV and HCV

Are you aware of any policy related to information use on hepatitis B and C by patients at Ngwelezane District hospital?

A draft report focusing on the use of health information policy framework by the Department of Health (2018) emphasized that health service providers need to be transparent with patients about how confidential and personal health information is collected, used and shared for primary, secondary, and research purposes. This also includes the fact that information must be communicated to patients in a clear and accessible way" so they can decide on matters related to their health and wellbeing (Department of Health, 2018).

> *"Yes, I am aware that patient information is very confidential".*
>
> *"Yes, I am aware only doctors can use it".*
>
> *"No, I am not aware".*
>
> *"No, I am not aware"*

Policymakers at the national and international levels require policies to guide the provision of resources and interventions to prevent the outbreak of deadly diseases such as HBV, HCV and other associated diseases (Sharareh *et al*., 2020:1). Policies are needed to guide healthcare institutions in screening and vaccinating their staff and students (Karadeniz & Alaşehir, 2020:480). Studies show that the majority of HBV and HCV patients had no information on their HBV status and none of the participants had information on his or her HCV status and

suggested that policymakers should provide free HBV and HCV screening for all HCV infected individuals for their effective management (Pappoe *et al*., 2019:380).

Are you aware of the counselling and education programme organised for hepatitis B and C patients in Ngwelezane hospital?

The World Health Organisation (2020:1) made provisions for health education and counselling in every health tertiary institutions to cater for both physical and mental well-being of patients visiting the facilities. Therefore, individuals who wish to enjoy good health must adopt healthy habits. For this study, "health" refers to "the complete physical, mental and social well-being of HBV and HCV patients" and not merely the absence of disease or infirmity.

> *"I am not aware of any format of information dissemination*."
>
> *"Yes, I am aware"*.

There is a need for connection between health information, health literacy, health promotion, health education, health beliefs and health behaviour. Ford (2015:11) defined "behaviour" as a response to a stimulus, which includes thought and actions. This definition implies that individuals may perceive that they have a problem that requires information and doing something about it requires actions.

If you are aware, what format of instructions for information dissemination are they using?

The role of counselling and education as strategies for improving health, preventing or managing chronic diseases such as HBV and HCV patients cannot be underestimated. According to the *Online Dictionary of Nursing* (2021), "health education" is a "method used to inform people (either individually or collectively), persuade and enable them to adopt lifestyles that are believed to improve health and reject habits regarded as harmful to health," while counselling is a "method of approaching psychological difficulties in adjustment that aims to help the client work out his problems." The responses supplied to the question of what format of instructions for information dissemination are they using, some of the participants noted that they are not aware of any channel or programmes the hospital uses to disseminate information. However, they receive counselling from health professionals and still received counselling every morning from doctors and nurses

Am aware because I received counselling from health professionals. I received counselling from health professionals. I am not aware of a program but, I still received counselling every morning from doctors and nurses. I am not aware of any format of information dissemination.

Information seeking is an unavoidable requirement for the consistent and appropriate performance of these behaviour. When an individual seeks information on purpose to achieve a goal, this is referred to as information seeking. People living with HIV/AIDS (PLWHA) may interact with manual information sources, computerised systems, or both while looking for information about HIV/AIDS or HBV and HCV risk behaviour.

Sometimes the doctors come to give us instructions face to face. I am not sure. I always read information from posters and notice boards in the hospital. I listen to counselling from doctors during my visits. Although I am not aware of the formats of instructions, I only listen to counselling from doctors during my visits.

In line with the definition of the terms "information behaviour", the links between "information needs", "patients' information needs", "information seeking", and "information use, scholars like Pettigrew *et al*. (2001:44), states that there need to clarify the above terms as they emerge, given that they cannot be separated from each other since the three are interwoven and inter-related. Pettigrew *et al*. (2001:44) defined information behaviour as the "totality of human behaviour concerning sources and channels of information including active and passive information seeking and information use". In addition, Case (2012:10) noted that "information behaviour" has been studied in many contexts, especially in health contexts and other related disciplines, with different motives and goals.

Yes, although I am not aware of any program I always listen to counselling from doctors during my visits. I don't know about any program but I listen to counselling from doctors during my visits. I read about health information through the posters and notice boards in the hospital.

I also listen to information from doctors and nurses during a morning briefing. I also listen to information from doctors and nurses during the morning briefing

Therefore, HBV and HCV patients must be educated using different methods and approaches to inform or persuade them either individually or collectively to adopt lifestyles that will improve their health conditions (Cinar *et al*., 2015: 343). Besides, not everyone has equal access to the internet while seeking information, this is seen to be critical to acquire the possible knowledge required to prevent risky actions, which will eventually enhance their health care and quality of life (Adebayo, 2019:1).

Are the instructions provided relevant to your health problems?

The critical question is, are their instructions provided relevant to the patient's health problems, Previous studies analysed the benefits of information provisions in improving patients' health, especially in chronic diseases such as HBV and HCV (Orr *et al*., 2014; Shah & Abu–Amara, 2013). Since the quality of life is involved, information has the same essential worth as money, capital, goods, labour, and raw materials in business (Ong *et al*., 2008:1108; Bondini *et al*., 2007:1119). The process of giving information is intrinsically interactive since the information seekers focus their attention on adapting to stimuli, reflecting on progress, and evaluating the efficacy of the information seeker's knowledge base. Thus, information seeking is a cybernetic process in which the knowledge state is altered by inputs, purposeful outputs, and feedback

> *Yes, the instructions are very relevant to my health needs. I am not sure if they are very relevant to my health needs. I am not sure.*

A lack of information and understanding at health care facilities could result in major problems for patients, such as physical handicap, financial loss, and, in the worst-case scenario, death. According to Kutty, Kumar, Himanshu, and Pathak (2007), such knowledge impacts the direction in which a decision is taken as a choice leading to a specific desired outcome, namely the prevention of harm.

6.2.5. Factors Contributing to the Use of Information by Hepatitis B and C Patients

What factors motivated you to seek information on hepatitis B and C?

In response to the question of what factors motivated you to seek information on hepatitis B and C, some of the participants noted that they trust in the information provided by the health professionals while others said they are not sure about the information. Findings from some of the participants show that they gain health knowledge by seeking information. More findings

show that the patients want to improve their health condition. According to more findings from the interview, the most important motivating factor is that health information is important to their health needs. Ek and Heinstro (2011:200) argue that information seeking is an unavoidable requirement for the consistent and appropriate performance of these behaviours. Other people's prior work, other individuals, and information repositories such as manual papers and online databases could all be used to gather information.

> *I have trust in the information provided. I am not sure. I want to gain health knowledge. I want to improve my health condition. I have trust in the information received. The most important motivating factor is that health information is important to my health needs.*
>
> *My motivating factor is that I want to gain health knowledge. I was anxious about my state of health. I was curious to know my health condition. I am not sure but I know that health information is important to my health needs.*

Adebayo (2019:3), states that when an individual seeks information on purpose to achieve a goal, this is referred to as information seeking. Such as those people living with HIV/AIDS (PLWHA) may interact with manual information sources, computerised systems, or both while looking for information about HIV/AIDS or HBV and HCV risk behaviours.

> *My motivating factor is that I want to improve my health condition. I seek health information because I have trust that information will help me. I am not sure but I know that health information is important to my health needs.*
>
> *I seek health information because I believe it will help me get healed. I seek health information to help me evaluate the danger involved in not getting treated. I only seek for information to increase my chances of survival. I seek health information to stay well informed.*

Based on your experiences of the diseases, how important is information seeking related to your use of information?

Understanding how important is information seeking related to your use of information based on patient's experience at the hospital, it is important to note that health information policies have been established to guide the effective management of healthcare services, such as

preventing chronic diseases services in developed and developing countries worldwide (Batarseh *et al*., 2020:1). The responses from the participants indicate that seeking information is very important for improving their health, some of the participants noted that seeking information is very important for them to stay informed.

> *Seeking Information is very important for improving my health. Seeking Information is very important for me to stay informed. Seeking Information is very important for me to seek better treatment.*

To establish the relevance of health information policies, it is very important to consider the concept of health policy, and how it applies to health information provision, the importance and different areas of applications, as well as the purpose of health information policies concerning the effective management and elimination of chronic diseases such as HBV and HCV

Do you believe in the usefulness of hepatitis B and C related health information?

The participants believed in the usefulness of hepatitis B and C related health information provided at the hospital. Consequently, the educating of patients contributes to "improved quality of life for patients" (Sha *et al*., 2013:922). Education is an important "strategy used to improve people's knowledge regarding prevention methods, pain management, adherence to medications about chronic diseases such as HBV and HCV (If contacted), and cure" (Sha *et al*., 2013:922). Knowledge of HBV and HCV is very important because it helps to increase awareness. Moreover, education helps effect changes in attitude regarding health practices and improvement in individual HBV and HCV patients (Haq *et al*., 2014:807; Sha *et al*., 2013:922; Raza *et al.,* 2013:1127). Sharif *et al*. (2005:81) revealed that "psycho-educational intervention improved patients' quality of life". Education along with psychological intervention is needed to assist family members of patients suffering from chronic diseases. Patient education undoubtedly helps patients understand the importance of adherence to treatment, the complications of non-adherence to treatment, and the need for assistance with treatment and other care (Cacoub *et al*., 2008:6195; Sharif *et al*., 2005:81). The participant's notes;

> *"I believe health information is useful for my health".*
>
> *"Yes, I believe health information is useful for my health".*

Sharif *et al*. (2005:81) examined the effect of the "psycho-educational intervention on health-related quality of life of patients with chronic liver diseases", using a case study of Shiraz University of Medical sciences. Raza *et al*. (2013:8) emphasised the importance of "creating awareness about the risk factors" of HBV and HCV infection during counselling intervention. The study suggested that "prevention strategies should be emphasised through mass media awareness, education, and counselling to control the spread of the diseases". Both patients and healthcare professionals have benefited immensely from patient education in digital or traditional format (Kavarthapu & Sankari, 2017:1). Patient education improves HBV and HCV diseases, knowledge, attitude, and health practices (Haq *et al*., 2014:807). Patients' educational materials on HBV, HCV, cirrhosis and hepatocellular carcinoma can be reviewed for effective utilisation to close the gap between the availability and utilisation of material resources (Gulati, 2016:558).

6.2.6. Challenges that HBV and HCV Patients are Facing in Seeking and Using Information

What challenges do you normally face when seeking hepatitis B and C related information?

Understanding the challenges that patients normally face when seeking hepatitis B and C related information, some of the participants noted that they are shy, so they find it difficult to ask questions from doctors and nurses, which is a challenge, hence they don't receive the needed information. Other participants claimed they don't have any challenges. According to a study, information "need" is a subjective experience that occurs only in the mind of the person in need (Wilson, 1997:7), which implies that information needs arose out of the desire to fill a knowledge gap. As well as to improve on understanding the relationship between identifying information needs of HBV and HCV patients and filling the information gap (Adebayo, 2019). Taylor (1986:254) differentiated four levels of needs: a person's subject of interest, motivation, characteristics, the relationship of the inquiry to the file organisation, and anticipated answers.

> *First, I am a very shy person, so I find it difficult to ask questions from doctors and nurses. I don't have any challenges. I find it difficult to ask questions from doctors and nurses.*

> *My only challenge in accessing information is just the delay on the line before I can see the Doctors. I could not communicate the way I want because I am very shy.*

Similar opinion by Case and Given (2016:6) refers to information needs as a "recognition that knowledge is inadequate to satisfy a goal, perhaps the desire to satisfy a curiosity," which implies that if knowledge is inadequate to satisfy a goal, it can create a knowledge gap, which in turn creates an opportunity to develop a new theory or strategies (Dervin, 1999:727).

> *I don't dare to ask questions from doctors and nurses about my problem. I could not access my hospital files. I could not access information in the hospital.*

> *I usually experience a delay in meeting my doctors during visit days. I sometimes don't have access to my hospital file to know exactly what my problem is.*

In general, Ford (2015:35) agreed that information is needed to solve a particular problem and achieve a particular goal. Patients' information needs were examined in various contexts (Lowenstein *et al*., 2019:1; Chimonas, *et al*., 2019:632; Tran *et al*., 2019:1; Lavallee, Grogan, & Austin, 2019; Reid *et al*., 2010:682). Patients' information needs were explored in the context of "patients knee replacements surgery" (Smith *et al*., 2019:1). The need for patients to cope with the pain to survive the ailment is very important, which in turn depends on the effective management of pain by patients with the help of doctors and nurses caring for the HBV and HCV patients (Rockstroh *et al*., 2008:82). Also essential is the need to improve patients' dietary habits before percutaneous coronary intervention (George *et al*., 2018:307).

Patients must understand the strategies for pain management and understand the risk and benefits of treatment strategies employed by healthcare professionals, especially regarding drugs, treatment adherence, and decision-making (Smith *et al*., 2019:1). Patient information related to diseases can be obtained through various healthcare professionals, patient associations, online health forums, and health information exchange or websites (Kamran *et al*., 2015:15).

6.2.7. Guidelines Recommended for Information Provision, Access and Use by HBV and HCV Patients

In your own opinion, what guidelines would you recommend for the hospital management to follow in providing disease information for patients as the way forward?

Findings based on the guidelines recommended for the information provision for HBV and HCV patients revealed that, majority of the patients suggested that hospital management staff should make information available to patients about their health as well as improve information for patients. Some indicated that doctors-patients relationship should be improved, others indicated that patients should have access to information

> *"Hospital management staff should make information available to patients about their health problems. Hospital management to improve on information provision to patients. Doctors and nurses are to be patient and nicer to their patients".*

The hospital management need to establish and enforce patients' information policy, including privacy policies, to ensure confidentiality and allow patients and doctors to access their clinical information for personal awareness (Chao *et al*., 2010:98). In support of findings from Chao *et al*., (2010:98), there is a need to improve on general awareness policy about HBV transmission to abolish discrimination against chronically infected individuals."

> *"In my own opinion, patient care is good, but I think we also need to avoid delays on the line. The doctors-patients relationship should be improved. Hospital staff should provide health information, especially about the disease. In my own opinion, patients' queries should be attended to without delay".*

In the context of HBV and HCV patients, the first step in preventing the spread of such diseases is by encouraging them to search for health-related information (Lalazaryan & Zare-Farashbandi, 2014:193).

