UNDERNUTRITION AS A FACTOR IN THE LEARNING ABILITY OF PRIMARY SCHOOL PUPILS

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DECLARATION

UNDERNUTRITION AS A FACTOR IN THE LEARNING ABILITY OF PRIMARY SCHOOL PUPILS.

M.ED 1996

I, Cleopatra Nosipho Luthuli, do hereby declare that this dissertation represents my own work in conception and execution and that all sources that I have used have been acknowledged by means of complete references.

Signed by me ..Luthuli..... on the ..31st.....
day of ..OCTOBER..... 1996.

DEDICATION

This work is dedicated to my parents for their devotedness and encouragement towards my education. Their contribution towards my entire life has always been immeasurable. May this work be a source of inspiration to my son Tubatsi.

SUMMARY

The researcher sought to investigate the effect of undernutrition on the learning ability of primary school pupils in the Esikhawini and Kwa-Dlangezwa areas in the district of Empangeni in Kwa Zulu Natal.

This study has six chapters. In chapter one the researcher introduces this report and mentions the significance of the study and the plan as to how the study will be carried out. Chapter two and chapter three are both based on research that other researchers have conducted on this topic. It is therefore background information. The researcher exposes the relationship that exists between undernutrition and intellectual development, how the learning ability is affected by undernutrition, for example, pupils who come to school having not had breakfast.

Two methods were used in this study, viz literature review and empirical study. Literature review formed the basis of the study whereafter questionnaires were designed. Chapter four details the methodology used to collect data. In chapter five the data is analysed and interpreted whereas in chapter six the researcher summarises the study and makes conclusions and recommendations. This study confirmed that undernutrition impacts negatively on the learning ability of primary school pupils.

The study showed that the teachers and pupils regard breakfast as the most important meal because pupils were found to perform better in class when they have eaten breakfast. The learning ability is generally affected when pupils have not eaten food.

The study also revealed that most pupils do not bring lunch boxes to school, but they bring money to school so that they can buy something to eat. Teachers showed concern on the food items that pupils buy. They stated that it does not provide the necessary nutrients for good nutrition. In conclusion, this study showed that the learning ability of pupils is affected by undernutrition, that is, by not getting enough food, especially breakfast and also nutritious food.

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CHAPTER ONE

1.1 INTRODUCTION

Food, menu, diet, hunger, nutrition, malnutrition, what images do these words bring to your mind? What feelings are evoked by the food a person eats? Next to the air that one breathes and the water one drinks, food has been basic to ones existence. Food is the primary concern of humanity in its physical environment throughout all recorded history. By food or the lack of it, the destinies of individuals are greatly influenced. Human beings must eat to live, and what they eat will affect their ability to keep well, to work, to be happy and to live long (Green and Harry, 1987).

Food plays such an important role in humanity that for a considerable time higher institutions of learning train graduates in food science. Such training offers graduates the opportunity to apply their specific knowledge of science to problems associated with food. Human beings require and select food to maintain optimal health and to satisfy personal preferences. Accordingly, in order to perform well at school

and in activities which involve learning, the brain cells need to be nourished with a balanced diet. The brain receives food through the diet which is eaten by an individual. The brain of a primary school child is still in the process of development. So that if the child lacks food, then a lot of damage is done to the brain with consequential results that may have life effect.

Good balanced food is later referred to as nutrition, is essential for normal brain development (Edelson, 1988:30). The obvious implication here is that children who are undernourished during the critical periods of growth and development (i.e. during the growth spurt) are at risk of permanent brain damage. The problem is that undernutrition does not happen as a single entity. It is often coupled with other disadvantages as well, such as poor sanitation, poor housing and poor home support.

Poorly nourished parents who cannot breastfeed their children properly, generally have poor housing, poor medical care and do not have many other social or cultural advantages. Vergnani (1983:5) stresses the fact that "undernutrition results in

intellectual stunting which is associated both with the deprivation of food as well as the impoverished environment in which it usually occurs". In short, this study aims to examine the effect of such conditions to primary school children in the KwaDlangezwa and Esikhawini areas.

1.2 PURPOSE OF THE STUDY

A common nutrition slogan is "you are what you eat". This is certainly true, since the human body and the food consumed are both composed of individual nutrients. Green and Harry (1987) concur with this statement when they state that a person's body is a product of the food consumed and the kind of food consumed determines the health of the person. Both adequate quantity and quality of nutrients are needed for good health.

The body is a collection of cells, organs and tissues that are constantly being replaced. A person's hair is not the same hair it was a year ago and his skin is not the skin he was born with. The health of any society is directly linked to its value system, cultural conditions, socio-economic and political set-ups. Each of these has a profound influence on

the health of an individual.

The World Health Organization (WHO) defines health as "the state of complete physical, mental and social well-being, and not merely the absence of disease and infirmity". Still on the issue of health, Lewis and Kelly (1987:113) quote Chakravarti who states that "the fundamental determinants of health, apart from the genetic constitution are nutrition, environment and lifestyle". Nutritional status is the state of health related to the body's use of nutrients obtained from food.

The body engages in a constant process of replacement. This starts with food, the nutritive material taken into the body. There is a positive relationship between good nutrition and health.

Food is a substance taken into the body to maintain life and growth. Food is a subject of vital interest to the human body. The body must have food if it is to survive. Townsend (1989:5) maintains that "man becomes aware of the importance of food for himself when he/she notices his own hunger pangs". Optimum health, better achievement in school, a feeling of vitality

and an attractive, strong body are the rewards of good nutritional practices.

For optimum health, primary school children require plenty of physical activity as well as adequate nutrition. Energy in primary school pupils is utilized through playing, running and talking. All these activities are to be supported by enormous amounts of energy which is obtained from the food that these pupils eat.

1.3 STATEMENT OF THE PROBLEM

Nutrition is about food and the people who eat it. Frequently, studies of nutrition leave out this second aspect - that of the consumer of the food, and concentrate on the chemical aspects. Such accounts may focus on the constituents of the food, the nutrients, what happens to them within the human body and what the results are if insufficient amounts are provided. But the individual is also important. People often talk about isolated nutrients, however, they do not eat nutrients as such, but food.

Good nutrition enhances appearance and is commonly exemplified by shiny hair, clear skin, clear eyes, alert expressions and firm flesh on well-developed bone structures. Healthy foods promote a healthy mind. In support of the belief that the activity of the brain is influenced by the food that one eats, Edelson (1988:19)agrees that "no one believed that the activity of the brain could be influenced by the food that one eats". What one eats can affect how one thinks and acts: whether one is alert or sleepy, sad or elated, whether one can study efficiently or not.

Research suggests that it might do some good to eat foods rich in carbohydrates when one wants to relax or have a high protein snack when it is important to be alert. Edelson (1988) continues to mention that there is solid evidence that changes in the diet can produce changes in the brain chemistry and function in a matter of minutes.

From the time while the mother is expectant, she is supposed to eat a well-balanced diet in order to have a healthy baby. The term well-balanced diet refers to the idea that if sufficient nutrients are present, then health will ensue. The

amounts deemed to be sufficient are usually those which are not associated with signs of malnutrition or nutritional deficiency. The idea of a balanced diet is that of a mixture of foods which prevents nutritional deficiency and therefore by implication, results in good health (Hegarty, 1988).

During infancy, a correct diet is also essential and eating correctly should continue for the rest of an individual's life. When a child enters school, some of the dietary habits will change. The change may be negative because the child is eating some of the meals away from home. So the parent has little control over what the child eats during school hours. Some of the changes may be related to social situations, peer group and economic problems.

1.4 SIGNIFICANCE OF THE STUDY

There are factors which influence the performance of pupils beyond the didactic conditions. Other social factors which are likely to influence the learning ability are the home, family size and nutrition. Hence the adoption of the socio-philosophical approach is essential. The schools which were

involved in this research were all day schools. Boarding schools were excluded from this study because they accommodate pupils who may not be members of societies or communities wherein such schools are situated.

It is hoped that the study will provide knowledge, understanding and insight about undernutrition and its effect on the learning ability of primary school pupils. Findings will enable the researcher to make valuable recommendations for improvement of the situation and contribute to qualitative education, which lead to a healthy nation.

1.5 AIMS OF THE STUDY –

1.5.1 to investigate the effect of undernutrition on the learning ability of primary school pupils.

1.5.2 to find out if the pupils' learning ability (concentration/attention span) is affected by eating or by not eating breakfast

1.5.3 to determine what kinds of food pupils buy when they have money.

1.5.4 to find out what role teachers play in the nutrition of their pupils.

1.5.5 to determine the effect of the feeding scheme on the learning ability of pupils.

1.5.6 To alert parents and teachers about undernutrition and its effects.

1.5.7 To evoke a need for all parties interested in the learning ability of the primary school pupils to consider issues on undernutrition, seriously.

1.6 DEFINITION OF MAJOR CONCEPTS

In order for the researcher to go on with the study, it is necessary to clarify some terms which will be used in this study.

1.6.1 UNDERNUTRITION

The researcher chose to use the term undernutrition rather than malnutrition because malnutrition may be understood by the general public to mean starvation but the *mal* in malnutrition means "bad", which applies to those who are

overfed as well as those that are underfed. In this study the researcher will concentrate on those who are undernourished.

According to Robinson and Lawler (1982:4) the term undernutrition refers to "a deficiency of calories and one or more essential nutrients". To some extent, undernutrition and protein deficiency go hand in hand; those who are visibly undernourished are often found to be deficient in protein which is essential for the growth and maintenance of body tissues. McWilliams (1986) agrees with Robinson and Lawler (1986) that undernourished children are usually underweight. Because underweight is caused by small food intake, it is likely that the thin person is receiving inadequate amounts of essential nutrients needed by the body, not simply inadequate calories.

Newman (1992) defines undernutrition as an inadequacy in individual dietary intake relative to the kind and quantity of food required for growth, for activity and for the maintenance of good health.

1.6.2 LEARNING ABILITY

Estes (1970:30) states that learning ability has to do with performance in particular learning situations. According to Jensen (1973:28) it is "the ability to learn the traditional scholastic subjects under conditions of ordinary classroom instruction". In this study the concept learning ability will be used to mean mental functioning and the rate at which new tasks are learned.

1.6.3 PRIMARY SCHOOL PUPILS

The term primary school refers to the pre-secondary stage of education (Davis 1988:9). Blenkin and Kelly (1981:10) define primary school as a school which caters for pupils between the ages of 8 and 12 or 9 and 13. In this study primary school pupils are those who are in Std 5. The terms "children" and "pupils" will be used interchangeably to refer to persons attending primary schools.

1.7 **PLAN OF STUDY**

This study is organised as follows:

CHAPTER 1

This chapter consists of : motivation for investigation, statement of the problem, aims of the study and a plan for the organization of the dissertation.

