



Nutritional Education Practices and Learning Outcomes in Public Pre-Schools in Homa Bay County, Kenya

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Abstract: Adequate nutrition plays a critical role in children's physical growth, cognitive development. Many public pre-primary schools in Homa Bay County continue to experience nutrition-related problems which may adversely affect learning outcomes. Despite the importance of nutritional education provision in pre-primary school settings, limited empirical evidence exists on how nutritional education practices affects learning outcomes. The paper is guided by pragmatic research paradigm and utilising a concurrent triangulation design to assess the relationship between nutritional education practices and learning outcomes in public pre-primary schools in Homa Bay County. The target population consisted of 877 public pre-primary schools, 877 head teachers, 1,211 teachers and 40 Early Childhood Development Education field officers. A sample of 44 head teachers, 301 teachers, and 40 ECDE supervisors was obtained and sampled using purposive and stratified random sampling methods. Data were collected through questionnaires, interviews, and observation checklists. Quantitative data were analysed using descriptive and inferential statistics, whereas qualitative data were subjected to thematic content analysis. There was a statistically significant strong positive relationship between nutritional education practices and learning outcomes ($r = 0.643$, $p < 0.05$). This implied that effective nutritional education practices would improve learners' knowledge, skills and attitudes towards learning. Provision of nutritional education is key towards enhancing pre-primary school pupils learning outcomes. The paper recommends the need for county and national governments to strengthen teacher capacity, teachers to educate parental on importance of proper nutrition for their children, and government to support nutrition education programmes to improve children's learning outcomes.

Keywords: Nutrition, Education, Pre-primary, Teachers, Learning, Outcomes

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1. Introduction

Across the world, optimal nutrition is recognised as a fundamental requirement for the healthy growth, cognitive development and academic performance of children especially during the early years of life (UNICEF, 2019). Nutrition in early childhood is essential for lifelong health, learning, and development

(Mabukela et al., 2025). Data shows that in developing countries (including Kenya), children under the age of five years encounter high rates of undernutrition and poor diet quality, with dietary diversity emerging as a key predictor of micronutrient adequacy and developmental outcomes (Kamwendo, 2025). World Health Organization (2020) reported that malnutrition can lead to delayed growth and cognitive deficits

severely affecting academic performance of pupils in schools (Asad & Simon, 2025). This is because adequate nutrition promotes optimal brain development which is fundamental for learning and cognitive aptitude. Therefore, schools are expected to introduce nutritional programmes in early childhood as it is essential for children physical growth, brain development, and learning progress (Katsagoni et al., 2019). Proper nutrition in the pre-primary stage of learning improves learners' concentration, participation, and cognitive development which are fundamental for effective learning (DiGirolamo et al., 2020). This paper examines the relationship between nutritional education practices and learning outcomes in early childhood development education stage.

Nutrition education refers to knowledge of concepts and processes related to nutrition and health, including knowledge of diet and health, diet and disease, foods representing major sources of nutrients, and dietary guidelines and recommendations (Mbhenyane et al., 2024). Nutrition education is the change process whereby beliefs, attitudes, environmental influences and understanding about food lead to nutrition practices that are scientifically sound, practical and consistent with individual needs and available resources (Rasheed, 2023). Teacher delivery of nutrition education can be effective in improving children's food literacy and eating habits (Aydin, et al., 2022). Nutritional education in pre-primary schools provides opportunities for teachers to nurture pupils' eating habits, hygiene practices, and attitudes toward healthy living (Cotton et al., 2020).

Research evidence shows that across the world; there has been a challenge that teachers face in the delivery of nutrition education across the world. In Indonesia, Wiradnyani et al. (2021) noted that teachers needed to scale-up their nutrition knowledge and become more confident in delivering nutrition education in schools. In Malawi, Kamwendo (2025) discovered that learners in primary continued to demonstrate poor dietary habits and persistent misconceptions about essential nutrients as a result of inadequate nutritional knowledge. Collectively, the studies suggest that inadequate teacher preparedness in nutrition education contributes to weak learner understanding and unhealthy practices, underscoring the need for strengthened teacher training and curriculum support in schools.