> *"I don't have any recommendation. Hospital staff should provide enough information to patients. Doctors are to always explain the risk of disease*

infection to patients no matter how bad. Doctors and nurses are to ensure the privacy of patients' information but also make information available to them".

Study confirm that the knowledge of patients' information-seeking behaviour can provide health information experts with valuable information to improve patients' health. Lambert and Loiselle (2007:1006) maintained that "seeking information about one's health is a key coping strategy in health-promotion activities and psychosocial adjustment to illness".

"Doctors are to always make information available and discuss the risk involved in spreading diseases. Hospital staff are to provide the necessary information needed and make it accessible to patients". "I have no suggestion because I am well treated. Doctors and nurses are to make information available to patients to improve communication and understanding".

It was imperative to seek the opinion of doctors and nurses regarding the specific health information needed by patients, as well as establish the right sources of information for patients use. As healthcare providers, it is only reasonable and essential that the primary health information emanates from doctors and nurses, to understand the information needs of their patients (Ilogho *et al*., 2020). The perspectives of healthcare professionals (doctors and nurses) are among the first major factors to be considered regarding patients' information needs and preferences before providing health information for them (Ilogho *et al*., 2020). It is equally important that health professionals guide patients to reliable health information sources to avoid making mistakes (McMullan, 2006:24).

6.3. DISCUSSION OF FINDINGS: SENIOR STAFF/ADMINISTRATIVE OFFICER

6.3.1. Bio-Data of Participant

Findings revealed that, the key participant who consented and avail himself for an interview was a senior staff and administrative officer at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa. The participant was a male staff between the ages of 40-49, who had worked between the range of 1 to 10 years (See table 5.2). The participant provided rich information during the interview based on policies guiding patients information provision access and use. He also provided information based on challenges that healthcare providers are facing in providing information. The discussion of findings are discussed based on the following themes:

6.3.2. Policies and Resources to Support Information Provision and Use on Hepatitis B and C.

Are you aware of any policy related to patients information use on hepatitis B and C at Ngwelezane District hospital?

Health information policy is crucial for the purpose of guiding every activities concerning treatment, prevention, information provision and use for both patients and caregivers (Brinson & Rutherford, 2020:1355; Philips, 2018:178). No wonder Giaimo (2016:2) recommended that the healthcare system in any nation must be guided by rules and regulations, to provide efficient healthcare services. This implies that healthcare policy put in place must be capable of regulation treatment provided for patients, prevention the spread of dangerous diseases, and must be established for the purpose of promoting healthcare development and management of the healthcare system, as well as training of medical personnel in every health institution (Philips, 2018:178; Giaimo, 2016:2). Therefore, when asked during the interview that "are you aware of policy related patients information use on HBV and HCV at Ngwelezane Tertiary Hospital, the administrative officer revealed that there is a policy guiding patients information, protecting information, and well secured. The following were the responses of the officer:

> *Yes, am aware that hospitals have a policy guiding patients' information, to protect patients' information. They also provide information to patients from time to time to prevent the spread of disease and to control infections. Sometimes information is provided in form of a bulletin, or you can find them on the noticeboard, or the hospital website.'*

The above response from the hospital administrator indicated that the hospital indeed has a policy guiding patients' information as confirmed by the hospital staff. This is meant that health information policy was put in place to protect patients' information and to maintain privacy of patients information. This is in line with the submission by some researchers who believed that policy is needed to guide every activity regarding treatment, prevention, information provision and use for both patients and caregivers (Philips, 2018:178). In addition, the healthcare system must keep and maintain rules and practices guiding the provision of healthcare services (Giaimo 2016:2). This is important in supporting the prevention or treatment of illnesses,

development and management of the healthcare system, as well as training of medical personnel in every health institution (Philips, 2018:178; Giaimo, 2016:2).

6.3.3. Challenges Faced by Health Professionals in Providing HBV and HCV Information

What challenges do you normally face when providing information to patients?

Information provision for the purpose of health benefits, protection, treatment, health management and awareness are crucial given the epidemic nature of HBV and HCV. However, patients at Ngwelezane Tertiary Hospital have no access to relevant information provided due to several factors such as illiteracy, language barrier, timidity and among others. Ahmed *et al*. (2016:1522) identified barriers to information access as cultural, communication, social-economic status, healthcare system structure, knowledge of the diseases. Forsythe *et al*., (1992:181) equally lamented that physicians are unable to obtain clinical information sometimes due to communication problems. In addition, challenges of the high cost of IT facilities, lack of system integration, users' resistance, and slow IT adoption have made the task impossible to store and access patients' information especially when they stored manually (McKnight, 2006:145; Pravikoff *et al*., 2005:40). Findings based on this objective revealed that the major problem faced in providing information to patients was lack of cooperation and language barrier. The following were the responses obtained from the admin staff regarding challenges with information provision by healthcare providers at Ngwelezane Tertiary Hospital:

> *The challenge I normally have about information provision for patients is that at times, some are less cooperative, while some patients want information in their local language. Apart from these, I don't have any challenges with patients. I also don't have any challenge accessing patients' information or how to use patients information.*

In view of the above findings, language barrier has been noted by authors as the major problem behind lack of smooth interactions between physicians and patients (Zickmund *et al*. 2004:999). In addition, Jackson *et al*. (1997:292) reported language and communication barrier with non-English speaking patients. Other obstacles to information provision on HBV and HCV include a low level of information literacy. Treloar *et al*., (2013:51) proved that knowledge of HCV and education is important for treatment, particularly in the older

population. While educating people about causes and preventive measures should be targeted at those who are not literate among the older population.

6.4. DISCUSSION OF FINDINGS: DOCTORS AND NURSES

6.4.1. Bio-Data of Respondents

Findings regarding doctors and nurses show that the gender distribution was inconsistent. The gender distribution was unequal because majority of the nurse-respondents were female (n=18; 78%) against few male nurses (n=5; 22%), compared to number of doctors that participated in the survey questionnaire. The majority of the doctors participants were male (n=11; 61%), others were female in the distribution (n=7; 39%) (See Figure 5.1A). If compared with results from Rutten *et al*., (2006:150), who found out that males were less likely to be information seekers than females with a greater likelihood of information seeking among females in cancer context, the findings are deemed similar. In addition, previous studies indicated that older people and women were the groups most willing to participate in survey more than younger men using a written questionnaire. Because younger men preferred online surveys, while some groups preferred a telephone questionnaire (Glass *et al.,* 2015:1; Voight *et al*., 2003:66). Doctors' and Nurses' Gender: Finding based on gender of doctors and nurses were uneven. This agreed with Manierre (2015:151) that females are significantly more likely to look for health information, information in general, and information over the Internet than males, though the gap may be closing in the case of cancer. Findings based on employment factors indicated that all the doctors and nurses were gainfully employed as staff of Ngwelezane hospital. However, the distribution of the professional qualification of doctors and nurses per work experience revealed that the dominant number of years of work experience groups for both doctors and nurses were 1-5 years and 6-10 years (Figure 5. 1B). Those with more than 10 years of work experience were very few. Doctors represented all work experiences group while patients have no representation for work experience between 31 and 35 years.

6.4.2. Information Needs and Information Seeking Behaviour

The researcher sought to establish relevant health information considered needed by patients from doctors and nurses' point of view using self-administered open and close questionnaires. Five studies had previously sought the opinion of healthcare providers regarding patients'

information needs and seeking behaviour in a similar context (Langbecker *et al*., 2013: Berghout *et al*., 2015: Bajwah *et al*., 2013; Haase *et al*., 2019; Rees *et al*., 2006). Findings shows that prevention (*n*=26; 63%; see figure 5.2A) of disease information was the most needed information by the patients given that it is always better to prevent diseases than to cure. Concerning the need to know the "transmission mode of hepatitis," most participants (*n*=29; 71%; see fig. 5.2B) strongly agreed that patients need this information. As information providers, it is only reasonable and essential that the primary health information providers understand the information needs of their patients (Ilogho *et al*., 2020; Haas *et al*., 2019) perspectives of healthcare professionals (doctors and nurses) are among the first major factors to be considered regarding patients' information needs and preferences before providing health information for them (Ilogho, *et al*., 2020). It is equally essential that health professionals guide patients to reliable health information sources to avoid making mistakes (Haase *et al*., 2019: McMullan, 2006:24). The study findings show that doctors and nurses agreed and strongly agreed (*n*=22; 54% and *n*=16; 39%), respectively, that diet information was important (Figure 5.3A). George, *et al*., (2018:307) emphasised the positive role of the patients' dietary intake as a precautionary measure against coronary disease. Prevention is somehow part of the instinctive reflex that comes during the remorse of having contracted the infection. Regarding diet as the second most needed health-related information, it was normal to expect patients to consider seeking information about the kinds of food that can boost the healing process and not endanger their health conditions. These basic principles prevent aggravating the symptoms.

6.4.3. HBV and HCV Patients' Information Seeking

Many activities are involved in searching for health-related information, usually for the general purpose of bridging information gaps (Marchionini & White, 2007:205). The findings revealed that doctors and nurses (n=23; 56%) strongly agreed that patients seek information regarding healthcare support. This is followed by the 44% (18) that agreed that patients have no objection to "*information seeking*" in any form (Figure 5.4A). This finding differs from the outcome in the section on patients' information needs, where "*treatment"* remains the outstanding motivation that influences or predicts patients' information-seeking actions regarding health-related information. The motivating factors for this choice were presented in the information needs section, but, notably, the variable "purpose" is somehow linked to "need." If the "*treatment*" was the most needed information, it is logical to expect that the purpose of

information seeking by patients was related to "treatment reasons". The findings on seeking information were decreasing order such as:

(i) *to discover better treatment* (44.4%), (ii) to *stay informed* (22.2%), (iii) to *increase the chances of survival* (11.1%), (iv) to *get healed* (11.1%), and (iv) to *find hope* (11.1%) [Figure 5.3].

From doctors and nurses perspectives, patients suffering from chronic infections are always expecting to hear that "*the treatment is now available"*. For chronic disease, such good news is most of the time-released by the media, particularly television or the internet (Jacob *et al*., 2017:5; Tanaka *et al*., 2013:779). For patients, except for the "*direct counselling received from doctors,"* they also said they "*watch television*" in expectation of hearing the above-mentioned good news (Marco *et al*., 2006:256). Information users seek information for different purposes. In line with Taylors' (1986:184) assertion, "information gathered must be used for a purpose, which can be decision-making or to effect a change in the knowledge of the recipient." Some search information to find out the preventive methods for diseases, and others for the treatment and follow-up procedures. Whichever purpose it might be, searching for knowledge is very important.

Findings show that about 44.5% of the patients sought "*HBV and HCV health-related information*" in a non-rhythmic frequency (Figure 5.4). Searching for health-related information was to discover a "*better treatment*." Only 22.2% of the patients said they "*sought health-related information weekly*." About 11.1% of the patients sought health-related information equally for a "*month period*," every three months, and occasionally (*sometimes*). The doctors and nurses confirmed that the method of seeking information mostly used by patients was through *"direct counselling from medical professionals" (44.5%) [Figure 5.5c]*. This may be due to the desire for getting healed. However, the frequency of seeking health-related information is mostly un-regular. Health pressure can only be the explanation of the irregular pattern of information seeking.

6.4.4. Information Access and Use by Doctors and Nurses

Easy access to qualitative health information can improve the healthcare services and quality of life of people with chronic illnesses, including those with HBV and HCV (Zach *et al*., 2012; Kalichman *et al*., 2002). Given that an effective use of health information is linked to the

successful prevention of endemic diseases such as HBV and HCV (Howell *et al*., 2021:535: Cooke *et al*., 2019:135; Cros *et al*., 1998:51). Many authors stressed the importance of access and use of patients' information by healthcare providers for making informed decision (Swoboda *et al*., 2018:9; Agaku *et al*., 2014:374; Hesse *et al*., 2005:2618). Findings from doctors and nurses' point of view the purpose of the use of patient information was to "*guide the management of diseases*" (*n*=25; 61%), followed by "*diagnosis of medical problems and illnesses*" (*n*=24; 58.5%). Others use information "*for enquiry and academic purposes*" (*n*=14; 34.1%), and "*to decide for patients' treatment*" (*n*=18; 43.9%). Therefore, one may not be surprised to find out why most patients found doctors and nurses very accessible when seeking information more than other sources such as magazines and television. These findings are relevant to the suggestions by Edlin *et al*. (2005:276), who argued that the strategy required for prevention is *"understanding*" the dynamics of the causes of disease, mode of transmissions, treatment and preventions. The medical professionals, being objective, provide the correct information to their patients (Maxson *et al*., 2010). This indicated that the medical doctors and nurses in Ngwelezane regularly provide adequate information for their patients, which explains why all the patients (100%) were satisfied with the source of information they have chosen.

In addition, the majority of doctors and nurses' access and use patients' files (*n*=16;39%) when information is needed. Other sources used include hospital administration (*n*=2; 4.9%; with occasional use of patient's files), hospital administration alone (*n*=2; 4.9%); excluding the use of patients' files), articles (*n*=1; 2.4%), blood results (*n*=1; 2.4%), and academic literature (*n*=1; 2.4%). However, 43.9% (18) of respondents did not reveal other modes used to access patients' files (Figure 5.7). The purpose of using patients' information by doctors and nurses seem reasonable. Medical professionals need as much information as possible for patients suffering from hepatitis B and C. But the concern is to know how doctors and nurses access patients' information. Even though 16(39%) doctors and nurses referred to patients' files to access health-related information, 18(43.9%) did not disclose their information sources. Speculations can be around efforts to maintain the confidentiality of patients' information, which may remain a secret. The indication here is that patients' files are confidential documents with limited access, and health personnel are not allowed to revel confidential information.

Findings revealed that the most accessible information system used by doctors and nurses was clinical and diagnostic equipment (*n*=28; 68.3%; Figure 5.8D). Doctors and nurses have different opinion about use of diagnostics information system. For example, *medical*

diagnostics equipment's are similar to "c*linical and diagnosing equipment*". Medical diagnostics equipment is used for monitoring patients' blood pressure, pulse, body temperature, weight, and many more. Such equipment includes stethoscopes, Doppler, and ultrasound, X-ray, and imaging equipment. They are used in hospitals by medical professionals to meet the health needs of their patients. This equipment also relates to the *Clinical Decision Support Systems (CDSS)*. Although CDSS is a health information technology system that provides health professionals and patients with understanding and person-specific information, intelligently clarified or presented at suitable times, to enhance health and health care. However, this doesn't mean that the *Clinical Decision Support Systems* are not available or accessible in the hospital.