CHAPTER 2

This chapter provides a theoretical background to the study. It is a theoretical exposition of the importance of eating a balanced diet. The relationship between nutrition and the brain. It discusses factors that influence food intake such as the role of parents, the economic influence, the religious, cultural and moral values and the effects of undernutrition on mental development.

CHAPTER 3

Chapter three is still on theoretical background concerning undernutrition and intellectual development.

CHAPTER 4

Chapter four details the research design and methodology followed in the study.

CHAPTER 5

In this chapter the results of the investigation are presented, discussed and interpreted. It is the analysis and interpretation of data.

CHAPTER 6

Chapter six gives a synthesis of different findings. It gives a summary and recommendations emanating from the study.

1.8 CONCLUSION

Within a given environment some individuals are more susceptible than others to undernutrition. Among the vulnerable groups are children: their nutritional requirements are high during rapid early growth. When nutrients are not available for a given stage of development, the physical or mental retardation may be irreversible.

In this chapter the researcher has stated the problem, the purpose, significance and aims of the study. The plan of how the study will be carried out has been discussed. In the following chapter, the researcher will discuss the theoretical background on what other researchers have found in relation to this study.

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CHAPTER TWO

THEORETICAL BACKGROUND TO THE STUDY

2.1 INTRODUCTION

Good nutrition provides stamina, that is, resistance to fatigue or illness, and promotes a healthy appetite. In this chapter the researcher will discuss the importance of eating breakfast, the role of the parents as influencers in the food intake of their children, what part is played by the religious, cultural and moral values in the intake of food as well as the effects of undernutrition on mental development. Another important factor to consider is the economy. Generally, people with limited incomes depend on lower cost foods to supply much of the caloric and nutrient needs. Undernutrition should not be seen as a single isolated effect but as itself a symptom of a socio-economic disease in our society.

2.2 THE IMPORTANCE OF EATING BREAKFAST

It is a known fact that human beings need food to give them energy which enables them to work. This is also the case with children. They need to have breakfast in order to be able to concentrate in class and pay attention to what is happening around them. According to Robinson and Lawler (1982) a study which was conducted at the State University of Iowa showed that when breakfast was omitted, the attitude toward schoolwork, and scholastic achievement was poorer. There is an increase in energy requirements throughout the primary school period to cover the energy needs of growth and physical activity. The dietary pattern is modified for some children when they begin school. Breakfast may begin to be a more hurried affair or may even be skipped in the rush to get to school.

Many changes occur in a child's life, when formal education begins. Getting to school on time can interfere with breakfast, children may be unwilling to get up in time to eat, and some parents may not provide their children with an adequate breakfast. According to Taitz and Wardley (1989)

school children have changing nutritional needs which vary according to the level of growth, and various nutritional problems can arise, including undernutrition.

Children often leave home for school very early in the morning and in the rural areas it is difficult to cook breakfast for them before they go. It must then not be surprising when most children come to school having not eaten breakfast. This is very bad because hungry children do not learn well, and are more likely to fail their examinations than well fed ones. Children who are going to learn well must be well fed. A school child needs breakfast before he/she goes to school, and also something to take with him to eat for lunch in the middle of the day.

Many parents do not have breakfast themselves so that they do not think that their children need breakfast either. It is as important for children to have a nourishing breakfast and lunch as it is for them to have a good dinner. In the modern family, the greatest tendency towards skipping on nutrition probably occurs at breakfast and lunch. Because parents are ordinarily home for dinner, the evening meal is usually far

more adequate than other meals. Good breakfast habits are likely to be maintained in families which have a formal breakfast together. Unfortunately the scheduling in some families may make this arrangement impractical.

Parents can still encourage children to eat a good breakfast by preparing an appetizing meal and eating with them both during school mornings and during vacations. Studies have shown that when breakfast is consumed, children have a better attitude and school record compared to when it is omitted.

Whitney (1984) cites a study which was conducted by the cereal Institute in 1962 which showed that the work rate and work output were greater when school boys had eaten a basic breakfast (that is, fruit or juice, cereal, 2 slices of bread with butter and milk). Their teacher reported better attitudes and greater scholastic achievement when the boys were eating the basic breakfast than when breakfast was omitted. The study also determined that a midmorning break was not significant in increasing work output if breakfast had been eaten but did increase work output for almost half of the pupils who had not had breakfast. The results indicated that breakfast is of more

value than a midmorning break. McWilliams (1986) also emphasizes the point that children will perform better in school when they have an adequate breakfast before starting the day's school work.

2.3 **FACTORS THAT INFLUENCE FOOD INTAKE**

2.3.1 ECONOMIC INFLUENCE

> "Nutrition stands or falls on two pillars, the one social, namely a supportive and integrated home life, and the other economic, namely an adequate livelihood. If both are sturdy, you may predict that the children will be fat and healthy. Even if one pillar is thin, nutrition may be preserved if the other is very strong. In an affluent society, divorce often devastates the social pillar, but an adequate income and realistic social grants and child care facilities can compensate. In the rural areas the economic pillar is often attenuated, but a competent mother somehow copes, apparently able to spin gold out of straw" (Vergnani, 1983:21).

It is known that most of the women in the rural areas are unemployed, so the father is the breadwinner in the home. When the economic pillar crumbles, that is, when the father is out

of work or dies or deserts, women are left behind to fend for their children without resources, the children are then prone to undernutrition.

Income influences the variety of foods from which people can choose, and also the amount of food that may be purchased. Generally, people with limited incomes use smaller amounts of milk and meat foods. Also, the selection from the meat group is restricted to less expensive cuts. The meat group, to many people is essential to meal satisfaction, and the ability to buy it also has a connotation of status. Thus, when the income of poor people improves, the amount of meat purchased is usually increased. When the income is liberal, people have the freedom to choose from an almost unlimited variety of foods in or out of season, locally produced or from some distant state or country, fresh or processed.

2.3.2 RELIGIOUS, MORAL AND CULTURAL VALUES

Certain foods are forbidden by religious regulations. The association of a food with religion gives some clue to its importance in daily living. Christians use bread and wine as

symbols of Christ's body and blood. Pork is forbidden to the Jews and Muslims. Hindus are vegetarians, they will eat no flesh of any animal and many of them also abstain from eggs and milk. Seventh Day Adventists are lactovegetarians, that is, they eat milk, cheese, eggs and legumes but no flesh foods.

From what has just been discussed it is evident that those foods which are important for building up the body are sometimes forbidden by religion. This means therefore that a child will not grow up properly as he/she should because eggs, milk, meat and cheese which build up strong bones and muscles and are needed by the brain cells are not allowed for consumption.

Fasting is common to most religions. On fast days one food may be substituted for another or foods may be abstained from altogether. Moral attributes 'good' or 'bad' are often ascribed to foods. A child may be told to eat liver even if he/she does not like it because it is 'good' for him/her; he/she may also be told not to eat candy, which he/she likes, because it is 'bad' for him/her. Or he/she may be told that

he/she may have candy if he/she eats some liver.

Food is often used as a reward, punishment or means of bribery. Thus, a child who has behaved well is rewarded with a prized food-candy, ice cream, cake; but one who has behaved badly may be punished by being deprived of food such as dessert.

In every group of people customs have arisen concerning foods that should and should not be eaten. Although there is little or no scientific basis for these taboos, they are rigidly held so that change is likely to be resisted. These taboos often accentuate undernutrition. An example by Robinson and Lawler (1982) states that in Nigeria children are rarely given meat or eggs. These are expensive foods, and it is thought that giving them to children will encourage them to steal. Coconut milk is taboo for children since it is believed to make them unintelligent. Since children are still growing they need meat and milk for their growth, so culture will influence what they eat and they cannot disobey their cultural norms. This cultural practice, unfortunately leads to underdevelopment with far reaching consequences for education.

2.3.3 THE ROLE OF PARENTS IN FOOD INTAKE

It is the conscientious parents' responsibility to be certain that school-going age children have an adequate diet. Parents have a strong influence over their children's dietary patterns in the primary school period. When food is eaten with enthusiasm by parents, children will follow suit.

Creation of a warm and sociable family meal environment is a helpful step toward promoting good nutrition for all family members, (McWilliams, 1986). Jarrett (1979) states that companionship at meal time and appropriate food-related parenting behaviours were strongly associated with improved quality of diet. Parents can also aid their children in achieving good nutritional status if they watch their own dietary patterns. If parents are overeating, either for social or psychological reasons, children are likely to adopt this practice. The acceptance of a wide range of foods by parents encourages children to have broad tastes too.

2.4 UNDERNUTRITION AND SCHOLASTIC ACHIEVEMENT

Children are the commonest and most vulnerable victims of undernutrition. The nutritional requirements of children are high during growth. When the correct food is not available for a given stage of development, the physical or mental retardation may be irreversible. In 1986 a nutritional survey was conducted by the Regional Health Organisation for Southern Africa (RHOSA) and one of their findings was that if children have been undernourished, they become 'too lazy' to study. The undernourished child is inactive and does not explore the world around him.

Children are curious beings who want to explore their environment. Therefore, a stimulating environment is very important for intellectual development. Underfed and underweight children are stunted in growth. They are educationally disadvantaged due to concentration problems caused by hunger, insufficient energy to cope with school activities and lack of intellectual stimulation.

Galler (1983) and Grantham-McGregor and associates (1987) conducted a study in Barbados and in Jamaica on undernutrition and subsequent behaviour and intellectual performance. These researchers found out that children who were undernourished showed sleepiness in class, emotional instability with frequent occurrences of temper tantrums, and crying. They also showed attention disorders including short attention span, poor memory, distractibility and restlessness.

In an article by Thomas (1990) on undernutrition and school progress it is stated that the student who suffers from a diet markedly deficient in nutrients will lack the energy needed to engage in sustained physical or mental tasks. He goes on to state that undernutrition can contribute to irritability, to lack of attention or concentration, to early fatigue, to disorders, to difficulty in memorising and recalling information, to inaccuracy in motor skills and to a variety of physical pains that can distract pupils from their learning tasks. In addition to all of this, undernutrition may also decrease pupils' learning opportunity by contributing to illness that forces pupils to stay home and be constantly

absent from school and its activities.

2.5 CONCLUSION

The factors that influence what children eat have been discussed. The discussion of these factors revealed that children are good imitators as in the case where parents will set an example by eating breakfast themselves, then the children will follow suit. The fact that children are guided by religion and culture in the foods that they eat also plays an important role in determining the type of foods which are consumed.

The discussion also revealed that if a child is not getting the right kinds of foods which promote growth and good health, this will manifest itself in the scholastic progress of the child. Factors such as poor memory, lack of concentration span, distractibility, to mention a few, will be evident in an undernourished child. This may cause the child not to perform well in his school work and as a result lead the child to fail in his/her progress in school subjects.

