

# Cultural Nutritional Practices and Its Influence on Cognitive Development in Taru Location, Kwale County

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**Abstract:** Despite programmes being initiated to improve maternal and new-born health including the Baby Friendly Hospital Initiative (BFHs), a global programme aimed at enhancing optimal levels of maternal and infant feeding and care in health care facilities, the envisaged results of these programmes have not been satisfactorily achieved in Taru, Kinango Sub-County, Kwale County, Kenya due to several challenges. The purpose of this study was to determine the influence of cultural nutritional practices on cognitive development. This study was guided by Abraham Maslow's Theory of Hierarchy of Needs. The research employed the descriptive survey design which is description of the state of the affairs as it exists and the researcher reports the findings. Questionnaires, interviews schedules and observation schedules were used to collect data. This study targeted a total of 795 respondents comprising of 694 lower primary pupils, 87 teachers and 8 head teachers and 6 health workers from 8 primary schools in Taru Location. Piloting of instruments was done in two different schools to ascertain their reliability and validity. The researcher used both quantitative and qualitative data analysis techniques for this study because both approaches complement each other. The data collected by use of the questionnaires were coded, assigned labels to variables' categories and fed into the computer. The quantitative data were analysed quantitatively with the aid of Statistical Packages for Social Sciences (SPSS). Frequency tables, bar-graphs and pie charts were employed to present the information. Inferential statistics such as mean and standard deviation were utilized to summarize the relationship between independent and dependent variables. Qualitative data obtained from interview schedule were organized into themes and discussed based on research objectives. Findings revealed that malnutrition among pupils in lower primary schools caused an array of psychosocial problems like illness, brain damage, delayed physical growth, delayed development of motor skills and delayed intellectual development. The study concluded that nutrition status of pre-school children greatly affected their mastery skills, cognitive development and academic performance. The study recommended that school-based feeding programmes should be set up so that they play an important and effective role in improving nutritional status of school going children and hence their performance.

**Keywords:** Cognitive Development, Cultural Nutritional Practices, Malnutrition.

## I. INTRODUCTION

Nutrition is undoubtedly the greatest environmental factor that plays a significant role in the maturation and development of Central Nervous System (CNS) of children, hence affecting their cognitive development (Bailey & Arab, 2012). Psychologically, cognition is concerned with the manner in which we come to explore the world around us, dealing with the development of thought and knowledge. Nevertheless, under-nutrition is a problem around the globe with infants and school going young children being the most vulnerable segments of population (FAO, 2018). According to the report by the Food and Agriculture Organization (2017), approximately 1025 million people are chronically in hunger, 60% of who are children. In the developing nations, including African countries, approximately 146 million children are underweight, 50% of whom are stunted and 20% are wasted.

In the area of cognitive development Wolfe, Burkman and Streng (2010) suggests that when there is not enough food the body has to make a decision about how to invest the limited foodstuffs available and, survival comes first and growth second. In this nutritional triage, the body seems obliged to rank learning last, better to be stupid and alive than smart and dead. That is why children become stunted as growth is limited to enhance survival. A good start in life is important and maternal nutritional status during pregnancy has repeatedly been demonstrated to be associated with pregnancy outcomes for infants (centre for Disease Control and Prevention, National Centre for Health Statistics, 2016).

In Kenya, chronic and acute malnutrition, micronutrient deficiencies and infectious diseases are prevalent particularly among the rural populations and urban poor. The Kenya Ministry of Health according to studies done between the years 2008/2009 and 2005/2006 compared to 2003 show a percentage increase in stunting at a scale of 35:33:30 and wasting at a scale of 7:6:6. The Kenya under five (5) mortality rate shifted from 97 for every 1000 children in 1990 to 120 in every 1000 children in 2005.

Kwale County has some of the worst socioeconomic and health indicators in Kenya with Kinango and Samburu as the most affected divisions in the district. Child malnutrition also remains a serious public health problem in the locations. Data

on levels and patterns of malnutrition in Kwale District is limited. The poor performance in National Examinations in Kwale County Kenya has in recent years raised concern and created anxiety among stakeholders in education implying that there is a problem with cognition among children. There has been a linking high risk of malnutrition’s rate to acute and chronic food shortages at the household level in the study area. However, there is little evidence to demonstrate how nutrition affects cognition among children. This study therefore investigated the optimal brain function and cognitive development with respect to cultural nutritional practices in Taru Location, Kwale County.