Furthermore, the next most accessible information system was "*Laboratory Information System*" (*n*=24; 58.5%) [Figure 5.8F], followed by a *Computerised lab Information System* (*n*=20; 48.8%) [Figure 5.8G]. Except for the departmental affiliation of respondents, the professional qualifications may also play a role in accessing some information systems. For example, nurses have a dedicated information system, *Nurses' Computerised Information System* (Figure 5.8H), that doctors may have never used. There were also *Clinical Decision Support Systems* (*n*=16; 39%) [Figure 5.8B], *Clinical Information System* (31.7%) [Figure 5.8E]. However, no information system, *Electronic Medical Record* (*n*=17; 41.5%) [Figure 5.8A], was accessible or available to doctors and nurses. The influence of affiliation, qualification and other bio-data information on respondents' views was investigated in the section "Analysis of influences between categorical variables."

6.4.5. Policies and Resources Supporting HBV and HCV Information Provision, Access and Use

One of the most deliberated priorities for the national health system in South Africa is the need to improve the overall health system, which also requires improving the health information policy (Andrew & Pillay, 2005:2:8; LKreps, 1988). To ensure effective implementations of strategic healthcare plans, health information policy must be introduced to guide patients' entire health systems, especially confidential information (Brinson & Rutherford, 2020; Pillay, 2002:4). Health information policies have been used in developed and developing countries, especially in African countries, to guide healthcare services, including access and use of patients' confidential information (Yang *et al*., 2017:103). However, the growing health

challenges of HBV and HCV diseases require that healthcare providers establish very effective and duly implemented policies.

Findings show that there were wide variations in the views of doctors and nurses. The analysis revealed that majority of doctors (n=17; 41%) were not aware of the hospitals' policy documents supporting the use of information, while 15% (6) of nurses were not aware. On the other hand, 41% (17) of nurses were aware of hospital policies on patients' information use, while only 2% (1) of doctors were aware of such documents (Figure 5.9A). Perhaps, such policies were to be used at the discretion of the doctors and nurses and not necessarily made available for patients' use or consumption. Eventually, a similar gap was observed in the availability of resources per qualification. Only 24.4% (10) of doctors had information resources (to support their patients to cope with social or psychological challenges while receiving their treatment), whereas 51.2% (21) of nurses had the information resources (Figure 5.9B). These findings validated the findings from Javadi *et al*., (2014:17) that" information use is essential for the rehabilitation and recovery of patients from trauma "that are likely to result in depression, anxiety and due to complications as a result of HBV or HCV disease (Javadi *et al*., 2012:17).

Thus, it becomes evident that the qualification of respondents had influenced their knowledge on the existence of the hospital policy documents and the availability of resources. It was unexpected to note that medical professionals working in the same environment have different perspectives about their use. However, Figure 5.9 gives only visual information about the gap of views. Scientifically, a test of independence of these two qualitative variables (qualification and awareness on the one hand and qualification and resources on the other hand) must be done to verify if the gap is statistically significant. The findings show that the *level of awareness of the hospital policy* by doctors highly differs from that of nurses and the coupled variables (*awareness of policy* and *availability of resources*) have a significant statistical link. The Chi-square test was used for six couples of qualitative variables to ascertain the possible influences between them. It was revealed that four couples of variables had a "p-value" parameter lesser than 0.05 (Table 5.1; hatched lines with a red asterisk).

A chi-square test compares the existence of a mutual influence among two qualitative variables. It helps to ascertain if there is a statistical gap between the responses of two qualitative variables. In our case, lines 1, 2, 5, and 6 of Table 5.1 have "p-values" less than 0.05.

Consequently, this scientifically confirms that doctors' awareness of the hospital policy was different from that of nurses (Table 5.1; line 1). Therefore, the hospital must establish and enforce patients' information policy, including privacy policies, to ensure confidentiality and allow patients and doctors to access their clinical information for personal awareness (Chao *et al*., 2010:98). In support of findings from Chao *et al*., (2010:98), there is a need to improve on general awareness policy about HBV transmission to abolish discrimination against chronically infected individuals."

Furthermore, their views on available resources are also statistically different (Table 5.1; line 2). Furthermore, the knowledge of doctors and nurses about resource availability is different according to their departmental affiliation (Table 5.1; line 5). Equally, the awareness of the hospital policy also differs according to the departmental affiliation of doctors and nurses (Table 5.1; line 6). However, the findings revealed that the gender of the participants did not have any influence on awareness of policy or knowledge of the available hospital resources. Figure 5.10 below displays a "mosaic plot" of the Chi-square test to compare qualification and awareness of the policy.

It revealed that doctors were statistically not aware of the hospital policy documents, as did nurses (Figure 5.3.10). These findings confirmed the argument by Mitchel *et al*. (2010:729), who suggested that improved knowledge and awareness of chronic diseases among healthcare and social service providers are very important and therefore must be accessible to the public and healthcare providers. Otherwise, it would be difficult, if not impossible, to achieve the WHO's goal of eliminating viral hepatitis by 2030, Kim *et al*., (2019:596) emphasised the need for awareness of information and active public health policy to identify persons at risk and provide appropriate management.

6.4.6. Counselling and Education by Healthcare Professionals on HBV and HBV Patients' Information

The role of education and counselling cannot be underestimated due to the contributions to improving the quality of life of patients and individuals. Education plays a strategic role in providing information and knowledge of hygiene, disease prevention, management, and possible eradication, especially HBV and HCV. The knowledge of HBV and HCV is very important because, through educational processes, knowledge is acquired to help create

awareness. As an instrument used for behavioural changes, education impacts healthcare practices and improves the quality of life of individual HBV and HCV patients (Haq *et al*., 2014:807; Sha, 2013:922; Raza, 2013:1127; Sharif *et al*., 2005:81). Raza *et al*., (2013:8) emphasised the importance of creating awareness about the risk factors of HBV and HCV infection during counselling intervention.

Findings revealed that doctors and nurses' opinions corresponded with those of patients that "*verbal and direct counselling was provided for patients during consultations and treatments",* which was the most used and available counselling programme provided to patients (*n*=15; 36.6%) [Figure 5.3.11A]. The views of doctors and nurses also confirmed patients' statements about the format of information dissemination provided by the medical professionals. This was followed by the "referral to psychologists and social workers" (*n*=6; 14.6%), "both counselling and referral to psychologists" (*n*=3; 7.3%), "health education programme" (*n*=1; 2.4%), and "both counselling and coping mechanism" (*n*=1; 2.4%).

Concerning education programme, most respondents admitted that there was no formal education programme available in the hospital (*n*=11; 26.8%) [Figure 5.11B]. Rather than organising programme for patients during their visits to the clinic, this study revealed that educational resources, such as "posters," pamphlets, group counselling, and magazines, were used to provide information for them. Nevertheless, posters were the most recurrent available education resources (*n*=7; 17.1%). Other education programme was also mentioned: use of pamphlets (*n*=2; 4.9%), group counselling (*n*=2; 4.9%), and magazines (n=1; 2.4%). It is noteworthy that patients' educational materials on HBV, HCV, cirrhosis and hepatocellular carcinoma can be accessed and utilised effectively to close the gap between the availability of health information policy and the level of awareness of information resources on HBV and HCV (Gulati, 2016:558).

6.4.7. Factors Contributing to HBV and HCV Patients Information Use

The use of information by patients can be determined by different factors, subject to the situations and needs of individuals at a particular time (Kuecuekbalaban *et al*., 2017:1; Salmanzadeh *et al*., 2016:380). In the context of HBV and HCV patients information use, the decision to use information "depends on the disease elimination, risks avoidance, control or reduction of the spread of the disease" (Salmanzadeh *et al*., 2016:380). Mak *et al*., (2018:262)

believed that seeking and using health-related information will help patients to "gain access to antiretroviral therapies or treatment, access to HBV and HCV screening, and access to preventive medical care." Some authors attributed the factors contributing to the use of health information as age, gender, and the economic status of individual information seekers (Jennings, 2018:1; Savolainen, 2015:661; Hovick *et al.*, 2014:511; Van Zandt *et al.*, 2002:61).

Findings from doctors and nurses' perspectives are contrary to that of patients' opinions based on preferences and opinions. For example, doctors and nurses believed that 12 factors contributed to the use of information by patients. These include patience when given medication (*n*=21; 51.2%) [Figure 5.13D]. Most of the patients believed that the adherence to medication is influenced by the use of information from doctors and nurses, and in turn influences their chances for survival. This finding relates to the construct of salience and beliefs in information seeking model. As expected, patients ascertained that staying informed was *very useful* and could contribute to their survival expectations. Doctors and nurses also agreed on the level of "compassion and empathy" (*n*=19; 46.3%) [Figure 5.12D], followed by "psychological support" (*n*=19; 46.3%) [Figure 5.12B], emotional support (*n*=18; 43.9%) [Figure 5.12A], and "improvement of interpersonal relationship" (*n*=18; 43.9%) [Figure 5.12E].

Other factors contributing to the use of patients' information include "health centre location" (*n*=18; 43.9%) [Figure 5.13E], "understanding the nature of disease" (*n*=17; 41.5%) [Figure 5.12F], "protection against other infections" (n=16; 39.3%) [Figure 5.13A], "ability' (*n*=16; 39%) [Figure 5.13F], "treatment" *(n*=16; 39%) [Figure 5.13C], "social support" (*n*=16; 36.6%) [Figure 5.12C], and "care" (*n*=14; 34.1%) [Figure 5.13B]. These findings demonstrated the position of Napolitano *et al*., (2019:2070) who identified "patients' needs as having adequate knowledge or information regarding where to obtain HBV and HCV related infomation, coping mechanisms, management of disease, mode of contacts, preventive measures, treatment options. While other factors relates to the importance of medication adherence, the usefulness of vaccination, and the readiness and positive attitude towards receiving the vaccination for preventive purposes.

6.4.8. Challenges with Information Provision for HBV and HCV Patients' Use

Many studies previously examined the high burden and prevalence of chronic HBV and HCV globally in many developed and developing countries, specifically in South Africa (Papatheodoridis *et al*., 2016:1; Wicker *et al*., 2014:1; Adeyemi *et al.,* 2013:155; Nwokediuko, 2011:786; Hours *et al*., 1991:255). Consequently, healthcare givers (doctors and nurses) made efforts to access and use the information to eradicate the spread of HBV and HCV but met with different challenges (Wicker *et al*., 2014:1; Nwokediuko, 2011:786; Hours *et al*., 1991:255). In addition, previous studies identified the challenges with information, such as lack of organised and accurate data, lack of awareness and information regarding the danger of HBV and HCV (Hours *et al*., 1991:255). Others faced communication challenges due to the spread of the COVID-19 pandemic (Zhou, 2020:1). It was also noted that many health care services were not accessible during covid-19 pandemic (Zhou, 2020:1). Meanwhile, this current study revealed that patients, doctors and nurses also faced some major challenges regarding HBV and HCV patients' information provision.

Contrary to the findings recorded from patients' interviews, the doctors and nurses encountered many challenges that are quite different from that of patients. Findings revealed that doctors and nurses encountered problems providing information for patients such as language barrier, inaccessibility to patients' information, illiteracy, and nervousness, less cooperation, long gaps in vaccine appointments, counselling, and others. Concerning the HBV or HCV patients' information, the findings were in decreasing order of occurrence: Most medicals encountered the problem of "language barrier" (*n*=5; 12.2%). Even though direct counselling from medicals was the most available format of information dissemination to patients, doctors and nurses face severe challenges in communicating some relevant health-related information to patients. The most dominant challenge was the language barrier.

On top of the illiteracy of most patients, it is not simple to explain technical concepts related to hepatitis to patients. Two limitations are involved here. The first is related to the fact that not all doctors or nurses speak the local language used by patients. The second limitation includes the difficulty of addressing technical concepts in IsiZulu. However, this doesn't exclude the possibility of finding an interpreter to help patients understand what they have been

told. The problem of language barrier has been reported between the physician and patients diagnosed with HCV infection by Zickmund *et al*. (2004:999) due to communication difficulties with physicians, especially gastroenterologists. The study by Jackson *et al.* (1997:292) substantiated the findings of this study by reporting language and communication barriers with non-English speaking patients. Similar findings.

Other obstacles to information provision on HBV and HCV include a low level of information literacy. Treloar *et al.*, (2013:589) proved that "knowledge of HCV and education is very important for the progress in the treatment of HCV especially in an older population" while educating people about causes and preventive measures should be targeted at those who are not literate among the older population. From doctors and nurses' side, they were also confronted by the limitation of the inaccessibility of information. In addition to the accessibility challenges faced by doctors and nurses, a study by Omoanono (2020:1) confirmed that "negative attitude of some health professionals, low self-esteem and other sociodemographic factors, insufficient time to interact with a health provider, inability to distinguish between correct and false health information" were among the challenges faced in seeking for information.

About 9.8% (*n*=4) of respondents declared that there is not a structured and Computerised database that organizes the patient's health-related information. Manually sorting out patients' files is very tedious and time-consuming. Forsythe *et al*., (1992:181) substantiated patients' inaccessibility and how to manage clinically relevant information by physicians. Other challenges include the "illiteracy of patients" (*n*=3; 7.3%). Treloar *et al*., (2013:589) confirmed that "low literacy level is also associated with several adverse health outcomes," including health knowledge, increased incidences of chronic illness such as HBV and HCV, diabetics, strokes, liver cirrhosis. A low level of illiteracy is also associated with a poorer ability to interpret labels and health messages, particularly among elderly persons, contributing to higher mortality rates (Adeyemi *et al.*, 2013:155).