In Kenya, the government has emphasised the importance of holistic child development through Early Childhood Development Education (ECDE). But evidence from counties such as Homa Bay show that undernutrition remains prevalent among young children, affecting school participation and learning outcomes. Whereas school feeding programmes have been implemented in most public schools in Kenyan for some period of time, the integration of nutritional education practices into classroom learning has remained inconsistent (Lekisaat & Kangara, 2023). Existing

research have mainly explored nutrition in relation to child health and school attendance, with less focus on how teachers' nutritional education practices affect learning outcomes in pre-primary schools. This study therefore sought to examine the influence of nutritional education practices on learning outcomes in public pre-primary schools in Homa Bay County

1.1 Problem Statement

Proper nutrition is crucial to pre-primary school pupils' cognitive development and learning outcomes (Ojwang et al., 2022). However, in many public pre-primary schools in Homa Bay County, data from County Education office (2025) shows that pre-primary school pupils continue to experience poor nutritional outcomes which negatively affect concentration in class, participation in school activities, and overall learning. Even though efforts have been made to improve pre-primary school children nutrition through introduction of school feeding programmes and parents' sensitisation, nutritional education practices within pre-primary school classroom settings remain inadequately addressed in literature. Whereas many studies concentrate on school feeding programme interventions, they pay less attention to how teacher-based classroom nutritional education practices influence learning outcomes for pre-primary school pupils. As a result, there is limited empirical evidence on the role of teachers in integrating nutrition education programme to enhance learner outcomes (knowledge, skills and attitude) in public pre-primary schools. This paper sought to fill this gap by assessing the relationship between nutritional education practices and learning outcomes in public pre-primary schools in Homa Bay County, Kenya

1.2 Objective

The aim of this study was to explore the influence of nutritional educational practices and learning outcomes in public pre-primary schools in Homa Bay County, Kenya

2. Literature Review

Nutritional education has achieved universal attention as an important component in pre-primary school education, yet its influence on learning outcomes appear to be abstractly underdeveloped. Whereas most research acknowledge that instructors perform a key role in moulding pupils' nutritional knowledge (Metos et al., 2019), few investigates how that knowledge translate to cognitive engagement and classroom learning behaviours. From a constructivist view, nutritional education need not to be seen as a content transmission but as an interactive procedure where learners construct meaning through guided experiences.

Teachers understanding of nutritional policies significantly influences nutritional practices in classroom (Ausehus et al., 2023). The study by Ausehus et al. (2023) found out that instructors often lacked clarity on nutritional policy frameworks proposed by Ministries of education resulting to inconsistent implementation in schools. This implies that a meso-system – level disconnect (Bronfenbrenner) where policy structures fail to efficiently affects classroom level practices. Whereas the research found important institutional challenges, they did not determine how these gaps influenced pupils actual learning outcomes in schools, hence reducing its explanatory capacity.

Teachers recognise their developmental role and do not prioritise nutrition education practices because of competing curriculum demands (syllabus coverage) (Katsagoni et al., 2019). This shows a behavioural gap where knowledge does not result to practice. But Katsagoni et al. (2019) research reliance on self-reported data raised worries on social desirability bias, possibly overstressing teachers' attitudes and awareness. In developing countries, the association between nutritional education practice and learning is further confounded by social economic challenges. Wang and Fawzi (2020) observed that whereas institutional feeding programmes increased macronutrient intent and pupils' attendance, their impact on cognitive outcomes was at average level. This implied that nutritional education alone could be inadequate without supportive conditions within the environment reinforcing Bronfenbrenner's position that pupils developed is influenced by various interacting systems.

Studies conducted in developing countries support this complexity. For example, Setyaningsih (2025) reports that pupils' food choices were dependent more on affordability compared to knowledge, showing a conceptual gap which limits its efficiency in nutritional education. In Nigeria, Igboji et al. (2022) discovered that weak control of food vendors and lack of training to food handlers. This pointed out to a systemic gap which undermined school based nutritional education programmes. But this research focused mainly on structural matters with limited concentration on classroom level pedagogical practices.

In Kenya, a study by Ojwang et al. (2022) found high level of nutritional knowledge among caregivers, yet variation in practices continued to occur. This suggested a knowledge – practice gap, implying that awareness alone did not guarantee change of behaviour. Research by Muderedzwa and Matsungu (2020) discovered no significant association between dietary diversity and attitudes, challenging hypotheses that positive attitudes inevitably resulted to improved outcomes. Likewise, Nyamai (2022) research demonstrated that institution feeding programmes improved pupils' engagement and concentration in class but did not clearly link the outcomes to nutritional education practices hence

missing the chance to investigate how teaching about nutrition by teachers' influences pupils learning behaviours.