1.2 Conceptual Framework

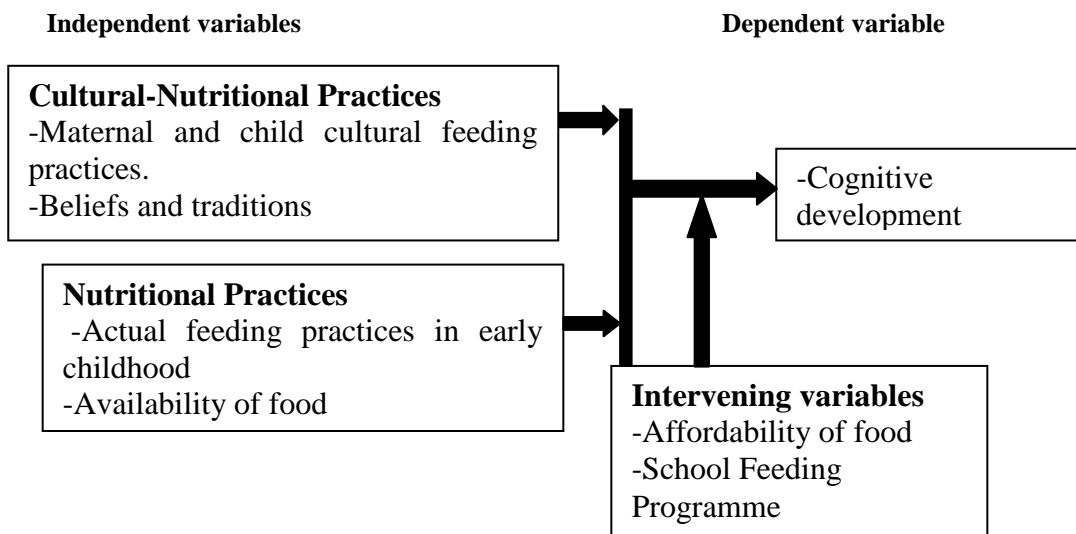


Figure 1.1 Conceptual Framework

II. LITERATURE REVIEW

2.1 Influence of Cultural Nutritional Practices on Cognitive Development

Cognitive function relies on the combined activity of billions of neurons and several biochemical pathways, and specifically enzymes that require various micronutrients (Sargoor, Ghattu, Willis, Kurpad, Muthayya, Karat, Nagarajaih & Srinivasan, 2010). Kar, Rao, and Chandramouli (2008) examined the effect of stunted growth on the nature of cognitive impairments and on the rate of cognitive development. The study investigated if malnutrition would result in a concentrated impairment and a general slowing in the rate of development of all cognitive processes or these effects could be present for some specific cognitive processes. Effects of malnutrition on cognitive processes were also looked at in relation to impairment without affecting the rate of development and its effect on the rate of development of the cognitive process itself. The participants were identified as being malnourished or adequately nourished in the age groups of five- to seven-year olds and eight- to ten-year olds.

Erickson (2006) pointed out five key components, based on research, required to keep the brain functioning correctly. The

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substances, all found in food, are important to brain development and function. Proteins are found in foods such as meat, fish, milk, and cheese. They are used to make most of the body’s tissues, including neurotransmitters, earlier identified as chemical messengers that carry information from brain cells to other brain cells. A lack of protein, also known as Protein Energy Malnutrition, led to poor school performance by children and caused young children to be lethargic, withdrawn, and passive, all of which help affect social and emotional development.

According to Tomlisky (2010), the need for sufficient nutrition throughout the early years of development among children cannot be overemphasize. Interestingly, increased

Physical activity supported by quality nutrition, has a direct positive impact on improved cognitive functions in learners.

Thus, poor nutrition in the early years leads to neurological and behavioural disorders which lead to learning disabilities and mental retardation. Research has greatly emphasized that first years of life and the necessity for meeting the nutrition that is adequate for physical, social, emotional and mental development of every child (WHO, 2014).