Another challenge reported was the "nervousness of patients" (*n*=3; 7.3%). Wicker, *et al*., (2014:1) showed that "80% of the patients' experience an increasing level of anxiety." About 4.9% (*n*=2) of the patients are "less cooperative" due to serious anxiety, frustration, and depression or psychological disorder (Jones, *et al*., 2014:204). In comparison, some filled a "long gap for vaccine appointments" (*n*=2;4.9%) due to fear of the unknown. Studies also

revealed that patients with chronic diseases such as HBV and HCV are exposed to psychological and emotional distress, and sometimes very nervous or anxious and perhaps may not be able to engage in open discussions, attend to queries or interviews during routine check-ups (Agarwal *et al*., 2020:1; Fontana *et al*., 2002:401; Cerna, 2000:11). Therefore, patients in such circumstances must be psychologically prepared to deal with emotional distress, communication challenges, and responses in a discussion forum or conversational circumstance (Agarwal *et al*., 2020: Fontana *et al*., 2002:401; Cerna, 2000:11).

Findings show that counselling was about 2.4% (*n*=1). Boyer and Faillebin (2013:41) confirmed that counselling contributes to improvement in health knowledge and reduces gaps in the knowledge of chronic diseases, and reduces the rate of morbidity and other minor challenges (Figure 5.15). Others who did not reveal their challenges were dominant (*n*=10; 24.4%). Some other challenges include the loss of patients' files and the insufficiency of staff members (*n*=1; 2.4%) [Figure 5.15]. Patients' beliefs and perceptions were also part of the limitations of information provision. Therefore, healthcare providers must consider patients' beliefs and perceptions before providing information (Lake *et al*., 2020:4833). For example, patients might believe that medication cannot work because of bewitchment. This can make it difficult for patients to learn about certain precautionary methods from a particular source of information (Warri & George, 2020:1).

6.4.9. Guidelines Recommended for Improving HBV and HCV Patients' Information Provision, Access and Use

Previous studies demonstrated the importance of information for patients and caregivers: protection, safety, and decision-making. Besides, everyone needs information to improve health and quality of life. Therefore, previous studies suggested many guidelines to improve information provision, access, and use to cater to information needs, seeking and use. These include access to education and counselling on options for care and treatment for people infected with the hepatitis B and C virus (WHO (2020). In addition are the following: raising awareness about the dangers of HBV and HCV diseases, promoting partnerships and mobilising resources, increasing health equities; preventing transmission, and scaling up screening, care and treatment services (Bashi *et al.*, 2020:1; Ghai *et al*., 2020:456; Monaco *et al*., 2019:1689; Gurman *et al*., 2012:82).

Findings revealed that doctors and nurses provided some guidelines to sustain patient information and as well facilitate access and use. Among the recommended guidelines provided by the medicals was the implementation of the World Health Organization guideline for the provision, use, and access of information (n=5; 12.2%). In agreement with WHO recommendations, Zhao *et al*., (2020:1) agreed that timely access to quality health care information on HBV and HCV is very important, especially during the outbreaks of infectious diseases such as HBV and HCV. Moreover, timely information can be effective in curtailing the spread of disease and feelings of anxiety. The medicals further suggested implementing South African nursing guidelines to access and use information (n=4; 9.8%) [Figure 5.16].

According to Burridge (2018:529), to cope with accessibility challenges related to information provision for patients, to improve accessibility and documentation in complex information systems environments such as tertiary hospitals, health practitioners, particularly doctors and nurses, need to adapt to invest in digital information provision system to facilitate easy access to information and use. Further findings revealed that 7.3% (n=3) of the medicals recommended the "*production of pamphlets in the local language*" (isiZulu) to solve language barriers and constraints in patient information provision. This recommendation confirmed the findings by Kershaw *et al*., (2017:) who earlier posits that an effective pattern of communication specifically in the local language between patients and healthcare professionals increases health promotion and disease prevention as well as better the healthcare of individual patients. Other recommendations included the implementation of the Department of Health guidelines on hepatitis (*n*=1; 2.4%). (See Appendix 3-5).

The government of South Africa health guidelines clearly stated that "access to vaccines is the highest priority of the government to save lives and reduce the morbidity and mortality of infectious diseases such as smallpox, poliomyelitis, hepatitis B, measles, tetanus, whooping cough and pneumococcal conjugate across the world" (The Government of South Africa, 2020:1). More findings from the medicals suggested the multiplication or implementation of health-related education programmes (*n*=2; 4.9%). The findings confirmed the guidelines for information provision for HBV and HCV patients to address the education and treatment needs of individuals including patients with HBV and HCV (Terrault *et al*., 2015:1). Strategies for educating patients must include the appropriate HBV and HCV medication use, improving adherence to medications, and coordinating care provided by the inter-professional team. In

addition to the above is implementing effective strategies towards improving access and use of healthcare information by users of health facilities in South Africa with a specific focus on HBV and HCV patients.

The creation of social awareness formed 2.4% (n=1) of the guidelines suggested in the study. Social awareness is a very important strategy that can reduce the spread of dangerous diseases within an online community. The awareness programme through social media platforms: Facebook, Twitter, Instagram or WhatsApp, must be used to feature the mode of transmission, prevention measures, management, and treatment strategies to eradicate the spread of HBV and HCV diseases (Dehghani *et al*., 2019:15). In addition, awareness programmes can highlight and promote positive attitudes towards receiving a vaccination for prevention purposes (Napolitano et al., 2019:2070). Other suggestions included the creation of electronic databases (*n*=1; 2.4%) to encourage the use of electronic information sources, the creation of awareness and sensitization programmes in the hospital and communities (*n*=1; 2.4%) and churches (n=1; 2.4%), and the development of electronic guiding applications, among others (Figure 5.21).

Regarding the communication between patients and doctors/nurses, the following recommendations were formulated in decreasing the order of occurrence: the promotion of direct counselling (*n*=3; 7.3%). This finding confirmed the suggestion by Boyer and Faillebin (2013:41) that the purpose of health counselling is to reduce the communication and knowledge gap between patients and healthcare providers regarding HCV or HBV. Also, Østensen (2014) opined that "the potential barriers to implementing effective counselling behaviour included the negative perceptions about counselling" by patients. Therefore, the author suggested, "an urgent need for further studies to explore barriers to counselling behaviour and how these can be addressed by nurses and their managers."

Koshimoto *et al*. (2019:3394) considered nutritional counselling an important aspect of patients' psychological health during treatment for chronic diseases. The study further suggested that "nutritional counselling for patients is very important healthcare providers should provide information and counselling in a multifaceted and flexible manner. Also suggested was "the supply of the information (*n*=2; 4.9%). Information supply through a health information system is a useful strategy for information provision to patients and medicals. This finding is supported by Ludwick and Doucette (2009:22) that the adoption of health

information systems is a method of bridging the widening health care demand and supply gap. Bridging the information gap through adopting a health information system can assist physicians in tracking patient medical history, interventions, encounters, lab test results, and managing allergies and drug contraindications (Ludwick & Doucette, 2009:22).

Medicals suggested the development of a web-based communication system (2.4%). Ross *et al*., (2004:12) maintained that "it is possible to provide patients with secure access to their medical records through a web-based electronic communication system. However, such access may assist patients in the self-management of chronic diseases related to HBV and HCV. The Organisation of training sessions in the hospital (2.4%), among others (Figure 5.17), will improve the use of information systems by the medicals, patients and other health workers to provide efficient healthcare services. Therefore, language barriers, communication problems, and illiteracy must be addressed to enhance easy access to patients' information. So far, the suggestions provided by the medicals complemented those of the patients, thereby bridging the information gap.

6.5. SUMMARY

This chapter discussed the findings obtained from the analysis presented in chapter five. The major findings were discussed around the research objectives to answer the research questions, supported by the existing literature and the theory applied to the study. The qualitative data collected from HBV and HCV patients through in-depth interviews revealed that patients' needs for information were motivated by several purposes and personal factors. The topmost information needs of the HBV and HCV patients were the desire to survive and the expectation to hear about new healing treatment. The need for treatment was also paramount, just as the need for the prevention of diseases. Interestingly, all the patients interviewed understood the importance of seeking HBV and HCV health-related information. Most of the patients independently searched for information, hoping that information seeking is linked to better treatment, being informed, and surviving. Previously, few studies have explored UGET to examine information needs and seeking of HBV and HCV patients, however, this study explored the social-psychological origin of needs of UGET to investigate HBV and HCV patients information needs. This study investigated various information needs of HBV and HCV patients established that

In addition, findings also established that doctors and nurses were the most accessible sources of information for patients during consultations. Despite other accessible information channels, patients prefer to seek HBV and HCV-related information from the medicals based on trust and beliefs in their wealth of knowledge, experiences, and competencies.

The result of this study indicated that the antecedent factors of comprehensive model of information seeking such as trust and health information beliefs, characteristics of information sources and utility influence HBV and HCV patients in this study. The reason is that HBV and HBV patients were influenced based on the fact that they found doctors and nurses accessible when seeking health-related information at the hospital. Based on the submission by Johnson (1997:70), beliefs are important factors in information seeking because they compel individual patients thinking and level of motivation regarding information seeking. Few studies have investigated CMIS applications of information carrier factors to HBV and HCV context in South Africa. This study established the major purpose of the use of information by the doctors and nurses was for treatment. Patients' files were the most accessible sources of information by doctors and nurses. This finding relates to CMIS information carrier factors. Characteristics of information sources influence the use of doctors and nurses as sources of health information.

Another finding shows that doctors and nurses had different knowledge about the hospital's available resources and policies to support information provision to patients. Most patients confirmed that they were aware of hospital policy guiding patients' information. However, contrary to the responses by the patients, the majority of the doctors and nurses confirmed that they were not aware of policy documents for patients information use. Perhaps, the differences were due to departmental affiliations and the line of duties of doctors and nurses in the hospital. Furthermore, the majority of the patients confirmed being counselled on chronic disease management and instruction during the morning briefing, as soon as they arrived or when awaiting consultations. Doctors and nurses also agreed with the provision of verbal and direct counselling for the patients.

In another development, findings revealed that doctors and nurses were limited by many challenges of information access that did not allow them to communicate properly with their patients on health-related indications oriented to their treatment and vaccine. The major challenge faced by the patients in searching and using information was timidity and low self-esteem. The patients lacked the courage to ask for information. They lacked understanding of

the medical terminologies. On the contrary, doctors and nurses faced language barriers, inability to access patients' information sometimes because some patients are timid, nervous, and less cooperative when asking for information.

Finally, patients recommended that information be made available to them and that doctors and nurses need to clearly explain the risks involved in living with HBV or HCV diseases, keeping patients' information private and confidential. Among the prevailing recommendations by doctors and nurses was creating a Computerised database for better access to patient information and increasing health-related education programmes in the hospital. The medicals further recommended implementing the World Health Organization guidelines for access and use of information, implementing the South African guidelines for access and use of information, and producing pamphlets in local dialects or languages (isiZulu) for patients to be able to read and understand. The suggestions may solve the language barrier and meet the guidelines from the Department of Health on hepatitis and other chronic diseases regarding access to vaccines being the highest priority to save lives. The next chapter discusses the study summary, conclusions, and recommendations.

CHAPTER 7: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 INTRODUCTION

The purpose of this study was to investigate the information needs and information seeking behaviour of Hepatitis B (HBV) and Hepatitis C (HCV) patients in Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa. It was argued in the introductory chapter that Hepatitis B and C are dangerous and a silent killer disease that put a serious burden on patients and caregivers, unfortunately HBV and HCV patients at Ngwelezane lack of information that could help prevent the spread within the communities. An effective method of information provision, information seeking and access to information is crucial for patients and healthcare providers. In South Africa, many hospitals have been equipped with necessary resources to provide information based on patients' needs. However, despite these attempts, there seems to be a gap in information availability, accessibility, policy, communication and use. Some health institutions are responding to the information needs of Hepatitis B and C patients in other to achieve the sustainable development goal 3 (SDG 3), which is to ensure healthy lives and promote well-being for all at all ages. In the previous chapter, the findings of this study were discussed. This chapter aims to present a summary, conclusions based on the findings, and recommendations on each finding. The discussions in this chapter are based on the following objectives set for the study and as follows:

- To determine the information needs and information-seeking behaviour of HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.
- To establish HBV and HCV patients access and use the information at Ngwelezane Tertiary Hospital, Kwazulu-Natal, South Africa.
- To establish the policies and resources supporting information provision and use for HBV and HCV patients at Ngwelezane Tertiary Hospital, South Africa.
- To determine the role of counselling and education by healthcare professionals in providing information for HBV and HCV patients at Ngwelezane Tertiary Hospital, South Africa.
- To ascertain factors contributing to the use of information by HBV and HCV patients at Ngwelezane Tertiary Hospital, South Africa.

- To establish challenges that Ngwelezane Tertiary Hospital KwaZulu-Natal, South Africa is facing in HBV and HCV information provision and use.
- To recommend guidelines for the provision of information for HBV and HCV patients at Ngwelezane Tertiary Hospital, KwaZulu-Natal, South Africa.

Therefore, the summary of findings, conclusions and recommendations of this study are based on the objectives of this study.

7.2 SUMMARY OF FINDINGS

This section presents the summary of findings according to the objectives set for this study. This is to enable the researcher to conclude and as well as provide recommendations.

7.2.1 Summary on information needs and information-seeking behaviour of HBV and HCV patients

Findings revealed that the antecedent factors of beliefs predicted patients' information seeking from doctors and nurses. It was also revealed that patients' information needs include the desire to survive, the expectation of hearing about new or better healing, treatment, and prevention of the diseases. It was evident from the findings that the demographic factors did not influence the patients' information-seeking patterns. The majority of the patients independently sought HBV and HCV health-related information and were not influenced by economic factors. Rather, the majority of the patients were motivated by the desire to discover a better treatment. It was also revealed that the majority of the nurses that responded to the questionnaire were females, compared to doctors dominated by the male gender. This finding indicates that either gender could seek specific health information independently, according to the type of health information needed. This study revealed that CMIS model antecedent variables were able to influence patients information-seeking given that patients trust and beliefs the quality of the information received from doctors and nurses.

7.2.2 Summary on access and use HBV and HCV patients' information

The findings established that the most accessible source of information for patients was through direct counselling from doctors and nurses during consultations at the clinic. Perhaps the patients find it most convenient to ask questions during consultations with the doctors or nurses. Other accessible sources of patients' information were the Internet, magazine, television, television and radio. Findings also revealed that the major influence on patients' choice of

information sources was accessibility. Other characteristics included the reliability of information sources and the ability to understand the use of the sources. The patients attached importance to each source of information based on motivating factors such as staying informed, discovering better treatment, and increasing their chances of survival.