The following chapter looks into undernutrition and intellectual performance. It relates to this chapter as all the factors that have been discussed have an influence on the intellectual performance of school-going children; particularly primary school pupils.

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CHAPTER THREE

UNDERNUTRITION AND INTELLECTUAL PERFORMANCE

3.1 INTRODUCTION

Food continues to be a major factor in both growth and general development of the whole person throughout his/her life time. The potential impact of undernutrition on intellectual and behavioral development has been receiving considerable attention. Children have high nutritional requirements and it is important that they eat properly in order to prevent physical and mental retardation which may have negative results throughout one's life time.

Some children enter school with poor nutrition habits stemming from a variety of reasons. For families below datum poverty income, adequate food is not always available to provide a variety and quantity of food that may be deemed desirable for developing good nutritious habits. Weininger and Briggs (1983) state that the first clinical sign of poor nutrition in

children is a deficit in weight for their height. If this condition is prolonged, the child's height is also affected. A slowing down in growth rate or evidence of growth retardation is therefore an indication of poor nutritional status. The basic problem here is how to detect this condition without exposing such children to nutritionists. This chapter looks at the mental functioning and performance of an undernourished child, how his/her school achievement is affected and the influence of family size as implicated in childhood undernutrition.

3.2 **UNDERNUTRITION AND INTELLECTUAL DEVELOPMENT**

3.2.1 UNDERNUTRITION AND MENTAL BEHAVIOUR

There is substantial evidence that short periods of undernutrition in early life may permanently, irreversibly impair the structure and function of the central nervous system and thus permanently and irreversibly reduce the intellectual capacity of adults who were undernourished at a critical period early in life. Loehlin, Lindzen and Spuhler (1975:205) state that "it has been well established that

severe undernourishment during critical periods of brain development can lead to irreversible brain damage or impairment, and in turn reduce intellectual performance throughout the lifetime of the critically undernourished person." This means that anything that happens during ones' infancy and childhood might have very grievous consequences which become evident in ones performance in later life.

Robinson and Lawler (1982) also agree with Loehlin et. al. (1975) that possibly the most serious problem of undernutrition is in the mental retardation that may occur and that the undernourished child is also exposed to environmental influences that interfere with rapid learning. Loehlin et al (1975:313) cites Stoch and Smythe (1963) who presented evidence that severe undernutrition during the first two years of life, when brain growth is most active, results in a permanent reduction in head circumference and brain volume and a restricted intellectual development. This study would focus on exactly this problem in black children in limited primary schools in KwaZulu-Natal. Winick (1984:78) found from a study which she conducted that "severe undernutrition retarded the growth of the brain and this growth retardation was directly

reflected in a reduced head circumference."

Food deficits affect persons of all ages, the impact is especially critical for children who are dependent upon others for food. Ballweg and Webb (1990) cite a study by Galler et. al. (1986) who came to the conclusion that undernutrition results in depressed intellectual performance. One of the most important modifiers of the effect of undernutrition on mental development is the age of the children when they experience *undernutrition*.

Ballweg and Webb (1990:84) found that "the younger the child when he/she experiences severe undernutrition, the stronger the negative influence upon his/her mental development". This shows that the level of undernutrition at an early age has a significant impact upon the mental maturity of the child. The age of the malnourished child and mental maturity shows that undernutrition during the early months of life will manifest itself in lower mental maturity during the school-going age of the child. They go on to add that physical development and mental development appear to respond differently to nutritional deficiencies.

While both physical and mental growth can be stunted by undernutrition during the first years of life, partial recovery and rehabilitation from physical deficits may be possible during school-age years. But mental development appears to follow a different pattern; development of the brain does not parallel physical growth of the body. Once the maturation of the brain cells is stunted, recovery may not be possible.

Buzina (1981) revealed that the relationship between undernutrition and mental development and behaviour indicate that severe undernutrition is accompanied by alterations in behaviour such as reduced motor activity, apathy, irritability and loss of interest in the social environment. Susser (1987:318) mentions that as a result of this "Clinicians began to observe and report the apathy, misery, and depressed functional performance of the affected children".

A number of follow-up studies of severe undernutrition indicated that depressed mental performance persisted into later childhood. Loehlin et al (1975), Buzina (1981) and Susser (1987) agree that severely undernourished children

exhibit characteristic changes in mental state starting with irritability and proceeding to apathy, stupor, coma and death. Robinson and Lawler (1982:423) agree with the many researchers by pointing out that "the apathy, lack of curiosity, and reduced activity of the undernourished child over a period of time will greatly reduce the amount of learning". The undernourished child is not interested in or curious about his surroundings. Undernutrition interferes with the learning process that normally occurs in healthy children growing up at a normal rate.

3.2.2 UNDERNUTRITION AND LEARNING ABILITY

Highly prevalent nutrition and health conditions among school-age children are important determinants of educational outcomes. Pollitt (1990:182) found that "health, nutrition and education are not independent domains in a child's life. They maintain close reciprocal interactions throughout the different developmental stages that children go through". There is a growing evidence that poor health and nutrition can be important determinants of both the attendance and the teachability of pupils and thus have a significant effect on

learning. Banks (1984:71) states that "undernutrition and poor living conditions are bound to have an influence on the health of the child, and so directly or indirectly on his ability to learn." Poor housing and overcrowding cannot only seriously impede the child's homework but even his opportunity for reading or constructive play.

In her article Susser (1987) carried out experiments and research on human beings and found that early and severe nutritional deprivation (undernutrition) seemed to affect behaviour and learning. There is already sufficient evidence to conclude that, overall illness, undernutrition and other health-related problems are probably important determinants of both school participation and school achievement (Leslie & Jamison, 1990). Pollitt (1990) is of the opinion that poor nutrition and health pose a significant educational problem. This opinion makes it even more imperative to study the effect of this phenomenon in KwaZulu-Natal schools.

Clarke et. al. (1991:53) conducted an in-depth assessment of the health and nutritional factors which may contribute to school failure in primary school children in Jamaica. The main

finding was that failing pupils were worse off than the succeeding students in a large number of socio-economic, health and nutritional variables. It seemed that health and nutrition not only affect achievement directly but also indirectly through attendance. Their conclusion was that poor health and poor nutrition contribute to poor school performance and achievement.

An article by Brôzek and Schürh (1985:13) on malnutrition and behaviour discusses the relationship of undernutrition to human behaviour as being of crucial importance. The research concluded that if undernutrition occurs during one of the critical phases of development, permanent damage will occur in the functioning of the nervous system, including the failure to achieve behavioral, cognitive and social potential. Thus, those people who live in poverty are at a greater risk of suffering from undernutrition during those important early developmental years, will be limited in their mental capacity and their capability to function within society.

Loehlin et. al. (1975:197) quote Cravioto et. al. (1973) who stresses that undernutrition, poverty and correlated poor

performance in school, result in a vicious circle whereby there is a low level of adaptive functioning, lack of modern knowledge, infection, and insufficiency of foodstuffs that produces undernutrition which gives a large pool of survivors who come to function in suboptimal ways. Such survivors in turn choose mates of similar characteristics and may rear their children under conditions that will in turn produce a new generation of psychologically undernourished individuals.

Pollitt (1985:18) conducted a study on nutrition and educational achievement and evidence is presented that "undernutrition in children is a risk factor in the formal education system because of its significant effects on school progress." Nutrition is an endogenous factor affecting a child's aptitude for schooling. The researcher cites studies in which nutritional deficiencies in school-age children have been shown to affect their school performance negatively. One of the conclusions that Pollitt (1985) reached was that the highest educational risk among children is produced by early, severe and chronic undernutrition coupled with a physical incidence of communicable disease and a social environment lacking in stimulation and other opportunities for learning.

3.2.3. FAMILY SIZE AND CHILD NUTRITION

Kucera and McIntosh (1991) believe that family size is implicated as a significant factor in childhood undernutrition. Children provide parents with a source of social status. For fathers, they perpetuate his hope of achieving social respect while for women, raising quality children represents the fulfilment of normative expectations (Harris, 1983). Kucera and McIntosh (1991:128) quote Blake (1981) who describes a 'quality' child as one "who reaches full potential with regard to intelligence and educational attainment. The attainment of one's full human potential, in terms of social pursuits, is often associated with optimum health and physical status as predisposing factors." In childhood this is characterized by normal growth and development patterns. Nutrition is known to play an important role in early growth and development and a 'quality' child is thus identified as a well-nourished child.

Family size creates time and resource constraints. The more the children, the more resources are divided and hence, the lower the quality of the output. Blake (1981) found that there

was a significant negative effect of increasing family size on intelligence and educational attainment. Economists have long recognized that for a given level of income, larger families have a disadvantage in terms of purchasing power for most goods and services (Kucera and McIntosh, 1991).

Small birth weight, high birth order, low standard of housing, incompetent parenting, repeated diarrhoea, non-utilisation of services and poor food intake are all contributory factors often acting together towards being undernourished. The more negative factors present in each child, the smaller the child tends to be. Poor housing with overcrowding and inadequate sanitation, lack of hygiene and low income on the other hand, and breaking up of the traditional family relatioships resulting in absence of social, moral and cultural support are well-known. (Ebrahim, 1982).

3.3 CONCLUSION

It has emerged from the aforegoing cursory discussion that severe undernutrition during critical periods of brain

development can lead to irreversible brain damage or impairment, and in turn reduces intellectual performance throughout the lifetime of the undernourished person. Problems cannot be easily corrected even if such a person receives good nutrition later on. The size of the family also contributes to the quality of food which is provided and given to the members of such a family.

The researcher has indicated that a bigger family is likely to enjoy poor quality of food. This indicates the significance of educating most parents on the importance of size and consequently family planning. Small families are likely to have bigger resourses and maybe better able to give their children good nutrition. Mention must also be made of the fact that the more enlightened parents are, the more they cherish the need to have smaller families.The tendency seem to be the richer a family is, the more jealous of its resources and tend to conserve them for fewer members.

The following chapter is based on empirical research. It is meant to authenticate and validate the conceptual background that has been given thus far. The questionnaire to be

completed by teachers hopes to solicit the condition of children in a limited number of black primary schools in KwaZulu-Natal.

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CHAPTER FOUR

RESEARCH DESIGN AND PROCEDURE

4.1 INTRODUCTION

In this chapter the researcher will briefly discuss the process which was involved before the respondents could respond to the questions posed to them. The discussion includes the research instrument, the pilot test, the selection of the sample and the cover letter to the respondents.

4.2 THE RESEARCH INSTRUMENT

4.2.1 ADMINISTRATION OF THE QUESTIONNAIRE

Oppenheim as cited by Mncwabe (1985) lists and discusses four methods of data collection viz, interviews, mail questionnaire, observation techniques and the study of documents. The research instrument used in this study was the questionnaire.

