



Influence of malnutrition on implementation of Competency-Based Curriculum among pupils in lower primary schools in Mumbuni Zone, Machakos County

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Abstract

The aim of this study was to determine the influence of malnutrition on implementation of Competence-Based Curriculum in lower primary pupils in Mumbuni Zone, Machakos County, Kenya. To ensure accessibility, retention, and completion of primary schooling as per Sustainable Development Goal (SDG), free primary education (FPE) was implemented in 2003. The government wanted to ensure that every child acquires the knowledge and skills necessary to promote sustainable development as per the SDGs. The persistent campaign by worldwide communities to persuade countries to respect human rights and meet basic needs has been one of the major issues of the 21st Century. Smith's theory on structural functionalism informed this study. The study adopted descriptive survey design. A target population of 24 public primary schools, 24 head teachers and 72 teachers in lower primary schools was sampled. A sample size of eight head teachers and 22 lower primary teachers were identified for the study based on a simple random sampling of 30% of the targeted population. Interview guide and questionnaires were used to get the data. Data was analyzed using both quantitatively and qualitatively. Descriptive analysis was used to analyze quantitative data with the use of Statistical Packages for Social Sciences (SPSS Version 27). Frequencies and percentages were created and presented using tables and figures. The study found that most of the lower primary teachers (97.8%) were ready to execute CBC, which positively impacted lower primary pupils' learning, thus significantly affecting the implementation of Competence-Based Curriculum among pupils in lower primary schools within Mumbuni zone. Based on the findings, the study recommended the need for school-guided feeding programs, particularly for lower primary pupils, to curb the problem of malnutrition that negatively affects implementation of the Competency Based Curriculum. The research concluded that pupils' malnutrition significantly impacted CBC implementation negatively in lower primary pupils of Mumbuni Zone, Machakos County.

Key Words: Malnutrition, Malnourished, Pupil Participation, Feeding Program, School Attendance, Curriculum Implementation, Competency Based Curriculum.

Introduction

Education considerably improves economic growth by affecting people's socioeconomic situations (Obasuyi & Rasiyah, 2019). It is also seen as a tool for social mobility and reducing poverty (Tilak *et al.*, 2018). Thus, the focus of several high-level summits convened in the final decade of the previous century was on human resource development (Munene, 2015). In response to these appeals, the governments worldwide, the populace, and the foreign development partners engaged in several projects. As a result, improvements have been made in school enrollment and completion rates, as well as in the number of children who are not in school and the gender access gap (UNESCO, 2015).

The implementation of Competency based Curriculum has either been imposed on the countries following directives of the government or due to the support from western non-governmental organizations. In Kenya, for instance, they had to sign the East Africa harmonization policies which require the East African countries to adopt CBC according to Cheptoo and Ramadas (2019). However, the implementation has been done amongst challenges like inadequate knowledge on how to train the pupils and the nature of the African classrooms. Generally, the implementation of CBC indicates shortcomings as cited by Cheptoo and Ramadas (2019). CBC has received a lot of attention in the recent past from scholars because of how Kenya has handled the introduction of the new system rather than the promises of the system (Sifuna and Obonyo, 2019). Education is also significantly impacted by malnutrition. When the body has an overabundance of the necessary nutrients or is either under or over-nourished, it is said to be malnourished. Globally, and particularly in sub-Saharan Africa, this condition is getting worse. Every country records data on malnourished children as a result of climate change. Despite rarely being cited as a primary cause, it is projected to be a factor in over a third of all child fatalities. Malnutrition is frequently caused by a lack of access to nutrient-dense diets, especially in the current environment of rising food prices. Malnutrition results from poor feeding habits, including insufficient breastfeeding, improper meals, and failure to ensure the child eats enough wholesome food.

A child's nutritional status is harmed by illnesses such as persistent diarrhea, measles, pneumonia, and malaria. Children obtained the same results. According to Shrestha and Pathak (2012) and Brauw *et al.* (2012), childhood undernutrition is expected to prevent mental development only by causing irreversible anatomical changes to the brain. A child's brain rapidly grows throughout the first three years of life through the production of neurons, axonal, synaptogenesis, dendritic growth, and synaptic pruning, all of which build atop one another (Sekiya and Ashida, 2017). Any disruption to this process, like trauma, stress, malnutrition, or a lack of nutrients, may have long-term impacts on the shape of the brain and the child's socio-emotional growth and academic achievement. Early nutritional deficiencies may prevent children from developing their minds fully (Kamara, 2018). Given those mentioned earlier, children should not experience malnutrition, even at a young age, as it negatively impacts their overall development and academic achievement.