Furthermore, findings revealed that all the patients interviewed were satisfied with the sources of information used based on the quality of the information received. Also, the major purpose of using patients' information by doctors and nurses was to guide the management of HBV and HCV diseases. For doctors and nurses, the major characteristic that influenced their choice of information sources was accessibility. Other accessible sources of information for doctors and nurses were patients' files, hospital administration, and academic literature. The purpose of the use of patient information was to guide the management of diseases. Others include diagnosis of medical problems and illnesses, for enquiry and academic purposes, and to decide for patients' treatment.

7.2.3 Summary on policies and resources supporting HBV and HCV patients' information provision and use

Findings from the hospital administrator revealed that the hospital indeed has a policy guiding patients' information as confirmed by the hospital staff to protect patients' information and to maintain privacy and confidentiality. Findings also revealed that most HBV and HCV patients were aware of the hospital policy on patients' information. The findings indicated that making information policy available to patients to be well informed is very important. Findings also revealed that the level of awareness by doctors about the hospital policy differed from that of nurses. Secondly, there was no alignment between hospital information policy and the use of information resources by HBV and HCV patients and between doctors and nurses. In another development, the findings revealed the significant gap in the awareness of policy and availability of resources between nurses and doctors. More nurses were aware of the hospitals' policy documents supporting the use of information than doctors. Eventually, such policies were used at the discretion of the doctors and nurses and were not necessarily available for patients' use or consumption. A similar gap was observed in the availability of resources per qualification. The majority of the nurses agreed that they had the information resources to support patients' information needs. In contrast, a limited number of doctors had information resources to support patients to cope with social or psychological challenges during treatment and recovery.

7.2.4. Summary on counselling and education of HBV and HCV patients

Regarding counselling and education awareness by the healthcare providers, findings revealed that most patients were aware of counselling and health education provided for them on clinic days. The patients also confirmed that doctors and nurses' formats of information dissemination were direct counselling and not formal education. Other formats of information provision included posters, pamphlets, group counselling, and magazines. It was also revealed that verbal and direct counselling was provided for patients during consultation and treatment. Other findings revealed that the instructions provided by the hospital prepared them "socially and psychologically" to cope with the challenges of treatment received. Meanwhile, other patients could not determine the relevance of counselling and education by doctors and nurses. Patients that needed special attention were referred to psychologists and social workers to help patients recover their social and psychological health. Findings revealed that doctors and nurses provided verbal and direct counselling for patients during visitations and treatments. Patients were also advised to visit psychologists and social workers for assistance. Health education, counselling and coping mechanism" were among the information provided for patients during their visits to the clinic. In addition, posters, pamphlets, group counselling, and magazines, were used as a format of information provision.

7.2.5. Summary on factors contributing to HBV and HCV patients' information use

Findings revealed a connection between salience and beliefs as part of CMIS antecedents predicting information seeking and use. Both salience and beliefs predicted information seeking and use because most of the patients agreed that HBV and HCV information was important to stay informed. In addition, all the patients believed in the usefulness of information to their health. Findings revealed that the most important factor that motivated patients' information seeking on HBV or HCV was the need to increase the chances of survival. This indicates that the patients recognised the importance of possessing as much information as possible on hepatitis for survival. Other factors included evaluating dangers, healing expectations, remaining informed, and seeking authenticity of the information.

Interestingly, all the patients agreed that hepatitis B and C health-related information are useful. Another finding revealed that doctors and nurses also agreed that the factors motivating the use

of information depended on the level of compassion and empathy, psychological support, emotional support, and improvement of interpersonal relationships. Other factors contributing to the use of patients' information include health center location, understanding the nature of the disease, protection against other infections, treatment, and social support and care.

7.2.6. Summary on challenges with HBV and HCV patients' information provision, access and use

Findings from the interview from the perspective of the hospital administrator, the major problem faced in providing information to patients were sometimes lack of cooperation and language barrier. On the other hand, findings revealed that the major problem that patients face to access information was low self-esteem. Secondly, patients faced the challenges of accessing their files/medical records due to hospital policy of maintaining the confidentiality of patients' files/information, lack of confidence, delays due to long queues on clinic days, and timidity. The majority of the patients also refused to comment on the challenges. Notably, doctors and nurses encountered challenges different from patients', particularly regarding communication barriers and patients' inability to understand technical, medical terms, language barrier, illiteracy, nervousness, less cooperation, long gaps in appointment, and counselling.

7.2.7. Summary on guidelines recommended for improving HBV and HCV information provision, access and use

This section investigated guidelines that hospitals could adopt for improving information provision for patients, doctors, and nurses. Most patients suggested that doctors and nurses make information available, explain the risks involved in living with HBV and HCV diseases, and maintain the privacy of information. Findings revealed that most of the patients suggested that hospital management staff should make information available to patients about their health as well as improve information for patients. Some indicated that doctors-patients relationship should be improved. In addition, doctors and nurses recommended that the guidelines by the World Health Organization on the provision, use, and access of information be implemented. Other suggestions included implementing the South African nursing guidelines in the local language (isiZulu) and the Department of Health guidelines on hepatitis; producing pamphlets; organising health-related education programmes; creating social awareness, electronic

database, and awareness programmes in the hospital and churches; developing electronic guiding applications; and organising training sessions for medicals in the hospital.

7.3. CONCLUSIONS

This study concluded that the antecedent factors of CMIS influence patients' information-seeking behaviour. The information carrier factors determine the information sources used by the patients. Patients' information-seeking behaviour was determined by the characteristics of information sources, while the utility of information factors also influence the patients' information-seeking behaviour. It can also be concluded that patients' social psychology of needs can be gratified by access and use of credible and reliable information sources. The study established a link between the principle of social and psychological origin of needs, access and use of credible and reliable information sources for HBV and HCV diseases related information. The conclusions in this chapter are based on the findings of each of the research questions.

7.3.1 Conclusions on information needs and information-seeking behaviour of HBV and HCV patients

From the qualitative findings, it can be concluded that the most needed health-related information was to improve the patients' health conditions, treatment and prevention information are. Patients'' information needs were to survive the illness and the expectation to hear about new healing treatment which influences their information-seeking behaviour about HBV and HCV. The study established that antecedent factors of beliefs predicted patients' information seeking from doctors and nurses. HBV and HCV patients' information needs were satisfied using the sources of information based on characteristics such as accessibility and reliability. Both male and female patients believed that seeking information will assist in improving their health conditions. Conclusions from the quantitative perspectives were that patients' needs HBV and HCV related information on diet intake, check-ups, and transmission modes.

7.3.2 Conclusions on access and use of information by HBV and HCV patients

From the qualitative segment, it can be concluded that the most accessible information sources for patients were direct counselling from doctors and nurses during consultations at the clinic.

Other sources included the internet, magazine, television, television and radio, while doctors and nurses used patients' files, hospital administration, and academic literature. Patients found it most convenient to ask questions during consultations with the doctors or nurses. The study found a link between accessibility, convenience, reliability, and the characteristics of information sources as one of the information carrier factors influencing information seeking. Access to patients' information through a reliable source is important to both patients and healthcare givers. Information sources must be understandable, informative and should contain current treatment procedures for survival. The conclusion from the quantitative perspective was that majority of doctors and nurses' access and use patients' files for information. Other accessible patients' information from doctors and nurses perspectives was through clinical and diagnostic equipment.

Besides, the patients believed that the satisfaction of information used through any channel is based on the quality of the information received to manage HBV and HCV diseases. This study established a link between patients' satisfaction with information sources and the theory of uses and expected gratification of information consumed. The social and psychological origin of needs determined preferred information sources and the level of gratification received by patients. The theory of expectancy-value theory relates to the findings from the study, given that patients' information needs were influenced by the desire to survive and the expectation to hear about new healing treatments.

7.3.3 Conclusions on policies and resources supporting information provision and use by HBV and HCV patients

Conclusions from the qualitative segment was that hospital policy in guiding patients' information is very important. Hospital policy was established to guide patients' information as confirmed by the hospital staff, to protect patients' information and to maintain privacy and confidentiality. From the quantitative segment, it can be concluded that the level of awareness of the hospital policy by doctors differed from nurses. Most nurses were aware of the hospital policies on patients' information use. In contrast, most doctors were not aware of the hospital policy documents on the use of information. Thus, a gap was established in the resources available to support patients' information needs to cope with social or psychological challenges during treatment procedures.

7.3.4 Conclusions on counselling and education of HBV and HCV patients

This study indicated that most patients are aware of the importance of counselling and health education received on HBV and HCV disease prevention and management in the hospital. The study also revealed that doctors and nurses' format of information dissemination included direct counselling, posters, pamphlets, group counselling, and magazines. The study further revealed that verbal and direct counselling was provided for patients during consultation time and while receiving treatments to prepare them "socially and psychologically" to cope with treatment challenges.

7.3.5 Conclusions on factors contributing to the use of information by HBV and HCV patients

The study ascertained that the need for survival, evaluation of dangers, healing expectation, being informed, the authenticity of information sources, and diet information, were among the factors contributing to patients' information-seeking behaviour on HBV or HCV. In addition, this study ascertained the usefulness of hepatitis B and C health-related information. Doctors and nurses identified the level of compassion and empathy, psychological support, emotional support, and improvement of interpersonal relationships. Other factors include "health Centre location, understanding the nature of the disease, protection against other infections, treatment, social support and care.

7.3.6 Conclusions on challenges with HBV and HCV patients information provision, access and use

New insight was provided regarding the challenges faced in HBV and HCV patients' information provision and use. This study identified a lack of confidence to seek information, low self-esteem, lack of access to patients' files/medical records, delays due to long queues on clinic days, and timidity. It was also established that doctors and nurses encountered communication barriers, the inability of patients to understand medical terms, language barrier, illiteracy, nervousness, less cooperation from patients, long gaps in vaccine appointment, and counselling. Therefore, hospital management needs to make information available for patients use and for medicals.

7.3.7 Conclusions on guidelines for improving HBV and HCV patients' information provision, access and use

Findings from the patients' interviews revealed that most patients suggested that hospital management make information available. Both male and female patients want the doctors and

nurses to explain the risks involved in living with hepatitis and maintain the privacy of information. Doctors and nurses recommended the World Health Organization guideline for the provision, use and access of information to be implemented. Based on these findings, it can be concluded that South Africa's nursing guidelines are useful resources for improving information provision and communication between doctors, nurses and patients. Production of pamphlets in the local language (isiZulu) was among the useful resources needed to reduce language barriers and patient information provision constraints. Also, the implementation of the Department of Health guidelines on hepatitis, implementation of health-related education programs, creation of social awareness, the creation of an electronic database, creation of awareness programs in the hospital and in churches, the development of electronic guiding applications, as well as organizing training sessions for medicals in the hospital.

This study has various restrictions regarding the scope of theoretical applications and geographical restrictions. Theoretically, the applications of UGET theory is limited to only the principle of the social and psychological principle of needs that were applied to the information needs of HBV and HCV patients. Other aspects of UGET theory were not applied. CMIS variables were also applied to HBV and HCV patients' information-seeking context. However, the CMIS model does not cover patients' information needs. The study experienced geographical restriction, given that the scope of coverage was limited to Ngwelezane Hospital, KwaZulu-Natal, South Africa. Contextually, this is a case study mixed-methods approach. Convenience sampling and purposive sampling methods were employed to collect quantitative and qualitative data, limited to only HBV and HCV patients receiving therapy at the hospital and the doctors and nurses providing the therapy. The study can be extended to cover every department in the hospital and other provinces in South Africa or other countries. The researcher also met with challenges collecting ethical clearances at the University of Zululand, the ethical committee at Ngwelezane hospital, and the Department of Health Provincial office. The researcher met the hospital medical committee representative to present the study proposal and received the directives and guidelines for researching the hospital before administering the questionnaire and interviewing the patients. The researcher also met with the doctors and consultants during early morning briefing to present the proposal before distributing the questionnaire.

7.4. RECOMMENDATIONS ON INFORMATION NEEDS AND SEEKING BEHAVIOUR OF HBV AND HCV PATIENTS AT NGWELEZANE TERTIARY HOSPITAL, KWAZULU-NATAL, SOUTH AFRICA

Based on the findings of this study, the following recommendations are made based on each objective:

7.4.1 Recommendation on information needs and information-seeking behaviour of HBV and HCV patients

Given the crucial role patients' information plays in the treatment and prevention of HBV and HCV diseases, patients' desire to seek current information on HBV and HCV best treatment strategies, prevention and care, and the need to survive illnesses at all costs. Therefore, healthcare providers should provide information through special intervention programs that include sensitization program, targeting community leaders who can spread information quickly, people living in Ngelezane districts and communities, and local communities and rural dwellers. The hospital management needs to engage with the community leaders, create sensitization programs, creating awareness of the dangerous nature of the HBV and HCV diseases as silent killers. Many individuals affected can come out en-mass to narrate their experiences with the disease. Individuals affected by the disease can find out information about the signs and symptoms of the disease. People can find out the mode of transmission and methods of prevention. Testing and vaccination are crucial to prevention, treatment and management. Patients need to be encouraged to seek information about diets and regular check-ups at regular intervals. Alternatively, the hospital management should provide accessible HBV and HCV information sources through electronic applications on patients' mobile devices to promptly alert them to turn up for routine check-ups. In support of UGET theory, mobile Apps can provide the gratification of receiving news alerts, appointment alerts, and check-up alerts on the patients' mobile phones to improve or influence their information-seeking patterns. Training should be provided for staff to guide patients in using mobile applications.

Information sharing is essential at this stage to help patients gain health knowledge. Reading culture should be encouraged among literate patients to read about HBV and HCV symptoms. Regarding patients that are not literate, information literacy programmes can be introduced to guide them on sourcing information. For example, television could be provided feature channels specifically on health information or promotion of specific diseases. In addition, the hospital should provide pamphlets to patients featuring the health benefits of good hygiene on every hospital visit. Patients should also be encouraged to adopt electronic resources and internet facilities to receive current information to guide them on health management and proper hygiene.