2.1 Theoretical Framework

This paper is informed by Lev Vygotsky's (1978) Sociocultural Theory to explain how provision of nutrition education results to learning outcomes in pre-primary schools. Social cultural theory posits that children cognitive development happens through social interactions and is mediated by more knowledgeable others like parents, teachers and caregivers within cultural relevant settings (Bema, Musweweshiri & Machiridza, 2026). In pre-primary schools, teachers' nutritional education practices (teaching on balanced diets, hygiene, gardening and food preparation) becomes effective when they are integrated in socially and interactive guided activities (Moyo & Chirwa, 2023). Through scaffolding and guided participation, pre-primary school teachers support learners in acquisition of knowledge and behaviours on nutrition which improves their cognitive growth and learning readiness. When teachers engage children in demonstrations, storytelling or practical food related activities, learners develop not only nutritional knowledge but also critical thinking and problem solving skills. Studies have shown that nutritional education increased learner attention, participation and learning outcomes when reinforced at home and in school (Jirout et al., 2019; Bema et al. 2026). Hence, Vygotsky theory explains that successful nutritional education is key towards improving learning outcomes in pre-primary schools.

3. Methodology

This research was conducted in Homa Bay County, Kenya. This study adopted a pragmatist research approach which is anchored on mixed-methods research methodology. The study was guided by concurrent triangulation research design which allowed the collection of both qualitative and quantitative data. The target population involved 877 head teachers, 40 ECDE field supervisors and 1211 public pre-primary school teachers from seven sub counties in Homa Bay County. A sample size of 301 pre-school teachers, 44 head teachers and 40 ECDE field supervisors were chosen using stratified random sampling and purposive sampling methods. Questionnaires, interviews and an observation checklist were used to collect data in this study. Data collected was analysed using descriptive and inferential statistics for quantitative data with the help of Statistical Product and Service Solutions (SPSS Version 24.0). Qualitative data from interviews and open ended questions was analysed thematically using content analysis. The results are presented in figures and tables for quantitative outcomes and narrations for thematic results.

4. Results and Discussion

4.1 Results

The goal of the study was to assess how the nutritional education practices influence learning outcomes in public pre-schools in Homa Bay County in Kenya. The study utilised data collected from pre-school teachers, head teachers, and ECDE programme officers through

questionnaires, interviews, and observation checklists, generating both quantitative and qualitative insights. Teachers are important link between the school and parents, and they provide essential guidance towards the proper use of nutrition for young children. Hence, teachers were requested to report how often they contacted parents or advised them concerning their children nutrition matters. Results are provided in Figure 1.

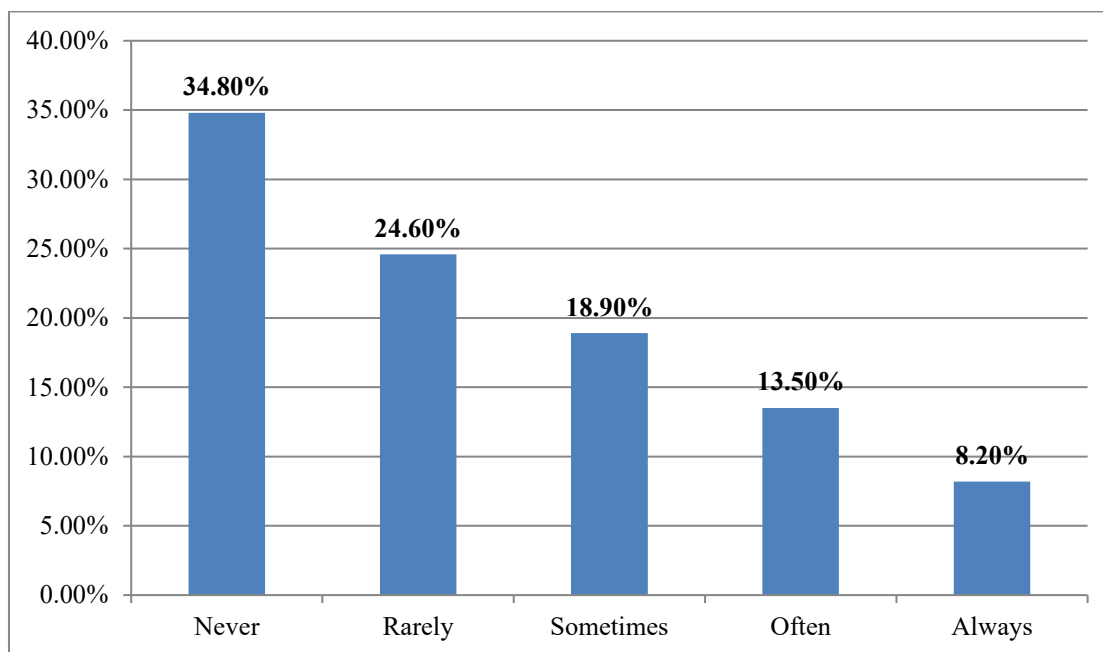


Figure 1 Frequency to which pre-school teachers talk to parents on children nutrition