Statement of the problem

The Kenyan government implemented the 8-4-4 educational system to create graduates who could support themselves. However, the 8-4-4 approach became unduly exam-focused, opening the door for a reform that led to implementing the recently introduced competency-based curriculum. The secret to solving the biggest problems in school is formal learning and sustaining high standards of education (Matata, 2016). A severe shortage of teachers, space, physical facilities, educational materials, and space have been recognized as some of the significant resource restrictions since the 2003 implementation of Free Primary Education in Kenya (Mwirigi & Muthaa, 2015). Without giving teachers' enough time to prepare for its deployment thoroughly, CBC was implemented unexpectedly. However, studies which have been done in this area did not exhaustively and explicitly establish the relationship between the factors on the key stakeholders specifically the teachers and pupils on CBC implementation; as a result, the current study looked into whether malnutrition can affect implementation of competence-Based Curriculums in Mumbuni Zone, Machakos Sub-County, in Machakos County.

Purpose of the Study

The purpose of the study was to investigate the influence of malnutrition on implementation of Competence-Based Curriculum in lower primary pupils in Mumbuni Zone, Machakos County.

Theoretical framework

The study was based on Anthony Smith's (1977) structural functionalism concept. According to the structural-functionalism hypothesis, social institutions are the structures that make up human society like an organism. These societal structures are designed in such a way that they serve a variety of purposes for the community. The structural-functionalism concept seeks to define each of the numerous social institutions for the stability of society and to describe how human society is constituted in this regard (Jahnke, 2015). In the nineteenth century, the structural-functionalism idea began to take hold and become more widely accepted. It was created and molded by scientists to comprehend human society. It claims that social structures that are generally dependable norms of social behavior direct our lives. Social systems, such as those found in the community, religious institutions, and family, are vital in shaping society. Additionally, certain rituals, like a handshake or elaborate religious rites, shape our daily lives. Each structure of society has social implications or functions that affect how the community functions. For instance, education serves several crucial social purposes like socializing, learning, and social positioning. As a result, this way of thought seemed to create a solid framework for understanding how social institutions function to shape, uphold, and perpetuate human society.

Education is a complicated institution with many different components in every human culture. It is a well-known and essential social institution designed to perform a specific task: educating society's citizens. Additionally, this theory can be used to comprehend and explain how education contributes to the preservation and advancement of civilization. This theory is being used in lower primary schooling in Mumbuni Zone, Machakos Sub County, Machakos County to help investigate how malnutrition can influence the implementation of competence-Based Curriculums.

Literature Review

Many studies have concentrated on the connections between diet and mental function. The influence of dietary foundations on typical brain processes has been demonstrated in studies. Together with diet, neurotransmitters chemical messengers in the brain have been investigated. Becker and Kretsch, (2019) proposed that the brain must instead be seen as influenced by nutrition. Further, they identified that the concentration of amino acids, and chlorine (in the blood), allows the brain to create and use many of its neurotransmitters. This viewpoint no longer allows the brain to be seen as an autonomous organ, free from other bodily metabolic processes. The ability of the brain to produce the proper quantity of amino acids and chlorine depends on food consumption. The blood must have these two chemicals for the brain to operate correctly. It is not surprising that our diet directly impacts our brains. For the brain to operate properly, it needs energy, also known as calories, which come from the carbohydrates, proteins, and fats in food and beverages. Although the body needs vitamins and minerals, they don't give you energy. At rest, the human brain consumes 20 to 30% of a person's total calorie intake due to its high metabolic activity. People who do not consume enough calories from meals to fulfill their energy needs may notice changes in how their minds work. Lower fluency and problem-solving skills are linked to skipping breakfast, especially in people who are already undernourished. A hungry person could also lack drive and energy.

Chronic hunger and energy deprivation have a significant impact on responsiveness and mood. When there is a lack of energy, the body responds by shutting down or altering many vital processes, including those that directly or indirectly affect brain function. These processes affect activity, hormonal levels, oxygen and nutrient transport, and the body's ability to fight diseases. People who habitually consume little energy frequently experience apathy, sadness, and hopelessness. Young newborns and developing fetuses are especially vulnerable to brain damage from starvation. The timing of the energy shortage concerning developmental stages determines how much harm is done. Early-life malnutrition has been linked to functional and cognitive impairments. Becker and Kretsch, (2019) presented evidence that our diet may influence how well we think. According to studies involving school-aged children, there is a clear link between poor nutrition and decreased academic performance. The function of the brain has also been demonstrated to be significantly influenced by iron. Low concentration test results were correlated with decreased iron levels in the individuals' bodies. Low iron levels and attention span were linked; it has been established that kids with iron deficiency anemia had short attention spans. Becker and Kretsch, (2019) discovered zinc to be important for cognition, especially memory.