According to Good (1963:280) a questionnaire is generally regarded as "a form distributed through the mail or filled out by the respondent under the supervision of the investigator or interviewer". In this study the questionnaires were not mailed but they were distributed and completed in the presence of the researcher and the research assistants selected and appointed by the researcher.

Gay (1976) emphasizes the fact that a questionnaire should be as attractive and brief, and as easy to respond to, as possible. There are advantages associated with using questionnaires over other methods of collecting data, such as the following:

i. the questionnaire can be sent almost anywhere and the use of the mail means that more persons can be reached.

ii. each respondent receives the same set of questions phrased in exactly the same way (this means that it allows greater uniformity in the way the questions are asked, thus ensuring greater comparability in the responses).

iii. a questionnaire is much more efficient in that it requires less time to fill in, is less expensive and permits collection of data from a much larger sample (Good 1963, Gay 1976, Sax 1979).

Sloppy looking questionnaires turn people off. Lengthy questionnaires turn people off. Questionnaires requiring lengthy responses to each question *really* turn people off. Turning people off is not the way to get them to respond.

In this study the questionnaires were personally administered with the advantage that the researcher and the research assistants could establish rapport with the respondents. They explained the purpose of the study and clarified items which the respondents were not clear on. This was made possible by the fact that the respondents were conveniently found together in one place, that is, in a classroom. This proved to be very important for both the researcher and the respondents whose psychology of motivation involves his/her attention, sympathy, interest, co-operation and honesty we need in answering questions (Good, 1963).

Both structured and unstructured items were used in this study. A structured item consists of a question and a list of alternative responses from which the respondent selects. In addition to facilitating response, structured items also facilitate data analysis. A potential disadvantage is the possibility that a respondent's true response is not listed among the alternatives. Questionnaires should therefore include an "other" category for each item, a space for a respondent to write in a response not anticipated by the researcher.

An unstructured item format, in which the respondent has complete freedom of response (where questions are asked with no possible responses indicated) is sometimes defended on the grounds that it permits greater depth of response and may permit insight into the reasons for responses. The disadvantages of an unstructured item in a questionnaire is that subjects/respondents often provide information extraneous to the objectives of the study and respondents are not happy with an instrument that requires written responses (Gay, 1976).

4.2.2 THE PRELIMINARY RUN

Before the final form of the questionnaire is constructed, it is helpful to conduct a pilot study to determine if the items are yielding the kind of information that is needed.

Pretesting the questionnaire yields data concerning instrument deficiencies as well as suggestions for improvement. Mahlangu (1987:82) also stresses the importance of the pilot study by stating that it "uncovers failings as well as areas of extreme sensitivity, that is, it enables the researcher to debug his/her questionnaire". This tryout probably leads to "revision of certain questions, deletion of useless questions and addition of other items" (Good, 1963:291). The pilot study was conducted at Umlazi and given to 20 Std 5 pupils and 5 Std 5 teachers. These pretest subjects were part of the population but not part of the sample.

In this study the pilot test helped the researcher to rephrase one of the items, that is, item B14 in the teachers' questionnaire. Previously the question read thus: What foods do you encourage them to buy? The respondents tended to give

responses such as healthy or nutritius foods. In order for the question to be specific, it was rephrased to read thus: Name the foods that you encourage them to buy.

Pretest subjects should be encouraged to make comments and suggestions. In this study the pilot test helped the researcher to rephrase one of the items because the respondents did not quite understand how to respond to that particular item in the questionnaire.

4.2.3 SELECTION OF THE SAMPLE

When selecting a sample the researcher should look for a design that serves the research objectives. Its definition, measurement and sampling procedures should be orientated to the aim of the project. It must be a probability sample where the probability of selection of every element of the population is known.

It must be practicable with no stumbling blocks in the way of accomplishing the design as was intended. It must, above all, be economical in the sense that it facilitates the achievement

of survey objectives with minimum costs (Kirsh, 1965).

In this study the researcher used random sampling. A sample is a limited number of elements selected from a population. Representative samples are ones which have been drawn in a random unbiased manner. Random sampling refers to the process of selection whereby every member of the population has an equal non-zero chance of being included in the sample. This means that no population element has been either deliberately or inadvertently omitted or excluded from the sample except by chance.

The researcher used the raffle principle whereby all the Std 5 pupils in the chosen schools, were each allocated numbers on a piece of paper and each slip of paper was put in a container. These slips of paper were then mixed thoroughly and then the required number was picked. Those who had their number picked were the ones who formed the sample. The same modus operandi was also applied in the selection of the sample constituting teachers.

4.2.4 COVER LETTER

Respondents were assured of anonymity and confidentiality in their responses. Since the questionnaires were personally administered, emphasis was made that they should not write their names in any part of the questionnaire.

Complete anonymity probably increases the truthfulness of responses as well as the percentage of returns. The act of responding should be made as painless as possible, for instance by not infringing on the privacy of the respondent.

4.3 RETURNED AND SPOILED QUESTIONNAIRES

For convenience, the researcher had chosen to question 90 Std 5 primary school pupils and 20 Std 5 primary school teachers. In all, 110 questionnaires were administered to respondents but while sorting the questionnaires for data processing, one from the teachers and two from the pupils were found to be spoiled. So the researcher ended up with 19 questionnaires from the teachers and 88 questionnaires from pupils.

4.4 CONCLUSION.

The researcher has discussed the whole process involved in drawing up the questionnaire. The advantages why the qeustionnaire was chosen over other methods of collecting data have also been mentioned. The researcher has explained the method used in the selection of the sample and how the questionnaires were distributed to the respondents. In the following chapter the findings will be analysed and discussed.

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CHAPTER FIVE

ANALYSIS AND INTERPRETATION OF DATA

5.1 INTRODUCTION

This chapter is concerned with analysing the results of the research conducted by means of a questionnaire which was given to Std 5 primary school teachers and pupils.

Responses to questionnaires were done by marking with a cross [X] on the boxes or by giving explanations where necessary. Analysis and interpretation of data is in the same sequence as the items appearing in the questionnaire.

5.2 ANALYSIS OF RESPONSE

5.2.1 QUESTIONNAIRE TO TEACHERS

SECTION A : PERSONAL PARTICULARS

A 1.

SEX	FREQUENCY	PERCENTAGE
MALE	14	21
FEMALE	15	79
TOTAL	19	100

The above table shows that 79% of the respondents were females. Delamont (1987:92) writes that "the majority of nursery and primary school teachers (77,6%) are women". The findings in this study confirm this. A response on the sex variable did not matter much in this work. Nothing was reported about it in the list of aims for the study. Nothing was hypothesized about sex.

A2.

AGE IN YEARS	FREQUENCY	PERCENTAGE
15 - 24	2	10,5
25 - 29	5	26,2
30 - 34	4	21,1
35 - 39	4	21,1
40 & Over	4	21,1
TOTAL	19	100,0

Most of the respondents (26,2%) were between 25-29 years old. This number then declined to 21,1%. Delamont (1987) mentions in her study that 19% of full-time teachers in England and Wales were aged under 30. Most teachers were in their thirties. The proportion of women declines among those in

their thirties, reflecting the loss of women to child-rearing in those years, then rises again among teachers in their forties. In this study the pattern of age (21,1%) seemed to be constant for the thirties and forties. The age range of teachers at most primary schools still accomodates teachers who are between 25 years of age, fourty (40) years and over. This case is true and constant in most black schools as most female teachers work until retirement.

A.3

YEARS OF TEACHING EXPERIENCE	FREQUENCY	PERCENTAGE
0- 5	8	42,1
6 - 10	4	21,1
11 - 15	3	15,8
16 - 20	1	5,2
21 and Over	3	15,8
TOTAL	19	100,0

This table reveals that 42,1% of the respondents had taught for less than five years and those who had 11- 15 years of teaching experience (15,8%) had the same percentage as those who had taught for 21 years and over.

SECTION B

INFORMATION ON NUTRITION

B.1 DO YOU KNOW WHAT THE THREE (3) BASIC FOOD GROUPS ARE?

	FREQUENCY	PERCENTAGE
Yes	17	89,5
No	2	10,5
TOTAL	19	100,0

89,5% of all teachers responded that they knew what the three basic food groups are. This is very encouraging because it is the teachers themselves who must teach the pupils about these food groups. Seefeldt (1980:213) states that "young children can be introduced to the three basic food groups informally". This can be achieved by the use of pictures of the different foods. Consequently teachers who are knowledgeable about basic foods stand a good chance of educating children towards understanding of nuritious food. This will have far reading implications for children's learning abilities.

B2. If the answer is yes, what are they?

It is interesting to note that from the table in B1 above, 89% respondents said that they know the three basic food groups, but from the answers that they gave, only 52,6% knew the exact names of these food groups. Only 36% readily mentioned what these basic foods give to the body.

This information indicates that although people might know a lot about food and its functions, they might not be able to categorize the information they have into the various food groups. The responses which were given by the 36% respondents might also indicate that they misunderstood the question. This staggering response indicated that there was still a need to educate teachers on the categorization of food. Teachers who are knowlegeable and informed can easily educate their pupils. This knowlegeability about food will give teachers epistemic authority which is vital for impartation of knowledge.

B 3. WOULD YOU SAY THAT ALL THE THREE BASIC FOOD GROUPS ARE...

	FREQUENCY	PERCENTAGE
Very important	18	94,7
Important	1	5,3
Less important	-	-
Unimportant	-	-
TOTAL	19	100,0

Most teachers (94,7%) responded that breakfast was a very important part of a person's diet. Stanfield (1987:122) found that "pupils who skipped breakfast scored less well on tasks than did those who ate breakfast". Garrow, James and Ralph (1993:400) concur with Stanfield (1987) when they state that "without breakfast children may find it difficult to pay attention to tasks at school". A deduction that can be made is that if 94% of the respondents put high premium on breakfast it is rather easy for them to convey the message of breakfast vitality to pupils.

B 4. IS THERE ANY FOOD THAT IS SOLD AT YOUR SCHOOL?

	FREQUENCY	PERCENTAGE
Yes	16	84,2
No	3	15,8
TOTAL	19	100,0

This table showed that both teachers and pupils bought food from the people that sell. If there are people selling food, this means that the pupils who did not eat breakfast can buy something to eat at break/lunch. 15,8% on the other hand indicated that nobody sold food in their schools. This would mean that if a pupil did not bring a lunch box, then he/she would not eat anything during the day and needless to say what the consequences of this would be on the pupil's school work.

B 5. WHO SELLS THAT FOOD?