7.4.2 Recommendations on access and use of HBV and HCV information

HBV and HCV patients found doctors and nurses accessible for information during consultations and hospital visitations based on the findings. Other preferred information sources were the internet, magazine, television and radio. Doctors and nurses also use patients' files, asking questions from patients during consultations were accessible to doctors and nurses, hospital administration records, and sometimes, academic literature. This study recommends that doctors and nurses pay more attention to patients' queries during consultations and take them seriously. The healthcare providers need to produce relevant newsletters and pamphlets discussing information based on the specific diseases in excess, relevant literature for literate and websites discussing preventive strategies for patients. Findings indicated that accessible sources of information for patients also include direct counselling from patients that are not literate. They should be given pamphlets or posters with proper descriptions, pictures and diagrams to understand the nature of HBV and HVB disease, showing them pictures of the symptom, both at the early stage and advanced stage when it is no longer curable. This study recommends that the hospital set up a program to regularly discuss the danger of HBV and HCV disease on the radio, on television programs, and stage drama to sensitize the public by making information available and accessible. Patients' information needs to be available and accessible for effective decision-making. In addition, electronic health record (EHR) and a good software system are recommended for the hospital for the management to store patient's information to be easily accessible. Electronic health records make patients' information easily accessible by doctors and nurses for efficient service delivery and information provision.

7.4.3 Recommendations on policies and resources supporting patients information provision and use

Concerning the importance of the hospital policy in guiding patients' information, patients and other healthcare staff need to be aware of available hospital policies and the purpose of use. It is crucial that the hospital provides policies and guidelines for using such documents. Based on findings majority of the nurses were aware of such policy documents more than doctors. Therefore, it is recommended that the hospital create awareness about available information policy documents for the benefit of all. Such documents should be printed and distributed to the doctors, nurses, and, if possible, patients. The hospital management should collaborate with the government to create awareness about HBV and HCV prevalence. Patients' information policy should be formulated and made aware to staff, implemented, and regularly interpreted by the patients in a language they can understand. Hospital policy regarding the confidentiality of patients' information needs to be maintained to ensure information security. The hospital should make information available, ensure confidentiality and explain the risks involved to patients.

7.4.4 Recommendations on Counselling and education for HBV and HCV patients

The format of instructions used for information dissemination by doctors and nurses included direct counselling, posters, pamphlets, group counselling, and magazines. However, posters were the least information resources used to disseminate information. Therefore, the hospital should increase the production of pamphlets and posters to increase information provision. Online health resources can also be used through mobile sets or other affordable electronic devices to regularly stay informed with health information.

7.4.5 Recommendations on factors contributing to the use of information by HBV and HCV patients

Given the level of compassion, empathy, psychological support, emotional support, and improvement of interpersonal relationships, it is recommended that the hospital support interpersonal relationships through special support groups to reduce psychological or emotional stress in patients.

7.4.6 Recommendations on challenges with HBV and HCV patients' information provision, access and use

Regarding the challenges of the communication barrier and lack of confidence, it is recommended that caregivers allow enough time for discussions with patients and accommodate their inadequacies. This approach will help build confidence in patients' minds to communicate effectively. Concerning the language barrier, the hospital management needs to employ the services of trained interpreters for effective communication between patients and medical professionals. These efforts will help to improve the quality of the patient-physician communication system. The study recommends that management call caregivers' attention to the potential communication barriers when caring for patients. Also, the government should advocate for improvement in the quality of care.

7.4.7 Recommendations on guidelines for improving HBV and HCV patients' information provision, access and use

The findings suggested implementing South African nursing guidelines, the Department of Health guidelines on hepatitis, health-related education programmes; creating social awareness, electronic databases, awareness programmes in the hospital and churches. Production of pamphlets in the local language (isiZulu) is important to reduce the language barrier and constraint in the information provided for patients; developing electronic guiding applications, and organising training sessions for doctors and nurses in the hospital. Thus, patients' information needs and information-seeking patterns can be improved through particular intervention: awareness creation, community engagement, social and psychological supports due to stigmatisation, counselling and education, health promotion, health literacy, and funding. Figure 7.1 illustrates the guidelines for patients' information provision and use.

7.5. ORIGINALITY AND CONTRIBUTIONS TO THE BODY OF KNOWLEDGE

The originality of this study is proved in the sense that this study was the first to investigate the information needs and information-seeking behaviour of HBV and HCV patients, with a focus on Ngwelezane Hospital, KwaZulu-Natal, South Africa. The study contributes to the literature on information-seeking behaviour using a pragmatic approach, CIMS and UGET.

The study contributes to the literature because it was the first of its kind to examine hepatitis B and C patients' information needs at Ngwelezane tertiary hospital South Africa using a mixed-methods approach to collect qualitative and quantitative data from patients and quantitative data from doctors and nurses. The result emerging from an interpretive point of view applying UGET to the information needs of the patients was an important improvement in health

conditions, better treatment and preventive care. The applications of CMIS to patients' information-seeking shows that trust and beliefs in the quality of the information received from doctors and nurses as information sources motivate patients' information-seeking actions. This study also contributes literature on health information access and use by BV and HCV patients at Ngwelezane hospital. The applications of CMIS to investigate the accessible sources of patient information reveal that information sources' characteristics are important factors to consider when choosing information sources.

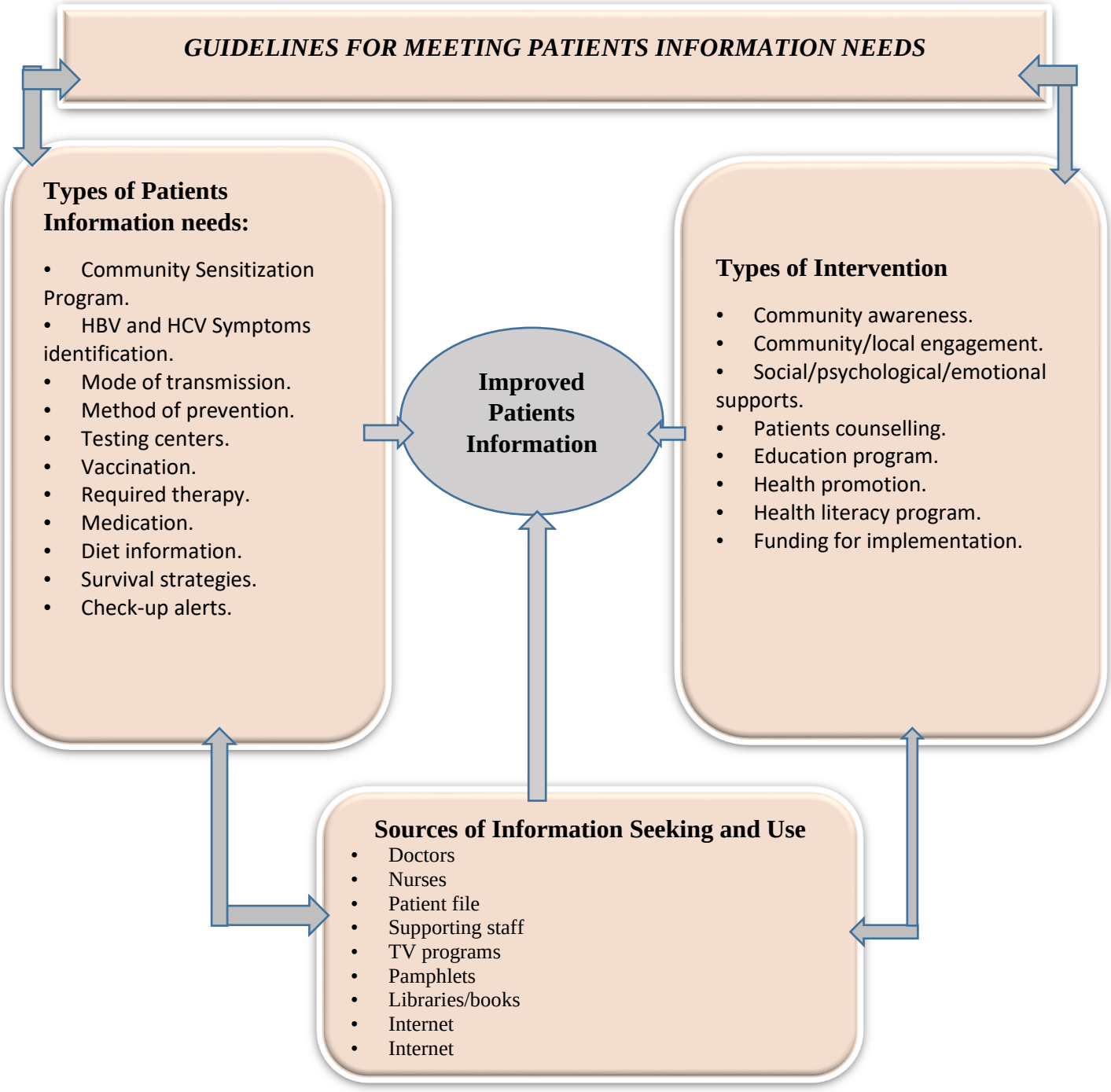
Additionally, in a practical sense, this study contributes to existing literature by sensitising healthcare providers about the need to improve information provision policy and guidelines to capture accessibility to patients' information specifically on HBV and HCV. Information access is available on the Ngwelezane hospital website on other diseases but not on hepatitis B and C. The study contributes new information for policymakers in healthcare management, health librarians, and other information specialists/professionals who are sensitised about the importance of HBV and HCV disease information for educational development, clinical practices, and social and psychological support for individual patients, and decision-making.

The study contributes to the body of knowledge sharing through seminar presentations, conference papers and a thesis deposited in the institutional repository of the University of Zululand. Several presentations have been made based on this current study. This topic was presented at Ngwelezane hospital during doctors' and nurses' seminars. Also, three publications have emerged from this present study. Two journals and a conference paper (Ibinaiye and Jiyane, 2021, *Mousaion;* and Ibinaiye, 2021, *Library Philosophy and Practice*), one conference paper (Ibinaiye and Jiyane, 2021) titled "*understanding the role of information in the prevention of hepatitis B and C epidemic in Africa and sub-regions: A pragmatic perspectives*" presented at the annual scientific conference and fellows congress, organised by National Postgraduate Medical College of Nigeria., August 20th -22nd, 2021. Additional two articles are presently under consideration by the Journal of Health Informatics, and the second at Mousaion, where a robust discussion based on patients' information needs were developed (See figure 7.1).

This study was limited to Ngwelezane tertiary hospital in the KwaZulu-Natal region of South Africa. Ngwelezane tertiary hospital was chosen because the hospital is among the first generation public hospital and the most developed tertiary hospitals in KwaZulu-Natal, South Arica. The data collections process was met with many difficulties, from restrictions

due to COVID-19 protocol and the language barrier. Access to the patient' registers was declined due to sensitivity of patients' information, confidentiality, and non – availability of data. This study employed a mixed-method case study; therefore, the result cannot be generalized.

Figure 7.1 Guidelines for improving HBV and HCV Patients Information Provision, Access and Use



7.6. SUGGESTIONS FOR FURTHER RESEARCH

This study investigated the information needs and information seeking behaviour of HBV and HCV patients in Ngwelezane Hospital in KwaZulu-Natal, South Africa. Further studies may investigate a comparative analysis of information access and use by HBV and HCV patients in South Africa, Nigeria, other African countries, or any other country, using the quantitative methods for data collections and structural equation modelling for data analysis. Other studies could also investigate the following titles:

1. We are utilising artificial intelligence approaches to explore information provision, accessibility and utilisation by HBV and HCV patients and healthcare providers in the post-pandemic period.
2. They are improving information provisions for hepatitis B and C patients using Machine Learning Approach in the healthcare facilities in KwaZulu-Natal Province, South Africa.
3. Applying the Internet of things to HBV and HCV patients' information access and use in the selected tertiary healthcare facilities in South Africa.

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APPENDIX ONE: Voluntary Interview For Hepatitis B And C Patients

Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa.

Department of Information Studies,

Faculty of Arts,

University of Zululand, Private Bag X1001,

KwaDlangezwa, 3886, South Africa.

Dear Participants,

I am a PhD student at the University of Zululand. I am investigating information needs and seeking behaviour of hepatitis B and C patients at Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa. The purpose of the study is to investigate the information needs and seeking by HBV and HCV patients and how they use information in Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa, and to determine how information-seeking patterns can be enhanced because of the recognition of the vital role of information to HBV and HCV patients. The study's outcome is envisioned to benefit HBV and HCV patients using Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa.

Thank you in advance.

Best regards,

Ibinaiye Irewole Dorcas

Email address: docibi@yahoo.

Cell Number: +27670551577

SECTION A: BIO-DATA

1. Gender:

Male ( )

Female ( )

2. Age Group:

20 – 29 ( )

30 – 39 ( )

40 – 49 ( )

50 – 59 ( )

60 – 80 ( )

3. Economic Status:

Employed ( )

Not-employed ( )

Self-employed ( )

4. Years of Working Experience

1 – 10 ( )

21–30 ( )

31–40 ( )

41–50 ( )

51–60 ( )

5. Health Status:

Hepatitis B and C

Others----------

SECTION B: INFORMATION NEEDS AND INFORMATION-SEEKING BY HBV AND HCV PATIENTS.

Patients' information needs refer to potential information needed by individual patients who tested positive for HBV and HCV and registered to receive medical treatment under physician care in a hospital. They are information relevant to assist patients' decisions to improve their current or future health or illness conditions (*Encyclopedia of Public Health*, 2008:128).

Information needs for HBV and HCV Patients

6. What health-related information is needed to prevent hepatitis B and C and improve patients' health conditions?

7. How can meeting your information needs assist in improving your health conditions?

The Information-Seeking of HBV and HCV Patients

8. Do you independently seek health-related information on hepatitis B and C through any source?

9. Could you ascertain your purpose in seeking health-related hepatitis B and C information?

10. How frequently do you seek hepatitis B and C-related information?

11. What method do you use when seeking hepatitis B and C-related information?

SECTION C: ACCESS AND USE OF INFORMATION BY HBV AND HCV PATIENTS

12. What sources are accessible when seeking health information on HBV and HCV?

13. What characteristics of information sources influence your decision to seek information on hepatitis B and C through that source?

14. How important is the source of your information to meet your information needs on hepatitis B and C?

15. Are you satisfied with the information you get through your choice of information source?

SECTION D: POLICIES AND RESOURCES SUPPORTING INFORMATION PROVISION AND USE BY HBV AND HCV PATIENTS.