There is a connection between diet and focus. Bhardwaj and Nandal (2015) compared the performance of well-fed children to those underfed, as well as age-related variations in cognitive function and attention span. It was discovered that on assessments of phonemic fluency, design fluency, concentration span, and selective attention, the malnourished children performed differently from the sufficiently fed youngsters. Healthy nutrition is crucial for kids to reach their maximum academic potential, experience mental development, and maintain long-term health and wellbeing. Children cannot concentrate to the fullest extent when they are not getting the right nourishment (Roopnarine, *et al.* 2018).

Roopnarine, *et al.* (2018) argued that a balanced diet is crucial for proper brain function. For example, proteins may be found in meals like cheese, milk, fish, and meat. The majority of bodily tissues, including neurotransmitters, which are chemical messengers that transport information from one brain cell to another brain cell, are created using them. Lack of protein, also known as protein-energy malnutrition, impacts children's academic ability, focus, and social and emotional development. It also makes young children sleepy, distant, and quiet. According to the EFA Global Monitoring Report (UNESCO 2015), more than a quarter of pupils in Sub-Saharan Africa under the age of fifteen are underweight due to poor diet and malnutrition, making them more susceptible to diseases and less able to concentrate in class. Shrestha and Pathak (2012) and Brauw *et al.* (2012) agree that undernutrition during childhood only impairs mental development by causing long-term structural changes to the brain.

Research Design and Methodology

The research design for the study was a descriptive survey. The descriptive survey study This is the most popular approach for gathering data on people's views, beliefs, habits, or educational concerns (Nzoka & Orodho, 2014). It was acceptable to use a descriptive design because it would allow the researcher to learn about the participants' perceptions of the variables influencing learning outcomes for lower primary students in Mumbuni Zone, Machakos County. Data was analysed using both qualitative and quantitative method.

Findings and Discussions

Malnutrition and Implementation of Competency Based Curriculum

The study sought to establish the influence of malnutrition on the implementation of Competency-Based Curriculum in lower primary pupils in Mumbuni Zone, in Machakos County. The teachers were requested to give information concerning malnutrition and cognitive Development. The researcher used indicators such as class participation of the malnourished pupils, social interaction of malnourished pupils and those who are not, school attendance of malnourished pupils, feeding programs at schools, and participation in social activities such of the malnourished pupils.

Response Rate

A total of twenty-five questionnaires were distributed at random to teachers in lower primary schools, and eight head teachers were interviewed by the researcher. Twenty-two of the twenty-two questionnaires distributed to lower primary school instructors in schools that were selected at random were returned. The resulting response rates are presented in Table

Table : Response Rate

Description	Sample	Returned	Percentage%
Lower Primary Teachers	22	22	100.0
Head Teachers	8	8	100.0
Total	30	30	100.0

The responses from lower primary teachers and head teachers who took part in the interview are both recorded as 100% in the table. The study's viability for data analysis was confirmed based on the response rate, which exceeded 80% among the participants. This finding aligns with the proposition made by Mugenda and Mugenda (2003) that it is feasible to achieve a response rate exceeding 50%.

Class Participation of the Malnourished Pupils

The research instruments also elicited information on class participation of the malnourished pupils. The Table indicates the class participation of malnourished Pupils;

Table : Class Participation of the Malnourished Pupils

Response	Frequency	Percentage (%)
Very frequently	0	0.00
Often	1	4.55
Sometimes	4	18.18
Rarely	5	22.73
Never	12	54.55
Total	22	100.00

The Table indicates that majority (54.55%) of the malnourished lower primary pupils never involve themselves in class participation, 22.73% rarely get involved in class participation, 18.18% sometimes get involved in class activities, and 4.55% participate in class activities. Similar results were noted among the head teachers' views. The majority (94%) of the head teachers agreed with the study's findings that malnutrition, as well as cognitive development, are directly related. According to them, malnourished pupils had challenges in grasping concepts in class. Their level of conceptualization and understanding was low compared to the ones who are not malnourished. This is in line with a study done by Karge and Moore, (2015) which found that the brain is directly influenced by what we eat. Energy, which is referred to as the calorie derived from the carbohydrates, protein, and fats found in food and beverages, is needed for proper brain functioning. That showed that malnutrition affects cognitive development, thus affecting concept conceptualization in class. This is consistent with research by Becker and Kretsch, (2019), which suggested that our diet might have an impact on how well our brains work. According to studies involving school-aged children, there is a clear link between poor diet and decreased academic performance. This demonstrates that malnutrition is a significant impediment to good implementation of Competence-Based Curriculums due to impaired cognitive functioning.