	FREQUENCY	PERCENTAGE
The schools tuck shop	3	15,8
Pupils on behalf of their principal	-	-
Pupils on self of their parents	2	10,5
Certain mother(s) or father(s) who have permission to sell.	11	57,9

No one sells	3	15,8
Other (specify)	-	-
TOTAL	19	100,0

The above table shows that 57,9% respondents indicated that the people who sell food at their schools are certain mothers or fathers who have permission to do so. This is true because when one goes around the schools towards break time there are certain mothers who always wait for break/lunch time so that they can sell their food to the pupils. The reason for these fathers and mothers to sell food is because they know that there might be pupils who have money to buy food. Other pupils might not have had breakfast or that they did not bring a lunch box. They also know that parents give pupils money to use it to buy food.

B6. DO YOU ASK WHETHER PUPILS HAVE TAKEN BREAKFAST IN THE MORNING?

	FREQUENCY	**PERCENTAGE**
Yes	11	57,9
No	8	42,1
TOTAL	19	100,0

Most teachers showed concern about their pupils eating habits. The table above shows that 57,9% of the teachers did ask their pupils whether they had eaten breakfast before coming to school. This showed a positive concern on the part of the teachers. It shows that they have an interest in the health of their pupils. Teachers seem to realize that eating breakfast is an important step to start a school day.

B6.1 IF YOU DO, WHEN DO YOU DO IT?

	FREQUENCY	PERCENTAGE
Before starting the lesson(s) in the morning	7	36,9
After first break	2	10,5
After lunch	2	10,5
No response	8	42,1
Other (Specify)	-	-
TOTAL	19	100,0

42,1% did not respond to this question because they indicated in B6.1 that they do not ask if the pupils had any breakfast. This is quite a majority and the researcher thinks that they do not ask their pupils probably because they themselves do

not eat in the morning before coming to work. 36,9% teachers indicated that they ask pupils before starting the lesson in the morning probably to make sure that the lesson will have a lasting impression on the pupils.

B7. HOW DO YOU ASK THEM WHETHER THEY HAVE TAKEN BREAKFAST OR NOT?

	FREQUENCY	PERCENTAGE
As individuals	5	26,3
As groups	3	15,8
As a class	6	31,6
No response	5	26,3
TOTAL	19	100,0

31,6% of respondents indicated that they ask pupils as a class and 15,8% teachers said that they ask pupils as groups as to whether they eat breakfast or not. Surely there is a disadvantage in asking pupils as a class or as a group because there will be a 'yes' chorus. When pupils are asked as groups or as a class those who did not eat breakfast may be shy to come out and say so. Therefore a teacher will think that everybody has had breakfast. 26,3% did not respond to this question since they had indicated that they do not ask the

pupils about breakfast. This is the number of respondents who do not show concern whether pupils have breakfast or not.

B 8. IF YOU GIVE CLASS WORK/TEST WOULD YOU SAY THOSE WHO HAVE TAKEN BREAKFAST PERFORM:

	FREQUENCY	PERCENTAGE
Well/Achieve good marks	10	52,6
Those who have not achieve badly	-	-
There is no difference in achievement	9	47,4
Other (Specify)	-	-
TOTAL	19	100,0

52,6% of the respondents indicated that the pupils who eat breakfast perform well and achieve good marks whilst 47,4% indicated that there is no difference in achievement between pupils who have taken breakfast or not. Teachers indicated that pupils who have breakfast perform well in school. This confirms what other researchers have discovered on this issue. Whitney (1984) concluded that when pupils had eaten breakfast there was greater scholastic achievement than when breakfast was omitted.

B 9. WHICH PUPILS USUALLY FORM YOUR TOP 10?

The responses concerning the pupils who usually form the top ten, were the following:

i. 47,4% responded that it is those pupils who usually eat breakfast and nourishing food.

ii. 31,6% responded by stating that it is the pupils who achieve good marks and perform well in class.

iii. 21% teachers stated that it is the pupils who are capable, competent and gifted.

When one looks at the above statistics, it is clear that the majority of the teachers agreed upon the fact that pupils who form the top ten in their classes are the ones who usually eat breakfast.

B 10. WOULD YOU SAY THAT A CHILD WHO HAS TAKEN BREAKFAST THINKS FATHER?

	FREQUENCY	PERCENTAGE
Yes	11	58
No	4	21
Uncertain	4	21
TOTAL	19	100

Most respondents (58%) agreed that a child who has taken breakfast thinks faster. Scientists have found that in everyday life situation, there is a real possibility that learning how and when to eat the right kinds of food can enable people to sleep better, lose weight and improve alertness. Consequently pupils should be encouraged to eat breakfast so that they think faster.

B11. DO PUPILS IN YOUR CLASS APPEAR TO BE READILY WILLING TO CONTINUE LEARNING AFTER BREAK?

	FREQUENCY	PERCENTAGE
Yes	13	68,4
No	6	31,6
TOTAL	19	100,0

68,4% of the responses indicated that pupils appear to be willing to continue learning after break because of the following reasons which were given by the respondents:

i. Pupils have eaten food (31,6%). This seemed to be the strongest reason given by the teachers.

ii. Pupils have been playing, refreshing their minds and come back with an effort to learn (15,6%).

iii. Their minds are stimulated because of the feeding scheme.

iv. Pupils have to be willing to work because they know that

they will be punished if not participating in class (5,3%).

(ii), (iii)and (iv) are related because they all point to the fact that when children have eaten food, their minds are stimulated and their brain cells are ready to work. If there is a feeding scheme pupils will have been given something to eat. If there is a tuckshop, they would have bought and eaten something to give them energy. Whitney (1990) cites as a study which revealed that a midmorning break was not significant in increasing work output if breakfast had been eaten but it did increase work output for almost half of the pupils who had not had breakfast. This illustrates that breakfast is of more value than a midmorning meal.

The reasons given by the (31,6%) respondents of pupils not willing to learn after break were:

i. Some become tired (tired because they might have been working hard before break time).

ii. Some are bored and seem to be drowsy (they might be bored

because they don't like the subject or yawning may be a sign that a pupil is hungry).

iv. Others are unsettled (uncomfortable) : being unsettled displays energy or it might also mean that the pupil is sick.

From these reasons which were given by respondents, it shows that when pupils have eaten food their minds are stimulated and they seem ready to learn but when they have not eaten food then they become bored, tired and sleepy. Pollit (1990) confirms this by stating that there is growing evidence that nutrition can be an important determinant of both attendance and the teachability of pupils and thus has a significant effect on learning. From the findings, it is evident that significant learning will take place when pupils have eaten and are ready and willing to learn.

B 12. DO PUPILS BRING MONEY WITH THEM TO SCHOOL?

	FREQUENCY	PERCENTAGE
Yes	15	78,9
No	1	5,3
Uncertain	3	15,8
TOTAL	19	100,0

When one studies this table it is evident that a majority (78,9%) of pupils bring money to school as opposed to 5,3% of pupils who do not bring money to school. If pupils bring money to school, the money can be used to buy certain food items which will be consumed by pupils. The implication which the researcher gets from this 78% response, is that if most pupils bring money, then obviously there are people who sell at the school, otherwise it would be pointless to bring money to school. However, it would really make sense if those who sell food are told what to sell to pupils.

B 13. WHAT TYPE OF FOODS DO THEY BUY?

According to teachers, the following are some of the foods

that pupils who bring money to school usually buy:

- fruit, sweets, chips, homemade pies, ¼ bread, fried fish, cakes, milk, juices, sandwiches and nuts.

Some of these foods are categorised as 'junk food' e.g. sweets, chips and cakes. The term junk food is used to describe some food items which are lacking in essential nutrients. These foods can be used in moderation with a balanced diet. Junk food is harmful when it replaces foods that supply the needed nutrients (Robinson & Lawler, 1982).

B 14. NAME THE FOODS THAT YOU ENCOURAGE THEM TO BUY

Teachers indicated that they encourage pupils to buy foods such as the following:

i. brown bread, milk, oranges, apples, nuts, sandwiches, fruits, and vegetables.

It seems that teachers were somehow not happy with some of the foods that pupils buy (listed in B 13). Pupils may still

continue to buy those foods listed in B13 because they are available from the sellers and that pupils do not always do what they are told to do.

B 15. GIVE REASONS FOR YOUR DOING SO.

The reasons that teachers gave for encouraging pupils to buy the foods mentioned in B14 were the following:

i. fruits, juices and vegetables give pupils vitamins (A, B, C, D ect) which are essential for their bodies to make them fit and strong.

- Vitamin A: responsible for good vision.
- Vitamin B: for nerve cells.
- Vitamin C: for wound healing and ability to withstand stress for injury and infection.
- Vitamin D: for the formation of strong bones and teeth.

- Fruit such as oranges give Vit C

- Vegetables give Vit B
- Milk gives Vit A
- Food such as eggs and milk build the body
- these kinds of food build their bodies and the brain.

ii. Pupils are encouraged to eat the correct foods and not junk food (for the junk food refer to B13).

iii. Pupils are advised to eat healthy and nourishing food (healthy foods are those which have a positive influence or purpose to the body and they nourish the parts of the body).

iv. The food will make pupils to pay more attention to what is taught in class.

Encouragement towards choosing to eat certain foods shows that teachers know about good nutrition, that is, they know what is good for a healthy body and mind. What is not clear is the extent to which they themselves practise what they preach. Pupils might not see them eating these correct foods. It might also happen that some of them have their own children and so

they may have been equipped to know what is good for children and what is not.

B 16. DO YOU HAVE ANY PUPILS IN YOUR CLASS WHO HAVE A SHORT ATTENTION SPAN OR SHOW SLEEPINESS IN CLASS?

	FREQUENCY	PERCENTAGE
Yes	13	68,4
No	6	31,6
TOTAL	19	100,0

68,4% respondents indicated that there are pupils who have a short attention span and who show sleepiness in class. Attention span could be measured by clinical measurements. In this study attention span could be equated to concentration span. The findings here indicate that some pupils are not able to concentrate for long periods of time.

B17. WHY DO YOU THINK THEY BEHAVE LIKE THAT?

Respondents gave many reasons on the point of pupils who show sleepiness and a short attention span, the major ones being

the following:

i. pupils may be hungry because they have not eaten breakfast(it was discussed in B11 that breakfast is important for a pupil to be able to learn effectively).

ii. pupils may not be eating the correct food (correct food as opposed to junk food B13 and B15).

iii. they show a lack of concentration because they do not eat correctly (related to ii).

iv. other pupils come to school very hungry because of family problems (because of family problems, the pupil might not be able to concentrate on school work and they might not have had breakfast).

B18. WHAT DO YOU DO WHEN THEY BEHAVE LIKE THAT?