Research in Kenya as stated in the Kenya National Bureau of Statistics (2016) show that malnutrition among the pre-school children has highly increased, as many as 30% of pre-school children are severely or mildly malnourished. However, no local documentation has been done in Taru Location in Kwale County. The current study sought to determine the influence of cultural nutritional practices on cognitive development in Taru Location, Kwale County.

### III. RESEARCH METHODOLOGY

#### 1. Research Design and Target Population

The research employed the descriptive survey design which is description of the state of the affairs as it exists and the researcher reports the findings. The descriptive design was ideal because it was useful in collecting data based on observation and recording the current people's attitudes, feelings and behaviours without manipulating data. This study targeted a total of 795 respondents comprising of 694 lower primary pupils, 87 teachers and 8 head teachers from 8 primary schools in Taru Location from eight (8) primary schools. The target population also comprised of 6 health workers.

#### 2. Research Instruments

Questionnaires, scheduled interviews and observation schedules were used to collect data. Different questionnaires were specifically designed for the head teachers, teachers and health workers.

#### 3. Sampling Techniques and Sample Size

A combination of simple random and purposive sampling was used to select the number of teachers, parents and head teachers for the study. Simple random sampling was employed to select learners after obtaining a list from the head teacher assuming that all members of the population have similar characteristics. The sample size composed of 114 respondents which comprised of 90 learners, 6 lower primary school class teachers, 6 head teachers and 6 health workers.

#### 4. Pilot Study

The researcher conducted a pre-test of the research instruments before the field research in two different schools to ascertain their reliability and validity. Content validity of the instruments was measured through the assistance of the supervisors whom the researcher asked to assess the concept the instrument are to measure so as to determine if the sets of items accurately represent the items under study. To ensure reliability of the chosen instruments, questionnaires and interview schedules was formulated and pre-tested to ensure consistency in measurement. Spearman rank order correlation was employed to compute the correlation coefficient to establish the extent to which the responses were consistent.

#### 5. Data Collection Technique

The researcher sought and obtained a research permit and introductory letter from Graduate School to allow the research

to be conducted in the study area. The researcher visited the six sampled schools to inform the Head teachers about the study and to make arrangements to issue questionnaires to the head teachers, teachers and parents. The respondents were reassured by the researcher of confidentiality and also given guidelines on the filling of the questionnaires. A brief introduction was done by the head teacher and later questionnaires were issued to the relevant teachers. Both the head teacher and teachers filled in the questionnaires and where they sought clarity, they were assisted by the researcher. Prior arrangement was also made for interview sessions between the parents and the researcher. There was also observation and perusing of school records and clinic cards where applicable.

#### 6. Data Processing and Analysis

The researcher used both quantitative and qualitative data analysis techniques for this study because both approaches complement each other. The data collected by use of the questionnaires were coded, assigned labels to variables categories and fed into the computer. The quantitative data were analysed quantitatively with the aid of Statistical Packages for Social Sciences (SPSS). Frequency tables, bar-graphs and pie charts were employed to present the information. Inferential statistics such as mean and standard deviation were utilized to summarize the relationship between independent and dependent variables. For qualitative, data obtained from interview schedule were organized into themes and discussed based on research objectives.

### IV. RESULTS

#### 1. Cultural Nutritional Practices and Cognitive Development

The researcher sought to find out the extent to which learners were affected by poor nutrition. The status of cognitive development derived from the observation of 80 children was evaluated and discussed as per the degree of the effect. The results were presented in Table 1.

Table 1: Effect of Poor Nutritional Behaviours on Cognitive Development

Effect		Severe	Moderate	Normal
Brain damage	F	-	36	44
	%	-	45.0	55.0
Minimal withdrawal	F	57	23	-
	%	71.25	28.75	-
Illness	F	35	15	30
	%	43.75	18.75	37.50
Development delayed of motor skills	F	45	30	5
	%	56.25	37.50	6.25
Intellectual; development delayed	F	46	34	-
	%	57.50	42.5	-

N=80

As shown in Table 1, malnutrition caused an array of problems like illness, brain damage, delayed physical growth, delayed development of motor skills and delayed intellectual development. Malnutrition therefore alters intellectual development by interfering with overall health as well as the child's energy level, rate of motor development and rate of growth. In most cases, poverty status can exacerbate all these factors, placing impoverished children at particular risk for cognitive impairment later in life.