Interaction between Malnourished Pupils and those that are not

Lower primary teachers were requested to give information on the interaction between malnourished pupils and those that are not. The results are as shown in the Table .

Table : Interaction between Malnourished Pupils and those that are not

Response	Frequency	Percentage (%)
Very frequently	0	0.00
Often	2	9.09
Sometimes	3	13.64
Rarely	7	31.82
Never	10	45.45
Total	22	100.00

The Table indicate that majority (45.45%) of lower primary schools' pupils who are malnourished never interact with those who are not, 31.82% of the malnourished pupils rarely interact with those that are not, 13.64% of the malnourished pupils sometimes interact with those who are not and only 9.09% of the malnourished pupils often interact with those who are not.

These findings concurred with the ones reported by the head teachers. According to the majority (69%) of the respondent's, malnourished pupils have poor performance in social activities. According to head teachers' opinion, the malnourished pupils felt unworthy of associating themselves with those that are not malnourished. This was in line with a study done by Karge and Moore, (2015) on theory of mental development; which found that poor diet and malnutrition may retard intellectual development thus hindering socio-emotional development which is an essential element in pupils' interaction. Under nutrition impact on young kids can impede and delay healthy mental development. Additionally, it may retard behavioral and cognitive growth, limiting one's capacity to learn and maintain good health in the future. This shows that malnutrition affects the interaction of malnourished pupils and hence influences their implementation of Competence-Based Curriculum. This is in line with (WHO, 2011), which indicated that severe malnutrition can lead to reduced mental ability, lack of self-esteem, and ability to participate in social life. This shows that malnutrition affects the implementation of Competence-Based Curriculum of lower primary pupils in Mumbuni Zone, Mumbuni Sub County, Machakos County.

School Attendance by Malnourished Pupils

The study also sought to determine school attendance of malnourished children in relation to implementation of Competence-Based Curriculums. The table indicates the responses from lower primary teachers on the aspect.

Table: School Attendance of Malnourished Pupils

Response	Frequency	Percentage (%)
Very frequently	1	4.55
Often	1	4.55
Sometimes	14	63.64
Rarely	4	18.18
Never	2	9.09
Total	22	100.00

The Table data reveals that a fair majority (63.64%) of the malnourished pupils sometimes attend school, 18.18% of malnourished pupils in lower primary school rarely attend school, 9.09% of the malnourished pupils in lower primary schools never attend schools, 4.55% of malnourished pupils in lower primary school often and very frequently attend school. This shows that malnutrition affects implementation of Competence-Based Curriculums for pupils in the lower primary in Mumbuni Zone, Machakos County.

This is in line with a study done by Karge and Moore, (2015) which reported that the brain is directly influenced by what we eat. Energy, which is referred to as the calories derived from the carbohydrates, protein, and fats found in food and beverages, is needed for proper brain functioning. That showed that malnutrition affects cognitive development, thus affecting concept conceptualization in class.

Findings on Pupils' Malnutrition and Implementation the Competence-Based Curriculum

The results showed that there is a direct correlation between malnutrition and CBC implementation as was noted by majority (94%) of head teachers on cognitive development. The findings showed that pupils who were malnourished had challenges in conceptualizing concepts in class. The majority (69%) of head teachers had it that malnourished pupils have poor performance in social activities. In addition, 90% of head teachers had it that malnourished pupil did not perform in class to their best. All of these showed that malnutrition greatly affects implementation of Competence-Based Curriculums since it affects their concentration in class, grasping concepts, and interfering with their self-esteem; that is why they had poor interaction with others. The findings also indicated that malnutrition affected the performance of the pupils since conceptualization of learned concepts in class was common with malnourished pupils. Concerning findings for lower primary schools' teachers, the majority (63.64%) sometimes attended school, 18.18% rarely attended school, 4.55% often and very frequently attended school, and 9.09% never attended school.

Conclusion and Recommendations

The following are the study's recommendations, which are based on the study's findings: That;

1. Schools ought to offer a feeding program, particularly for lower primary pupils.
2. The ministry of education through the county government to avail support school feeding Program in Lower Primary Schools since this would promote school pupil retention thus effective CBC implementation.

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