	FREQUENCY	PERCENTAGE
Beat them	1	5,3
Tell them to stand up	14	73,7
Tell them to get out	-	-

Organise food for them	4	21,0
Other (Specify)	-	-
TOTAL	19	100,0

From the table above it is evident that most teachers (73,7%) tell the pupils to stand up when they show any signs of sleepiness or lack of concentration. The researcher thinks that teachers must ask pupils individually because the reasons given in B17 were what is *thought* not what was found out. It might happen that a pupil is really not eating correctly or that he/she sleeps late or some other reason. 21% indicated that teachers try and organise food for pupils who are hungry.

SECTION C : LUNCHBOX PROVISION

C 1. DO YOU ENCOURAGE PUPILS TO BRING LUNCH BOXES?

	FREQUENCY	**PERCENTAGE**
Yes	18	94,7
No	1	5,3
TOTAL	19	100,0

From the sample chosen, 94,75% respondents said that they

encouraged pupils to bring lunch boxes to school. This shows that teachers do care about the nutrition of their pupils. From this care one can deduce that teachers know that nutritious food has a bearing on the learning ability of pupils.

C 2. WHEN PUPILS HAVE TO EAT FROM THAT LUNCH BOXES, DO YOU STAY IN CLASS TO SEE WHAT THEY ARE EATING?

	FREQUENCY	PERCENTAGE
Yes	7	36,8
No	12	63,2
TOTAL	19	100,0

The common reason that teachers gave for staying to see what children have in their lunch boxes was that they wanted to know what kind of food the pupils bring, so that if it is not the correct type, they could then encourage them to bring healthy and nutritious food. A majority (63,2%) of the respondents indicated that they do not stay to see what the pupils have in their lunch boxes, because of the following reasons:

i. it is also the teachers' spare time or lunch break.

ii. to give the pupils freedom and privacy.

iii. teachers are busy during break time attending to their own matters.

iv. pupils are given time to enjoy themselves without the presence of an adult.

v. pupils might be shy to eat infront of a teacher.

vi. some teachers felt that it would be embarrassing to pupils for teachers to know what they are eating.

vii. other pupils take their lunch boxes and eat outside the classroom.

In B14 and B15 teachers listed foods which they encourage their pupils to buy or eat. This now somehow contradicts what they said because most of them (63,2%) do not stay to see what pupils are eating, that is, they do not check whether the

pupils are really eating the correct food.

Other pupils might take their lunch boxes and eat outside because perhaps their friends are not in the same class as them. They may want to share with their friends in other classes who may not have brought lunch boxes.

C3. IS THERE ANY FEEDING SCHEME AT YOUR SCHOOL?

	FREQUENCY	PERCENTAGE
Yes	17	89,5
No	2	10,5
TOTAL	19	100,0

It seems that from the chosen sample, most schools have a feeding scheme. The feeding scheme helps because firstly those pupils who do not eat breakfast will have something to eat. Secondly, at the schools where there is no tuck shop or where nobody sells food, the pupils will not go with an empty stomach for the whole day. Thirdly, those pupils who do not bring lunch boxes will have some food at school.

Williams and Worthington - Roberts (1992:271) support the feeding scheme in schools when they mention that "these feeding programmes contribute significantly to the nutrient and energy intake of many children". They go on to state that such feeding programmes may provide motivation for children to go to school.

C4. WHO INITIATED/STARTED IT?

	FREQUENCY	PERCENTAGE
The Dept of Education	14	73,7
The School	2	10,5
Parents	-	-
Other (Specify)	1	5,3
No response	2	10,5
TOTAL	19	100,0

73,7% respondents indicated that the feeding scheme at their school was started by the Department of Education. On the 'other' category 1 respondent stated that the feeding scheme was initiated by the RDP (Reconstruction and Development Programme) 10,5% did not respond because they had indicated in C3 that there was no feeding scheme at their schools.

If everybody is provided for by the feeding scheme then there will not be any problems related to nutrition. But if pupils have to make some contributions, that is, maybe buying the food at a subsidized price, then there might arise some problems, for example, some pupils might not, have the money to contribute and this will obviously mean that they will not have the money to contribute and this will obviously mean that they will not benefit from the feeding scheme.

C5. WHO MONITORS IT?

	FREQUENCY	PERCENTAGE
The School	14	73,7
Parents	2	10,5
Pupils	-	-
All of the above	1	5,3
Uncertain	-	-
Other (Specify)	-	-
No response	2	10,5
TOTAL	19	100,0

From the table above it is clear that the school monitors the feeding scheme because 73,7% of the responses indicated so. Such a high percentage shows that the school is in a better

stead to comment on the feeding scheme to make suggestions and improvements on nutrition.

C6. IS THERE ANY CHANGE OF MENU FOR PUPILS?

	FREQUENCY	PERCENTAGE
Always	10	52,6
Sometimes	5	26,3
No change	2	10,5
No response	2	10,5
TOTAL	19	100,0

52,6% respondents indicated that there is always a change in the menu which is provided by the feeding scheme to pupils. In B11 teachers gave responses about pupils not willing to learn after break. They commented that some pupils were bored and sleepy. It is possible that these responses came from the teachers of the schools where there is no feeding scheme. One of the reasons given for the willingness of pupils to learn after break was that their minds had been stimulated because of the feeding scheme.

5.2.2 QUESTIONNAIRE TO PUPILS

The analysis of the findings is in the same sequence as the items appear in the questionnaire.

SECTION A : PERSONAL PARTICULARS

A 1.

SEX	FREQUENCY	PERCENTAGE
Male	39	44,3
Female	49	55,7
TOTAL	88	100,0

This table indicates that out of a total of 88 respondents, 55,7% were female and 44,3% were male pupils.

A2. AGE IN YEARS.

The age of the respondents ranged from 12-17. The youngest respondent was 12 years old and the eldest was 17 years old.

SECTION B : NUTRITION BACKGROUND AND EATING HABITS

B1. DO YOU EAT BREAKFAST BEFORE COMING TO SCHOOL?

	FREQUENCY	**PERCENTAGE**
Yes	81	92
No	7	8
TOTAL	88	100,0

92% of the respondents indicated that they eat breakfast before they come to school. The breakfast that they eat before coming to school included the following:

i. bread (white/brown) which has been buttered and the fillings were either eggs, cheese, tomatoes, polony or jam.

ii. cornflakes, weetbix or jungle oats with milk

iii. tea or coffee with milk

iv. fruits such as apples, oranges, bananas.

v. left overs from the previous meal.

Whitney (1990) states that a basic breakfast consist of fruit

or juice, cereal, 2 slices of toast with butter and milk. From the items of food that the pupils eat for breakfast, it shows that although they are not eating the whole basic breakfast, they are eating some of the foods from the basic breakfast.

The 8% who responded negatively to this question gave reasons for not eating breakfast, such as:

i. they suffer from stomachache.
ii. there is no time to prepare food.
iii. no appetite in the morning.

Not eating breakfast can affect the pupil's learning negatively. Beal (1980:314) confirms this by mentioning that "when a child goes to school after having eaten no food since the previous morning, he/she is likely to be unable to concentrate on classwork".

Taitz and Wadley (1989) state that getting to school on time can interfere with breakfast, children may be unwilling to get up in time to eat, and some parents may not provide their children with an adequate breakfast. The majority of pupil

respondents (92%) indicated that they eat breakfast whilst 8% indicated they did not.

The above information shows that most pupils (92%) eat before they start their school day.

B2. IS IT IMPORTANT TO EAT BREAKFAST?

	FREQUENCY	PERCENTAGE
Yes	86	97,7
No	2	2,3
TOTAL	88	100,0

97,7% pupils indicated that breakfast is important. Beal (1980) writes that teachers cannot teach a hungry child. The reasons given by 97,7% respondents on the importance of breakfast included the following:

i. it gives the body energy to concentrate and listen to what one is taught
ii. a person begins the day with more energy
iii. if one has not taken breakfast one feels sleepy and

drowsy when being taught

iv. because it keeps the person's mind fresh

v. sometimes one does not have money to buy something at school

vi. when one is hungry one cannot perform well at school

vii. eating breakfast makes one to be active

viii. breakfast gives one strength.

From the reasons given above it is apparent that a large number of respondents agreed that eating breakfast gives one energy to perform and pay attention to one's studies. Food provides the three basic physiological functions, viz providing energy building and maintaining body tissues and regulating numerous metabolic reactions (Stare and McWilliams, 1977).

2,3% of the respondents who do not see the importance of breakfast gave reasons such as:

i. one is not hungry in the morning, that is, one does not feel like eating

ii. when eating breakfast a pupil will be late for school.

Whitney (1990) observes that breakfast may be skipped in the rush to get to school. The reasons for a child missing breakfast may be varied but the net result is usually inadequate nutrition.

B3. WHO IS RESPONSIBLE FOR COOKING MEALS?

	FREQUENCY	PERCENTAGE
Mother	58	65,9
Father	-	-
Grandmother	5	5,7
Grandfather	-	-
Sister(s)	13	14,8
Brother(s)	2	2,2
Aunt(s)	3	3,4
Uncle(s)	-	-
Helper	7	8
Other (specify)	-	-
TOTAL	88	100,0

It is interesting to note that this table reveals that 65,9% of the respondents said that mothers prepare food: 14,8% indicated that it is their sister(s) who prepared food and 8% indicated that the helper was responsible for cooking meals.

Helpers are usually females. Does all this confirm the saying that a woman's place is in the kitchen? The preparation and supervision of breakfast in the home is usually and principally a management problem for mothers even when they are employed outside the home (Whitney, 1990). It is therefore important that both parents, the mother and the father or all persons available at home prepare breakfast so that children see that breakfast is for all.

B4. WITH WHOM DO YOU HAVE YOUR MEALS?

	FREQUENCY	PERCENTAGE
Alone	25	28,4
Family	60	68,2
Other	3	3,4
TOTAL	88	100,0

Garrow, James and Ralph (1993:398) state that "parents continue to play a pivotal role in the nutrition of their children during the school years". Whitney (1990) shares the same viewpoint by mentioning that when parents eat and provide the motivation to eat a good breakfast, their school children will almost certainly eat breakfast too.

B5. DO YOU EAT FROM:

	FREQUENCY	PERCENTAGE
Your own plate	82	93,2
Share with someone else	6	6,8
Other (Specify)	-	-
TOTAL	88	100,0

Most respondents (93,2%) indicated that they eat food from their own plate. Only 6,8% said that they share food with someone else on the same plate. This response was included because if two or more people share from the same plate, one might be a fast eater and the other a slow eater. The one who eats faster might eat a larger share of food and the slow eater might not be getting enough food and this might lead to the slow eater being undernourished.

B6. WHY DO YOU HAVE TO EAT FOOD?

The following responses were given as to why food is eaten:

i. to make our bodies strong

ii. to get energy and power

iii. to build our bodies and protect us from diseases

iv. to build strong bones

v. to replace worn-out tissues

vi. for survival

vii. to make a person active

viii. food is nutritious

ix. for its delicious taste.