16. Are you aware of any policy document related to the use of information on hepatitis B and C by patients at Ngwelezne hospital?

SECTION E: COUNSELLING AND EDUCATION FOR HBV AND HCV PATIENTS (METHODS OF INFORMATION DELIVERY SYSTEM).

17. Are you aware of the counselling and education programme organised for hepatitis B and C patients in Ngwelezane hospital?

18. If you are aware, what format of instructions for information dissemination are they using?

19. Can the instructions prepare you socially and psychologically enough to cope with the challenges of treatment you are receiving?

SECTION F: FACTORS CONTRIBUTING TO THE USE OF INFORMATION BY HBV AND HCV PATIENTS

20. What factors motivated you to seek information on hepatitis B and C?

21. Based on your experiences of the diseases, how important is information seeking related to your use of information?

22. Do you believe in the usefulness of hepatitis B and C-related health information to your use of information?

SECTION G: CHALLENGES WITH ACCESS AND USE OF INFORMATION BY HBV AND HCV PATIENTS

23. What challenges do you usually face in accessing hepatitis B and C information provided by the hospital management?

SECTION H: GUIDELINES FOR INFORMATION PROVISION, ACCESS AND USE

24. In your opinion, what guidelines would you suggest or recommend for the hospital management regarding information provision, access and use as the way forward?

Thank you for your response.

Dorcas Ibinaiye

APPENDIX TWO: Ukuxoxa Ngokuzithandela Kwabagulayo Besifo Se-Hepatitis B ne-C

Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa.

Department of Information Studies,
Faculty of Arts, University of Zululand,
Private Bag X1001, KwaDlangezwa,
3886, South Africa.

Baphenduli Abathandekayo,

Ngingumfundi we-PhD ovela kulo mnyango oshiwo ngenhla iNyuvesi yaseZululand. Njengamanje ngenza ucwaningo ngezidingo zolwazi futhi ngifuna ukuziphatha kweziguli ezinesifo sokusha kwesibindi kohlobo B no-C esibhedlela iNgwelezane, Empangeni, Kwazulu-Natal, South. Inhloso yalolu cwaningo ukuphenya izidingo zolwazi nokufunwa yiziguli ze-HBV kanye ne-HCV nokuthi zilusebenzisa kanjani ulwazi esibhedlela iNgwelezane, Empangeni, Kwazulu-Natal, South Africa kanye nokuthola ukuthi amaphethini wokufuna ulwazi angathuthukiswa kanjani, ngenxa ukuqashelwa kwendima ebalulekile yolwazi ezigulini ze-HBV ne-HCV. Umphumela wocwaningo kubhekwe ukuthi uzuze iziguli ze-HBV ne-HCV. Futhi, abafundi, izifundiswa, abacwaningi, izikhungo, umphakathi kanye nohulumeni kufanele bahlomule kulolu cwaningo. Ucwaningo luzokwenza ukuthi umcwaningi akwazi ukufeza ingxenye yezidingo zokunikezwa iziqu zeDoctor of Philosophy in Library and Information Studies.

Ngikubonga kusengaphambili.

Ozithobayo,

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ISIQEPHU A: I-BIO-DATA

1. Ubulili:
   Owesilisa ( )
   Owesifazane ( )

2. Iqembu Leminyaka:

   20 – 29 ( )
   30 – 39 ( )
   40 – 49 ( )
   50 – 59 ( )

60 – 80 ( )

3. Isimo Sezomnotho:
   Uqashiwe ( )
   Akuqashiwe ( )
   Uyazisebenzela ( )

4. Iminyaka Yesipiliyoni Sokusebenza
   1 – 10 ( )
   21-30 ( )
   31-40 ( )
   41-50 ( )
   51– 60 ( )

5. Isimo Sezempilo:

   I-Hepatitis B ( )
   I-Hepatitis C ( )
   Okunye ----------

6. ISIQEPHU B

IZIDINGO ZOLWAZI NOKUFUNWA KOLWAZI KWABAGULAYO BE-HBV NE-HCV.

Izidingo zolwazi lweziguli zibhekisa kulwazi olungaba khona oludingeka yiziguli ezingazodwa ezihlolwe zine-HBV ne-HCV futhi zibhalisiwe ukuthola ukwelashwa ngaphansi kokunakekelwa ngodokotela esibhedlela. Yimininingwane efanele ukusiza iziguli ukuthi zithathe isinqumo sokwenza ngcono izimo zazo zokugula noma zokugula zamanje noma zesikhathi esizayo (Encyclopedia of Public Health, 2008: 128).

Imininingwane Yezidingo ze-HBV ne-HCV: Iziguli

7. Yiluphi ulwazi oluhlobene nezempilo ocabanga ukuthi luyadingeka ukuvimbela noma ukuqeda ukusabalala kwesifo sokusha kwesibindi kohlobo B no-C ukuthuthukisa izimo zempilo yeziguli?----------
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8. Ngokombono wakho, ucabanga ukuthi ukufuna imininingwane ephathelene nezempilo kungasiza ukuthi uhlangabezane nezidingo zakho zolwazi?

Ukufunwa Kwemininingwane Yeziguli ze-HBV ne-HCV

9. Ingabe ngokuzimela ufuna imininingwane ehlobene nempilo ngesifo sokusha kwesibindi kohlobo B no-C kunoma yimuphi umthombo?----------
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10. Ungayithola yini inhloso yakho yokufuna imininingwane ehlobene nezempilo yesifo sokusha kwesibindi kohlobo B no-C?----------
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11. Ulufuna kangaki imininingwane ehlobene ne-hepatitis B no-C?----------
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12. Iyiphi indlela ojwayele ukuyisebenzisa uma ufuna imininingwane ehlobene nesifo sokusha kwesibindi kohlobo B no-C?----------
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Ukufinyelela nokuSebenzisa imininingwane ye-HBV ne-HCV: Iziguli

13. Yimiphi imithombo yolwazi ongayifinyelela lapho ufuna imininingwane yezempilo nge-HBV ne-HCV?----------
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14. Yiziphi izici zemithombo yolwazi ezinomthelela esinqumweni sakho sokufuna ulwazi nge-hepatitis B no-C ngalowo mthombo?----------
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15. Ubaluleke kangakanani umthombo wolwazi lwakho ukuhlangabezana nesidingo sakho semininingwane ku-hepatitis B no-C?----------
16. Ingabe wenelisekile yimininingwane oyitholayo kumthombo wolwazi owukhethile?

Ukuqondaniswa kwezinqubomgomo nezinsizakusebenza ukuxhasa ukuhlinzekwa nokusetshenziswa kolwazi yiziguli ze-HBV ne-HCV.

17. Ngabe uyawazi umqulu wenqubomgomo ohlobene nokusetshenziswa kolwazi nge-hepatitis B no-C ezigulini zesibhedlela iNgwelezne?----------
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Indima yokwelulekwa nokufundiswa ngabasebenzi bezempilo ekuhlinzekeni imininingwane yeziguli ze-HBV ne-HCV (izindlela zohlelo lokulethwa kolwazi).

18. Uyalwazi uhlelo lokwelulekwa nokufundiswa oluhlelelwe iziguli ezinesifo sokusha kwesibindi kohlobo B no-C esibhedlela iNgwelezane?----------
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19. Uma wazi, iyiphi ifomethi yemiyalo yokusabalalisa ulwazi abayisebenzisayo?----------
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20. Ngabe imiyalelo enikeziwe iyakwazi ukukulungiselela ngokwenhlalo nangokwengqondo ngokwanele ukubhekana nezinselelo zokwelashwa ozitholayo?

Izici ezifaka isandla ekusetshenzisweni kwemininingwane yiziguli ze-HBV ne-HCV

21. Yiziphi izinto ezakugqugquzela ukuthi ufune imininingwane nge-hepatitis B no-C?

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22. Ngokuya kokuhlangenwe nakho kwakho kwezifo, kubaluleke kangakanani ukufuna ulwazi kuhlobene nokusebenzisa kwakho ulwazi?----------
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---

23. Uyakholelwa ekusetshenzisweni kwesifo sokusha kwesibindi kohlobo B no-C okuhlobene nokusebenzisa kwakho ulwazi?

Izinselelo isibhedlela iNgwelezane eMpangeni, KwaZulu-Natal okufanele zibhekane nazo ekuhlinzekweni kolwazi ezigulini ze-HBV ne-HCV

24. Yiziphi izinselele ohlangabezana nazo ngokujwayelekile ukuze uthole ulwazi lwe-hepatitis B no-C olunikezwa abaphathi besibhedlela?.----------
---

Imihlahlandlela yokuhlinzekwa kolwazi lweziguli ze-HBV ne-HCV

25. Ngokubona kwakho, iziphi iziphakamiso ongazincoma kubaphathi besibhedlela njengendlela eya phambili?----------
---

Ngiyabonga ngempendulo yakho.

APPENDIX THREE: Interview with a Senior Staff/Administrator

Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa.

Department of Information Studies,
Faculty of Arts, University of Zululand,
Private Bag X1001, KwaDlangezwa,
3886, South Africa.

Dear Participants,

I am a PhD student at the University of Zululand. I am currently conducting a study on information needs and information seeking behaviour of hepatitis B and C patients in Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa. The purpose of the study is to investigate the information needs and seeking by HBV and HCV patients and how they use information in Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa, and to determine how information-seeking patterns can be enhanced because of the recognition of the vital role of information to HBV and HCV patients. The study's outcome is envisioned to benefit HBV and HCV patients using Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa.

Thank you in advance.

Best regards,

Ibinaiye Irewole Dorcas

Email address: docibi@yahoo.

Cell Number: +27670551577

SECTION A: BIO-DATA

1. Gender:

   Male ( )
   Female ( )

2. Age Group:

   20 – 29 ( )
   30 – 39 ( )
   40 – 49 ( )
   50 – 59 ( )
   61 – 80 ( )

3. Years of Working Experience

   1 – 10 ( )

   21-30 ( )

   31-40 ( )

   41-50 ( )

   51-60 ( )

4. What professional qualification do you have?

   Chief Admin Office ( )

   Medical Record Officer ( ).

   Senior Admin. Officer ( )

   Admin Officer ( )

SECTION B:

Objective Three: **Policies and Resources Supporting Information Provision and Use on Hepatitis B And C.**

5. Are you aware of hospital policy related to patients information use on hepatitis B and C at Ngwelezane District hospital?

SECTION C: Challenges Faced by Health Professionals In Providing Information

6. What challenges do you normally face when providing information to patients?

THANK YOU FOR YOUR COOPERATION

APPENDIX FOUR: Voluntary Questionnaire for Doctors and Nurses

Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa.

Department of Information Studies,
Faculty of Arts, University of Zululand,
Private Bag X1001, KwaDlangezwa,
3886, South Africa.

Dear Respondents,

I am a PhD student from the above-named department at the University of Zululand. I am currently conducting a study on information needs and information seeking behaviour of hepatitis B and C patients in Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South. The purpose of the study is to investigate the information needs and seeking by HBV and HCV patients and how they use information in Ngwelezane Hospital, Empangeni, Kwazulu-Natal, South Africa, and to determine how information-seeking patterns can be enhanced because of the recognition of the vital role of information to HBV and HCV patients. The outcome of the study is envisioned to benefit HBV and HCV patients. Also, students, academics, researchers, institutions, the community and the government are to benefit from the study. Furthermore, the study will enable the researcher to fulfil part of the requirements for the Doctor of Philosophy degree in Library and Information Studies.

Thank you in advance.

Best regards,

Ibinaiye Irewole Dorcas

Email address: docibi@yahoo.com

Cell Number: 0788566078

SECTION A: BIO-DATA

Please tick the correct answer.

1. Gender:
   Male ( )
   Female ( )

2. Age:
   20 – 29 ( )
   30 – 39 ( )
   40 – 49 ( )
   50 – 59 ( )
   60 – 80years ( )

3. What professional qualification do you have?
   Medical doctor ( )
   Nurse ( ).

4. How long have you been working with Ngwelezane hospital?
   01 – 05 years ( )
   05 – 10 years ( )
   15 – 20 years ( )
   21 – 25 years ( )
   26 – 30 years ( )
   31 – 35 years ( )
   36 – 40 years ( )
   41 – 45 years ( )
   46 – 50 years ( )

5. Department: ----------

6. Current Position ----------

Research Objective 1: Information needs and information-seeking behaviour of HBV and HCV patients at Ngwelezane hospital Empangeni, KwaZulu-Natal.

Section B: Patients Information needs And Seeking Behaviour

Patients' information needs refer to potential information needed by individuals' patients who tested positive for HBV and HCV and are registered to receive medical treatment under physician care in a hospital. They are information relevant to assist patients' decisions to improve their current or future health or illness conditions (*Encyclopedia of Public Health, 2008:128).*

7. To what extent would you agree that hepatitis B and C patients need the following information? Indicate on a scale of 1-5, where 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree

Patients Information needs	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
	1	2	3	4	5
Preventive information about hepatitis B and C is needed by patients to help reduce the spread of the diseases.					
Patients need information concerning the mode of transmission of hepatitis B and C viruses and how to avoid spreading the disease.					
Locating centres for laboratory tests or diagnostic centres.					

Recommended vaccines for those not yet infected.					
The nature of food and diet required for health management and recovery.					
Keeping to the appropriate time for routine check-ups.					
Required coping strategies with pain treatment procedures.					
Adherence to medication to facilitate a speedy recovery.					
Support from healthcare providers regarding treatment.					
Location of specific health facilities and agencies providing support for HBV and HCV patients					
Counselling units for HBV and HCV patients					
Other issues to which they might need information (please specify)					

Others----------

Research Objective 2: Information access and use at Ngwelezane hospital Empangeni, KwaZulu-Natal.

8. Please tick in the appropriate box/es, those that apply to you using the rating scale:

Strongly Agree; Agree; Neutral; Disagree, and Strongly disagree.

Purpose of use of Patients' Information	Strongly Agreed	Agree	Neutral	Disagree	Strongly Disagree
Patients' information is used to guide the management of diseases.					
Patients' information is used to diagnose medical problems and illnesses.					
Patients' information is used for enquiry and academic purposes.					
Patients' information is used for deciding on patients' treatment.					
It helps reduce hospital management costs and improves personal and professional communication between patients and doctors.					
They are used for caring and treatment of patients whose lives are at risk.					