From the diagram above, two major themes can be derived, that is, effect on schooling/cognitive development and health challenges caused by poor nutrition. When asked to give the influence of poor nutritional behaviours on cognitive development, one of the head teachers reported:

*Undernourished kids tend to score lower on cognitive tests than those who get well balanced diet.* (Female Head teacher, A school, July, 2017).

Majority of teachers highlighted that children came to school without having any breakfast. Most of the respondents narrated that the lack of food and basic meals was a contributing factor in dropping out of school among the children. This is evident when one of the teachers reported that:

*Sometimes they go to school without a meal. Some grade three learners have dropped out of school because of not having any food at home. They sometimes only have one meal a day and sometimes sleep without taking in any food. They eat low calorie and less nutritious food like black tea in the morning and vegetables sometimes at lunch and /or supper.* (Female teacher, B school, July, 2017).

A parent (mother of three) said they only had one meal a day while the parents who participated in interview schedule, also lamented that they only had supper and breakfast. In most cases, based on the interviews with the parents, over 50% of these parents reported that they had a very small meal the previous night. It also appeared that the frequency of the meals was a problem considering these statements. This was observed to have a bearing on the cognitive development of children. According to Huang (2010), poor nutrition does not have to be severe in order to negatively affect child development. In support of the above, a study carried out in Kenya on adolescence who frequently did not eat breakfast or suffer from poor nutrition revealed that they generally become lethargic and stop interacting thus their learning potential is severely lowered (Yumusa, IGunnel & Adegbusi, 2012).

Findings from health workers who took part in the study confirmed that children from low socio-economic background who have poor nutrition ended up cheating, lying and stealing. Since this behaviour is regarded by society as socially unacceptable they end up being isolated by significant others and they may develop low self-esteem. Also, majority of teachers asserted that the majority of their students from poor backgrounds came to school without food and fail to

concentrate as a result. Instead of paying attention to the teacher as she/he presents concepts to the class, the hungry learner would be busy pondering on what to do so as to get the basic needs. Research findings by Priya (2010) concur that underfeeding in childhood was thought to hinder mental development solely by producing permanent, structural damage to the brain. Given such an argument, poor and under-nutrition tended to limit long term intellectual development of learners.

Health workers interviewed (Amani, Ali, Kazungu: Not real names) sentiments were represented by Amina (pseudo names) who echoed the following statements:

Amani lamented that:

*"Poor nutrition among grade seven learners causes them to be reserved in class, lethargy and withdrawal, a low self-concept and esteem, illness, brain damage, delayed development of motor skills and intellectual development...grade seven learners who have poor nutrition lag behind in academic performance as a result.*

(Male health worker, Taru Location, August, 2017)

This also confirms the IRIN (2011) report in Crookston, Schott, Cueto, Dearden, Engle, Georgiadis, Lundeen, Penny, Stein and Behrman (2013) which states that malnutrition and poor health is a large contributor to low retention and poor performance in school. Research in Kenya as stated in the Kenya National Bureau of Statistics (2016) show that malnutrition among the pre-school children has highly increased, as many as 30% of pre-school children are severely or mildly malnourished. According to Tomlisnky (2010), the need for sufficient nutrition throughout the early years of development among children cannot be overemphasize. Interestingly, increased physical activity supported by quality nutrition, has a direct positive impact on improved cognitive functions in learners. Thus, poor nutrition in the early years leads to neurological and behavioural disorders which lead to learning disabilities and mental retardation.

## V. CONCLUSIONS

Malnutrition among pupils in lower primary schools caused an array of psychosocial problems like illness, brain damage, delayed physical growth, delayed development of motor skills and delayed intellectual development. There is a significant relationship between nutritional practices and morbidity among school going children and their performance. Low hygienic levels increase the incidences of morbidity as was observed in diarrhea which consequently increases absenteeism among the affected children and thus affecting their cognitive development.

## VI. RECOMMENDATIONS

1. Teachers at pre-school are encouraged to set up a school-based feeding programmes so that they play an important and effective role in improving

nutritional status of school going children and hence their performance.

2. It is recommended that the ministry of health to provide health and nutrition education to the community members so as to help them improve their hygiene levels and adopt better dietary patterns.
3. The government of Kenya through the Ministry of Education should promote interventions that improve the quality and quantity of school meals for example school gardens.

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