Green and Harry (1987) maintain that the primary reason for eating is survival since food is one of the basic physiological needs, ranking in importance with air, water, sleep and shelter. Food not only meets the body's physiological demands but also satisfies the person's psychological needs. Abraham in Gareth (1979) states that man needs food to provide energy for the body's essential physiological functions like respiration, metabolism and for the growth and repair of the body's tissues. From these responses it seems that respondents know that food is not only eaten because it tastes good but that food also performs an important function in our bodies.

B7. DO YOU KNOW WHAT HAPPENS TO THE FOOD THAT YOU HAVE EATEN?

	FREQUENCY	PERCENTAGE
Yes	49	55,7
No	39	44,3
TOTAL	88	100,0

55,7% respondents indicated that they know what happens to the food that is eaten, and the reasons they gave were the following:

i. it goes to all parts of the body
ii. it is broken down into smaller pieces and saliva is secreted to mix the food
iii. it goes to the stomach
iv. food goes through the intestines.

Although the respondents did not explain in detail how digestion takes place, they at least knew that food is digested so that it can be used by the different parts of the body.

Stare and McWilliams (1977) mention that after eating, food is digested by the enzymes of the gastro-intestinal tract and broken down to release its basic constituents - the nutrients. The nutrients are chemical substances needed by the body for its proper functioning.

B8. HOW MANY PEOPLE ARE IN YOUR HOUSEHOLD?

	FREQUENCY	PERCENTAGE
2	-	-
3	3	3,4
4	5	5,7
5	9	10,2
6	20	22,8
7	11	12,5
8	12	13,6
9	9	10,2
10	9	10,2
more than 10	10	11,4
Other	-	-
TOTAL	88	100,0

From the information on this table it is evident that most respondents (22,8%) come from a family of six members,

followed by 13,6% who come from a family of 8 members and 12,5% indicated that they come from a family of 7 members.

Lavin (1967) discusses studies which were conducted by Bernstein and Niesbet in 1958. These writers found out that family size is related to academic performance, that is, the larger the number of siblings, the lower the level of school achievement.

B9. WHO IS THE BREAD WINNER IN THE FAMILY?

	FREQUENCY	PERCENTAGE
Mother	23	26,1
Father	24	27,3
Mother and Father	28	31,8
Grandmother	4	4,5
Grandfather	-	-
Sister(s)	2	2,3
Brother(s)	3	3,4
Aunt(s)	-	-
Uncle(s)	4	4,5
Other (Specify)	-	-
TOTAL	88	100,0

The table above reveals that 31,8% of the respondents said that both their father and mother were working and earning money. 27,3% stated that it was the father who is the breadwinner and 26,1% indicated that the mother was the breadwinner in their families. The reasons for the father or the mother being the only breadwinner in the household might be due to the high level of unemployment or it might happen that the other spouse has passed away or the fact that other households are single parent families.

B10. WHAT IS YOUR DENOMINATION?

	FREQUENCY	PERCENTAGE
Methodist	6	6,8
Catholics	13	14,8
Church of England	2	2,3
Church of Zion	29	3,3
Other (Specify)	38	43,1
TOTAL	88	100,0

The 43,1% on the 'other' category included denominations such as: Lutheran, Faith Mission, Covenant, Baptist, Nazarene, Assembles of God, Jehova's Witness, Seventh Day Adventist and St. Johns.

B11. ARE THERE ANY FOODS WHICH ARE FORBIDDEN BY YOUR RELIGION?

	FREQUENCY	PERCENTAGE
Yes	27	30,7
No	61	69,3
TOTAL	88	100,0

69,3% of the respondents indicated that their religion does not forbid the eating of certain foods but 30,7% said that some foods are forbidden by their religion. These foods include: pork, duck, pigeons and others forbid one to eat hot food on Saturdays. Religion influences the diet pattern of many people. In the Jewish homes, no food is cooked or heated on the Sabbath (Robinson and Lawler, 1982).

B12. DO YOU BRING A LUNCH BOX TO SCHOOL?

	FREQUENCY	PERCENTAGE
Yes	41	46,6
No	47	53,4
TOTAL	88	100,0

46,6% of the respondents bring lunch boxes to school and the food that they bring include the following:

i. sandwiches with the following fillings: polony, chesses, eggs, tomato, lettuce and cold meat.
ii. fried chips
iii. biscuits
iv. fruits such as bananas, apples, oranges.
v. juice.

King, Morley and Burgess (1973) stress that a school child needs breakfast before he/she goes to school and also something to take with him/her to eat for lunch in the middle of the day.

53,4% said they do not bring a lunch box because:

i. they always bring money to school

ii. they have already eaten breakfast

iii. there is no time to prepare a lunch box in the morning

iv. they do not like food that was cooked the day before

v. there is not enough food at home for them to bring to school.

When comparing the two figures, it seems that more pupils (53,4%) do not bring lunch boxes as compared to 46,6% who do bring lunch boxes. A person might wonder what these (53,4%) pupils eat during the day if they do not bring lunch boxes. This answer might be found from the question that is still to come.

B13. DO YOU BRING MONEY TO SCHOOL?

	FREQUENCY	PERCENTAGE
Always	27	30,7
Sometimes	55	62,7
Never	6	6,8
TOTAL	88	100,0

This table indicates that 62,7% of the respondents sometimes bring money to school and it is not an everyday thing. 30,7% said they always bring money to school and 6,8% indicated that they never bring any money to school.

The money that is brought to school is used to buy food such as:

i. cool drinks, thirst quencher (isiqeda)
ii. sandwiches, cakes pies, chips, sweets, fat cakes
iii. fruits (bananas, pears, apples, oranges)
iv. Milk
v. popcorn.

Parents should give their children food to take to school, rather, than money, because children may buy fizzy drinks which have no food value. (King, Morley and Burgess, 1973).

SECTION C : INFORMATION ABOUT THE FEEDING SCHEME

C1. IS THERE ANY FEEDING SCHEME AT YOUR SCHOOL?

	FREQUENCY	PERCENTAGE
Yes	50	56,8
No	38	43,2
TOTAL	88	100,0

Most of the respondents (56,8%) said that a feeding scheme was in operation in their schools whilst 43,2% indicated that there was no feeding scheme at their schools. School feeding and nutrition education programmes, when adequately implemented, provide not only important nutrients for pupils, but also an opportunity to learn to make responsible food choices (Robinson and Lawler, 1982).

C2. DO YOU ENJOY THE FOOD WHICH IS PROVIDED BY THIS FEEDING SCHEME?

	FREQUENCY	PERCENTAGE
Yes	20	22,7
No	6	6,8
Sometimes	24	27,3

No Response	38	43,2
TOTAL	88	100,0

43,2% of no response indicated those who said there was no feeding scheme at their schools. 27,3% said that they sometimes enjoy the food provided by the feeding scheme and 6,8% indicated that they do not enjoy the food that is provided.

C3. IS THERE ANY VARIETY/CHANGE OF MENU?

	FREQUENCY	PERCENTAGE
There is always a change	30	34,1
No Change	3	3,4
Sometimes	17	19,3
No Response	38	43,2
TOTAL	88	100,0

The table above shows that 34,1% said that there is always a change in the menu whilst 19,3% indicated that what they eat sometimes varies and 3,4% said that they eat the same food everyday. Williams and Worthington -Roberts (1992) comment on the issue of variation in the feeding schemes. They state that

little variety is seen in the feeding programmes since foods tend to be packed and lack of refrigeration limits the kinds of foods that can be stored.

5.3 CONCLUSION

In this chapter the researcher reported and analysed the findings of the research which was acquired by means of a questionnaire. In the following chapter the researcher will draw conclusions and make recommendations.

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CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter gives the summary, conclusions and recommendations of the study. The researcher would like to summarise the programme of the study.

6.2 SUMMARY

Chapter 1 deals with the introduction. Mention was made of the statement of the problem, the significance of the study and the plan of how the study would be carried out.

Chapter 2 and Chapter 3 were both on literature review. The relationship that exists between under-nutrition and intellectual development was exposed, the importance of eating breakfast and the consequences of skipping breakfast on the learning of the pupils was extensively discussed. The

researcher also looked into other factors that also affect proper nutrition and the learning ability of pupils.

In Chapter 4 the researcher detailed the methodology used to collect data. The selection of the sample and the distribution of the questionnaire to the respondents was also discussed.

Chapter 5 dealt with the research findings and the analysis and interpretation of the data. In this chapter, Chapter 6, the summary, conclusions and recommendations will be dealt with.

6.3 CONCLUSIONS

It has been found that under nutrition has serious effects on the learning ability of the primary school child. The study also revealed that a balanced diet is essential for school-going pupils.

This study demonstrated that both teachers and pupils understand the importance of eating breakfast. Teachers and pupils also stated that a pupil who has not eaten breakfast,

does not perform well in his/her school work. It was encouraging to discover that quite a majority of pupils do eat breakfast before coming to school.

From the study it was evident that in most schools there are certain mothers or fathers who come to sell food to pupils. Pupils who bring money to school outnumber those who bring lunch boxes. This means therefore that most pupils are dependent upon the food which is sold by either the school tuckshop or the mothers and fathers who sell food.

A majority of the teachers (52,6%) confirmed the fact that pupils who perform well and achieve good marks are those who have eaten breakfast. Teachers also stated reasons about the pupils who form the top 10 in class. Most of the reasons were all related to pupils having eaten breakfast.

The study also showed a link or a relationship between undernutrition and learning ability. During break/lunch time, the pupils eat from their lunch boxes and others buy food from the selling mothers or fathers. Teachers stated that the concentration or attention span of the pupils is increased

when they have eaten food. Pupils appear to be ready and willing to learn after break or lunch because they have eaten food. This confirms this link between the learning ability and nutrition.

Since most of the pupils (62,5%) indicated that they sometimes bring money to school, their teachers were not happy about the food items that they buy. The teachers therefore encourage the pupils to buy certain foods which as they pointed out were nutritious and good for the pupils.

Teachers from schools which have a feeding scheme, commented that the feeding scheme plays a very important role on the learning ability of pupils. They stated that it helps those pupils who do not eat breakfast and those who do not bring lunch boxes, to eat some food during the day. They mentioned that since the impact of food on the brain is so significant, the feeding scheme does stimulate the learning ability of the pupils.

The impact of religion on foods that are eaten was not so profound. Most pupils listed pork as a forbidden item of food.

Pork is meat and meat gives proteins which build strong muscles and repairs worn out tissues, that is, it is important to promote growth.

In conclusion, this study found that undernutrition does have an effect on the learning ability of primary school pupils. This effect can be traced to the entire education life of an individual.