They are used to improve work processes and to speed up work performances					
They are used to detect adverse events and medical errors.					
Patients' information is used to improve the effectiveness of healthcare delivery and services provided to patients within the community.					
They are used to organise hospital procedures and protocols as well as administrative functions					
Others Please indicate.					

9. How do you normally access hepatitis B and C patients' information?

10. What types of information system are accessible to you? Please tick

Types of patients' Information System accessible to Doctors and Nurses	Types of Patients' Information HBV and HCV.	Always	Often	Sometimes	Rarely	Never
Electronic Medical Record (EMR) is a repository of patients' data in digital form, stored and exchanged and accessible by multiple authorized users within a hospital system.	Electronic Medical Records					
Clinical Decision Support Systems (CDSS) is a system used by medical doctors and nurses to analyse patient information and formulate a diagnosis to improve the quality of the care their patients receive.	Clinical Decision Support Systems					
A web-based clinical information system is an application used by physicians to access the medical folders of patients they refer to hospitals within the health care community.	Web-based clinical information system(WBCIS)					
Clinical and diagnosing equipment. They are types of medical equipment's used by clinicians to measure and observe and	Diagnosis Image Archiving					

diagnose various aspects of a patient's health.						
Clinical Information System (CIS): is a type of information system intended for use in the Intensive Care Unit (ICU).	Clinical Information System.					
Laboratory Information system (LIS) is a software application used to improve work processes in a biochemical laboratory to simplify, speed up, and increase the reliability of sample analysis and result issuance.	Laboratory Information system.					
Computerised laboratory information management systems (CLIMS) is an information system that captures the analytical results of tests conducted during a medical trial.	Computerised laboratory information management					
Computerised information system (nurses): Is an information system used by nurses to maintain and develop medical data and systems to support nursing practice and improve patient care outcomes?	Computerised information system (nurses)					
Others. Please indicate---						

11. Where do you normally access the patients' information? Please indicate…….

Research Objective 3: Policies and resources supporting HBV and HCV patients information provision and use.

Policy supporting Information Access and Use by Healthcare Providers

12. Are you aware of hospital policy and documents related to patients' information use on hepatitis B and C at Ngwelezane Tertiary hospital? ----------

Please indicate----------

13. Do you have information resources to support your patients to cope with social or psychological challenges while receiving their treatment?

Please indicate.----------

Research Objective 4: Counselling and education by healthcare professionals in providing information for HBV and HCV patients at Ngwelezane hospital Empangeni, KwaZulu-Natal.
Counselling And Education For Hepatitis B And C Patients

14. A. What program do you have for hepatitis B and C patients counselling while receiving treatment in your hospital? Please indicate----------
---

B. What program do you have for hepatitis B and C patients' education while sitting in your clinic to receive treatment? ----------
---

Research Objective 5: Factors contributing to the use of HBV and HCV patients information at Ngwelezane hospital Empangeni, KwaZulu-Natal.

Perceived Factors Contributing to the Use of Patients' Information

15. (disagree-SD; Disagree-D; Neither disagree nor agree-NDA; Agree-A; Strongly agree-SA).

Factors contributing to the patients' information use	Strongly disagree	Disagree	Neither disagree nor agree	Agree	strongly agree
Emotional support					
Psychological supports					
Social supports					
Compassion and empathy					
Improvement in interpersonal relationships between doctors, nurses, family and friends.					
Understanding the nature of the disease and how to manage it effectively.					
Protection from hepatitis B and C and other associated diseases.					
Care and comfort from family and friends.					
Treatment and medical instructions from doctors and nurses.					
Patience with doctors and nurses when giving medication.					
Locating treatment centres, vaccination and test centres.					
Ability to differentiate between what is beneficial and what is dangerous for my health.					
Other factors, please indicate					

Research Objective 6: Challenges with hepatitis B and C patients information provision, access and use.

Challenges with Information Provision, Access and Use of Information

16. Please indicate; what challenges did you encounter concerning the following:

- Hepatitis B and C related information provision for patients? ----------
  ---

- Access to hepatitis B and C patients information? ----------
  ---
- Use of hepatitis B and C patients information?----------
  -

Research Objective 7: Recommended guidelines for improving hepatitis B and C patients information provision, access and use at Ngwelezane Hospital in Empangeni, KwaZulu-Natal.

17. What recommendations would you provide concerning the following:
    - Provision of hepatitis B and C information for patients----------
      ---
    - Access to hepatitis B and C patients information ----------
      ---
    - Information communication between patients and doctors/nurses----------
      ---
    - Method of information used by doctors/nurses----------

Thank you for your cooperation.

APPENDIX FIVE: Approved Ethics Clearance Unizulu

UNIVERSITY OF ZULULAND
RESEARCH ETHICS COMMITTEE
(Reg No: UZREC 171110-030)

RESEARCH & INNOVATION
Website: http://www.unizulu.ac.za
Private Bag X1001
KwaDlangezwa 3886
Tel: 035 902 6731
Fax: 035 902 6222
Email: LuthuliN@unizulu.ac.za

ETHICAL CLEARANCE CERTIFICATE

Certificate Number	**UZREC 171110-030 PGD 2020/8**					
Project Title	**Information Needs and Seeking Behavior of HBV and HVC Patients at a selected Tertiary Health Institution in South Africa**					
Principal Researcher/ Investigator	Ibinaiye					
Supervisor and Co-supervisor	Prof V Jiyane					
Department	Information Studies					
Faculty	Arts					
Type of Risk	Medium Risk – Data collection from people					
Nature of Project	Honours/4th Year		Master's		**Doctoral**	x	Departmental

The University of Zululand's Research Ethics Committee (UZREC) hereby gives ethical approval in respect of the undertakings contained in the above-mentioned project. The Researcher may therefore commence with data collection as from the date of this Certificate, using the certificate number indicated above.

Special conditions:

(1) This certificate is valid for 1 year from the date of issue.
(2) Principal researcher must provide an annual report to the UZREC in the prescribed format [due date-22 September 2021]
(3) Principal researcher must submit a report at the end of project in respect of ethical compliance.
(4) The UZREC must be informed immediately of any material change in the conditions or undertakings mentioned in the documents that were presented to the meeting.

The UZREC wishes the researcher well in conducting research.

Professor Mashupye R. Kgaphola
University Research Ethics Committee
Deputy Vice-Chancellor: Research & Innovation

22 September 2020

CHAIRPERSON
UNIVERSITY OF ZULULAND RESEARCH ETHICS COMMITTEE (UZREC)
REG NO: UZREC 171110-30
22-09-2020
RESEARCH & INNOVATION OFFICE

APPENDIX SIX: Approved Clearance Ngwelezane Hospital

KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

DIRECTORATE:
MEDICAL SERVICES
SENIOR MANAGER : MEDICAL SERVICES

Postal Address: Private Bag x 20021 Empangeni 3880
Physical Address: Thandiyise Road- Empangeni Jetty
Tel: 035-9817275 Fax: 0865168973 Email address : tobias.gumede@kznhealth.gov.za
www.kznhealth.gov.za

Enquiries: Dr RS Moeketsi
Date: 04.11.2020

To: Ms. D. Ibinaiye
University of Zululand
P/Bag x 2001
Kwa-Dlangezwa
3886

Dear Sir / Madam

RE: APPROVAL TO CONDUCT RESEARCH STUDY AT NGWELEZANA TERTIARY HOSPITAL

Your request to conduct research study at Ngwelezana Tertiary Hospital refers.

Please be advised that permission to conduct research study is hereby granted under the following conditions:-

- Confidentiality of hospital information, including staff and patients or contact information must be kept confidential at all times. Patient records are **not** to be removed from the hospital premises nor you are not allowed to photocopy/ photograph them.
- You are to ensure that your data collection process will not interfere with the routine services of the hospital.
- You are to ensure that hospital resources are **not** used to manage your data collection, e.g. Hospital staff collating data, photocopying, telephone etc.
- Informed consent is to be obtained from participants in your study if applicable.
- Policies, guidelines and protocols of the Department of Health and Ngwelezana Hospital must be adhered to at all times.
- Professional attitude and behaviour whilst dealing with research participants must be exhibited.
- The Department of Health and hospital's staff will not be held responsible for any negative incidents and or consequences including injuries and illness that may be contracted on site.
- You are required to submit to this office a summary of study findings upon completion of your research.
- You are requested to make contact with **Dr RS Moeketsi, Senior Manager: Medical Services** at Ngwelezana Tertiary Hospital once you are ready to commence your study.

Regards,

Recommended / ~~not recommended~~ by:

Dr RS Moeketsi
Senior Manager: Medical Services
Chairperson of the Ethics Committee
Ngwelezana Tertiary Hospital

Date 6/11/2020

Approved / disapproved by:

Mrs C.N.N. Mkhwanazi
Acting Chief Executive Officer
Ngwelezana Tertiary Hospital

Date 6/11/2020

GROWING KWAZULU-NATAL TOGETHER

APPENDIX SEVEN: Approved Clearance Department of Health KZN District, Pietermaritzburg, South Africa

KWAZULU-NATAL PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

DIRECTORATE:
Health Research & Knowledge Management Unit

Postal Address: Private Bag X9050
Physical Address: 330 Langalibalele Str; PM Burg; 3201
Tel: 0333953189/3123/2805 Fax: 033-3943782
Email address: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

NHRD Ref: KZ_202011_004

Dear Mrs I D Ibinaiye
(University of Zululand)

Approval of research

1. The research proposal titled **'INFORMATION NEEDS AND SEEKING BEHAVIOUR OF HBV AND HCV PATIENTS AT A SELECTED TERTIARY HEALTH INSTITUTIONS IN SOUTH AFRICA'** was reviewed by the KwaZulu-Natal Department of Health (KZN-DoH).

   The proposal is hereby **approved** for research to be undertaken at Ngwelezana hospital.

2. You are requested to take note of the following:

   a. *All research conducted in KwaZulu-Natal must comply with government regulations relating to Covid-19. These include but are not limited to: regulations concerning social distancing, the wearing of personal protective equipment, and limitations on meetings and social gatherings.*
   b. *Kindly liaise with the facility manager BEFORE your research begins in order to ensure that conditions in the facility are conducive to the conduct of your research. These include, but are not limited to, an assurance that the numbers of patients attending the facility are sufficient to support your sample size requirements, and that the space and physical infrastructure of the facility can accommodate the research team and any additional equipment required for the research.*
   c. *Please ensure that you provide your letter of ethics re-certification to this unit, when the current approval expires.*
   d. *Provide an interim progress report and final report (electronic and hard copies) when your research is complete to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za*
   e. *Please note that the Department of Health shall not be held liable for any injury that occurs as a result of this study.*

For any additional information please contact Ms G Khumalo on 033-395 3189.

Yours Sincerely

Dr E Lutge
Chairperson, Health Research Committee
Date: 13/11/2020

GROWING KWAZULU-NATAL TOGETHER

APPENDIX EIGHT: Approved Clearance University of Zululand

UNIVERSITY OF ZULULAND
RESEARCH ETHICS COMMITTEE
(Reg No: UZREC 171110-030)

RESEARCH & INNOVATION
Website: http://www.unizulu.ac.za
Private Bag X1001
KwaDlangezwa 3886
Tel: 035 902 6731
Fax: 035 902 6222
Email: LundallN@unizulu.ac.za

ETHICAL CLEARANCE CERTIFICATE

Certificate Number	**UZREC 171110-030 PGD 2020/8**								
Project Title	**Information Needs and Seeking Behavior of HBV and HVC Patients at a selected Tertiary Health Institution in South Africa**								
Principal Researcher/ Investigator	I Ibinaiye								
Supervisor and Co-supervisor	Prof V Jiyane								
Department	Information Studies								
Faculty	Arts								
Type of Risk	Medium Risk – Data collection from people								
Nature of Project	Honours/4th Year		Master's		**Doctoral**	x	Departmental		

The University of Zululand's Research Ethics Committee (UZREC) hereby gives ethical renewal approval in respect of the undertakings contained in the above-mentioned project. This approval is extended for another 1 year. The Researcher may therefore continue with data collection as from the date of this Certificate, using the certificate number indicated above.

Special conditions:

(1) This certificate is valid for 1 year from the date of issue.
(2) Principal researcher must provide an annual report to the UZREC in the prescribed format [due date- 15 November 2022]
(3) The UZREC must be informed immediately of any material change in the conditions or undertakings mentioned in the documents that were presented to the meeting.

The UZREC wishes the researcher well in conducting research.

Prof. Nokuthula Kunene
Chairperson: University Research Ethics Committee
Deputy Vice-Chancellor: Research & Innovation
15 November 2021

CHAIRPERSON
UNIVERSITY OF ZULULAND RESEARCH ETHICS COMMITTEE (UZREC)
REG NO: UZREC 171110-30

RESEARCH & INNOVATION OFFICE

APPENDIX NINE: EDITIN CERTIFICATE

SILVEROSS CONSULTANT

Contact: Silveross Consultants, Tel: +27719006400,
+27738991321/andyransey@gmail.com

Academic Research Consultants and Services

....Academic excellence through information

TO WHOM IT MAY CONCERN

Dear sir/ madam

EDITOR'S REPORT ON MS IBINAIYE IREWOLE DORCAS' DOCTORAL THESIS

This is to confirm that I edited Ms Ibinaiye Irewole Dorcas' Doctoral Thesis titled: ***"INFORMATION NEEDS AND INFORMATION SEEKING BEHAVIOUR OF HEPATITIS B AND C PATIENTS IN NGWELEZANE TETIARY HOSPITAL, KWAZULU-NATAL, SOUTH AFRICA".***

In the editing of this proposal, I focused on the general linguistic elements and also on the structural aspects. On the language, my specific focus was on aspects like sentence structure, grammar/syntax, and spelling. I also made suggestions where observed, on the most appropriate punctuation mark in which case, the candidate's chosen mark might have to be replaced by another, depending on the context of the sentence. The structural recommendations I made related to the paragraph, the use of upper and lower case, or the need to attend to a particular citation and/or referencing error, and the overall arrangement of the entire document for alignment purpose.

I found the candidate's writing to be generally mature, and trust that the editing work that has been done further enhances the overall quality of the dissertation.

Sincerely,
Consultant

2022-04-01