6.4 RECOMMENDATIONS

In the light of the findings in this study, the researcher would like to make the following recommendations:

i. Parents should try and wake their children early enough so that there is time for a child to eat breakfast (some pupils commented that they do not eat breakfast because they wake up late).

ii. Parents themselves should attempt to eat breakfast because they are the role models, in that way they can set an example for children.

iii. Parents should take more responsibility to prepare lunch boxes and pay more attention to the foods that their children eat at school. As the study revealed, pupils have access to money to buy food from mothers who sell or from grocery shops. This therefore leads them to buy foods with questionable nutritional value.

iv. Community nutritionists should play an important role in educating the community at large and the mothers or fathers who sell food to pupils. They should be educated about the importance of good nutrition during the pupil's school years and what kinds of food are good for the pupils to consume. This might persuade them to sell nutritious food and not just junk food. The headmaster of Kalongo School tried to stop his pupils having buns and fizzy drinks for lunch. He found that he could sell the pupils a glass of milk, two high protein milk biscuits and 100g of groundnuts for the price of one fizzy drink (King, Morley and Burgess, 1973).

v. Teachers who are knowledgeable about nutrition (e.g. Home Economics teachers) can share their knowledge with

pupils in order to inculcate good eating habits in the pupils.

vi. During the parent-teacher meetings, the principal and teachers can encourage parents to make a lunch boxes for pupils to take to school rather than money, because pupils may buy fizzy drinks which have no nutrition.

vii. If the feeding scheme is well managed, it can be a valuable tool in promoting good food choices. If the food that is provided is balanced and nutritious, then surely the pupils will learn to eat correctly.

viii. Parents need to be educated about the importance of nutritious food for school-going pupils.

ix. Since the socio-economic background has been found to have an effect on the choice of food by parents, parents can be taught on how to save and budget on the basis of limited financial resources. Within limited financial resources parents can be taught about balanced diets.

x. There is a need for a subject on nutrition or balanced diet in primary schools.

xi. Improved teacher-pupil communication especially during sessions for eating is essential.

xii. The school curriculum should incorparate modules/subjects on food and teachers should undergo in-service training on foods.

xiii. There is a need for close links between schools, homes and the department of education on matters relating to under-nutrition.

It is hoped that conclusions reached and recommendations made in this study will be a challenge to parents, teachers and pupils for consideration, implementation and further inquiry for the sake of improving education.

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APPENDIX A

QUESTIONNAIRE TO TEACHERS

Please complete the questionnaire as accurately as possible. Be frank and honest in answering the questions. There are no wrong or right answers. Do not write your name on the questionnaire. All information will be treated with confidence . Make a [X] in the appropriate box.

PERSONAL PARTICULARS

A1. SEX

Male		1
Female		2

A2. YOUR AGE IN YEARS.

15 - 24		1
25 - 29		2
30 - 34		3
35 - 39		4
40 & OVER		5

A3. YEARS OF TEACHING EXPERIENCE.

0 - 5		1
06 - 10		2
11 - 15		3
16 - 20		4
21 & OVER		5

SECTION B

BASIC KNOWLEDGE ON NUTRITION

B1. DO YOU KNOW WHAT THE THREE (3) BASIC FOOD GROUPS ARE?

Yes		1
No		2

B2. IF THE ANSWER IS YES, WHAT ARE THEY?

.....

.....

B3. WOULD YOU SAY THAT ALL THE THREE BASIC FOOD GROUPS ARE...

Very Important		1
Important		2
Less Important		3
Unimportant		4

B4. IS THERE ANY FOOD THAT IS SOLD AT YOUR SCHOOL?

Yes		1
No		2

B5. WHO SELLS THAT FOOD?

The schools, tuck shop		1
Teachers, teacher, principal		2
Pupils on behalf of their parents		3
Certain mother(s) or father(s) who have permission to sell		4
No one sells		5
Other (Specify)		6

.....

B6. DO YOU ASK WHETHER PUPILS HAVE TAKEN BREAKFAST IN THE MORNING?

Yes		1
No		2

B6.1 IF YOU DO, WHEN DO YOU DO IT?

Before starting the lesson(s) in the morning		1
After the first break		2
After lunch		3
No response		4
Other (Specify)		5

B7. HOW DO YOU ASK THEM WHETHER THEY HAVE TAKEN BREAKFAST OR NOT?

As individuals		1
As Groups		2
As a class		3
No response		4

B8. IF YOU GIVE CLASS WORK/TEST WOULD YOU SAY THOSE WHO HAVE TAKEN BREAKFAST PERFORM .

Well/Achieve good Marks		1
Those who have not achieve badly		2
There is no difference in achievement		5
Other (Specify)....		4

.....

B9. WHICH PUPILS USUALLY FORM YOUR TOP TEN?

.....

B10. WOULD YOU SAY THAT A CHILD WHO HAS TAKEN BREAKFAST THINKS FASTER?

Yes		1
No		2
Uncertain		3

B11. DO PUPILS IN YOUR CLASS APPEAR TO BE READY/READILY WILLING TO CONTINUE LEARNING AFTER BREAK?

Yes		1
No		2

IF YES, GIVE REASONS:

.....

IF NO, GIVE REASONS:

.....

B12. DO PUPILS BRING MONEY WITH THEM TO SCHOOL?

Yes		1
No		2
Uncertain		3

B13. IF YES, WHAT TYPE OF FOODS DO THEY BUY?

.....

B14. NAME THE FOODS THAT YOU ENCOURAGE THEM TO BUY.

.....

B15. GIVE REASONS FOR YOUR DOING SO.

.....

B16. DO YOU HAVE ANY PUPILS IN YOUR CLASS WHO HAVE A SHORT ATTENTION SPAN OR SHOW SLEEPINESS IN CLASS?

Yes		1
No		2

B17. IF YES, WHY DO YOU THINK THEY BEHAVE LIKE THAT?

.....

B18. WHAT DO YOU DO WHEN THEY BEHAVE LIKE THAT?

Beat them		1
Tell them to stand up		2
Tell them to get out		3
Organise food for them		4
Other (Specify)		5

.....

SECTION C

LUNCH BOX PROVISION

C1. DO YOU ENCOURAGE PUPILS TO BRING LUNCH BOXES?

Yes		1
No		2

C2. WHEN PUPILS HAVE TO EAT FROM THEIR LUNCH BOXES, DO YOU STAY IN CLASS TO SEE WHAT THEY ARE EATING?

Yes		1
No		2

IF YES, GIVE REASONS FOR THAT:.....

.....

IF NO, GIVE REASONS FOR THAT:.....

C3. *IS THERE ANY FEEDING SCHEME AT YOUR SCHOOL?*

Yes		1
No		2

C4. IF YES, WHO INITIATED/STARTED IT?

The Dept of Education		1
The school		2
Parents		3
No response		4
Other (specify)		5

.....

C5. WHO MONITORS IT?

The School		1
Parents		2
Pupils		3
All of the above		4
Uncertain		5
Other (Specify)		6

.....

C6. IS THERE ANY CHANGE OF MENU FOR PUPILS?

Always		1
Sometimes		2
No change		3
No response		4

Should you wish to give any additional information which may be of significance to this study, please feel free to do so in the space provided below:

.....

.....

.....

.....

.....

.....

THANK YOU FOR YOUR CO-OPERATION.

APPENDIX B

QUESTIONNAIRE TO PUPILS

Please complete the questionnaire as accurately as possible. Be frank and honest in answering the questions. There are no wrong or right answers. Do not write your name on the questionnaire. Mark a cross [X] in the appropriate box.

SECTION A

PERSONAL PARTICULARS

A1. SEX

MALE		1
FEMALE		2

A2. AGE IN YEARS .....

SECTION B

NUTRITION BACKGROUND AND EATING HABITS.

B1. DO YOU EAT BREAKFAST BEFORE COMING TO SCHOOL?

Yes		1
No		2

IF YES, WHAT DO YOU NORMALLY EAT?

.....

IF NO, WHY?

.....

B2. IS IT IMPORTANT TO EAT BREAKFAST?

Yes		1
No		2

IF THE ANSWER IS YES, WHY? .....

IF THE ANSWER IS NO, WHY? .....

B3. WHO IS RESPONSIBLE FOR COOKING MEALS?

Mother		1
Father		2
Grandmother		3
Grandfather		4
Sister(s)		5
Brother(s)		6
Aunt(s)		7
Uncle(s)		8
Helper		9
Other(Specify)		10

.....

B4. WITH WHOM DO YOU HAVE YOUR MEALS?

Alone		1
Family		2
Other		3

B5. DO YOU EAT FROM :

Your own plate		1
Share with someone else		2
Other (Specify)		3

B6. WHY DO YOU HAVE TO EAT FOOD?.....

B7. DO YOU KNOW WHAT HAPPENS TO THE FOOD THAT YOU HAVE EATEN?

Yes		1
No		2

IF YES, WHAT? .....

B8 HOW MANY PEOPLE ARE IN YOUR HOUSEHOLD?

2		1
3		2
4		3
5		4
6		5
7		6
8		7
9		8
10		9
More than 10		10
Other		11

B9. WHO IS THE BREAD WINNER IN THE FAMILY?

Mother		1
Father		2
Mother & Father		3
Grandmother		4
Grandfather		5
Sister(s)		6
Brother(s)		7
Aunt(s)		8
Uncle(s)		9
Other(Specify)		10

B10. WHAT IS YOUR DENOMINATION?

Methodist		1
Catholics		2
Church of England		3
Church of Zion		4
Other (Specify)		5

B11. ARE THERE ANY FOODS WHICH ARE FORBIDDEN BY YOUR RELIGION?

Yes		1
No		2

IF THE ANSWER IS YES, WHICH ONES? .....

B12. DO YOU BRING A LUNCH BOX TO SCHOOL?

Yes		1
No		2

IF THE ANSWER IS YES, WHAT FOODS DO YOU BRING?

.....

IF NO, WHY NOT?:

.....

B13. DO YOU BRING MONEY TO SCHOOL?

Always		1
Sometimes		2
Never		3

IF YOU DO BRING MONEY, WHAT DO YOU BUY?

.....

SECTION C

INFORMATION ABOUT THE FEEDING SCHEME.

C1. IS THERE ANY FEEDING SCHEME AT YOUR SCHOOL?

Yes		1
No		2

C2. DO YOU ENJOY THE FOOD WHICH IS PROVIDED FOR YOU BY THIS FEEDING SCHEME?

Yes		1
No		2
Sometimes		3
No response		4

C3. IS THERE ANY VARIETY/CHANGE OF MENU?

There is always a change		1
No change		2
Sometimes		3
No response		4

Should you wish to give any additional information which may be of significance to this study, please feel free to do so in the space provided below:

.....

.....

.....

.....

.....

.....

THANK YOU FOR YOUR CO-OPERATION.