Result shows that 85 (34.85) of teachers admitted never to have talked with parents concerning nutritional issues of their children, 60 (24.6%) said they rarely do, 46 (18.9%) sometimes talk with parents, 33 (13.5%) occasionally do and only 20 (8.2%) always had a conversation with parents concerning their children's nutritional issues. Mean values computed shows that teachers rarely ($mean=2.35$, $Std Dev=1.30$) invited or advice parents on matters pertaining their children nutritional status. This implies that majority of pre-school teachers care less about pre-school children's nutritional issues since they cannot take an initiative of talking to their parents.

Figure 1 demonstrates the level of parental participation in nutrition concern activities which fulfils the blended learning activities requirements in public preschool centres. Parents were reported to be more engaged in feeding programmes for the children who were reported as being more active with positive nutrition practices. The level of parental participation in Homa Bay County as analysed in the study suggests and justifies the need of more parent educational campaigns so that the parents can understand the need to provide their children proper nutrition.

The study also sought to investigate the impacts of the nutritional education content integrated in class activities on the learning outcomes. The interactions held with the ECDE programme officers and head teachers revealed that quite a number of schools practicing nutrition-based storytelling and food preparation as well as gardening, reported increased participation amongst the learners. Jirout et al. (2019) observed that nutrition education of children was more effective in the presence of interaction discussion because of the better concentration and attention in the class which assists with their cognitive capabilities. This suggests that doing nutrition as a subject in the ECD curricula would probably improve the understanding of good nutrition and possibly improve the performance of learners in ECD.

Moreover, the focus group discussions captured teachers' responses that pointed out children receiving balanced diet demonstrate active engagement and better concentration in class activities. However, students who come to school hungry or receive inadequate meals are less active, more lethargic, and distractible. These observations are comparable to international research as DiGirolamo et al. (2020) conducted which found that early childhood malnutrition is associated with diminished school involvement and cognitive

development. Therefore, improving the feeding program at school and intensifying nutrition education for the parents may be important for improving the learning achievement in public pre-school centres in Homa Bay County.

The same question was put to head teachers who were asked to indicate the frequency at which they engaged stakeholders in addressing nutrition issues affecting pre-school children. One head teacher No. 10 said that:

Periodically, any time we have parents meeting, the feeding programme for minors becomes agenda. We also call the parents from ECDE centre to plan for feeding programme.

Further, Head teacher No. 13 remarked that:

Parents are engaged twice every term, at the beginning of the term and at the end so as to get feedback on how the programme progresses in the course of the term.

In addition, head teacher No. 16 noted the following with regards to engagement of other stakeholders in addressing pre-school children's nutritional issues:

Stakeholders and teachers are addressed on nutritional issues affecting pre-school children once a term during parents meeting, when giving feedback on feeding programme as it is sponsored by parents

The research outcomes show significant efforts are being undertaken to bring all stakeholders on board by school administration to address nutritional needs of pre-school children for purpose of improving learning. Koutsaki et al. (2022) found that close collaboration between schools and parents in Brazil resulted in positive changes, such as introducing home gardens, increasing fresh food consumption, reducing processed foods, adopting healthier cooking methods, and improving the school environment to support learning. These findings are consistent with the results of this study, which also highlight the importance of parental involvement in promoting better nutrition and learning outcomes in preschool settings.

Furthermore, the researcher requested ECDE programme officers to indicate the frequency to which they engaged

with other stakeholders (schools and community) on matters of children nutrition. ECDE officer No. 1 remarked that:

I have arranged with all head teachers that I must attend BOM meetings to address the issue and every time I visit a school for normal assessment, I engage the teachers and also in their ward meetings.

Another ECDE programme officer No. 4 had this to say:

As often as possible, during parents meeting, education days, ward mass preschool graduation ceremony.

In addition, ECDE programme officer No. 4 said that:

As often as possible (in every visit). In every visit to schools, I must always visit the stores and cooking areas and here the children feed at.

This suggests that discussed with stakeholders' nutrition issues for the teaching and learning processes integration in schools was done by ECDE programme officers. These engagements focused on improving nutrition feeding programmes and raising awareness about the importance of child nutrition. These collaborative initiatives were essential, as evidence shows that strong institutional - parent alliance contributed to enhanced dietary practices, healthier behaviours, and improved learning environments for pupils.

The research established that integration of nutrition education into classroom activities positively influenced learner engagement. Pre-primary schools which incorporated nutrition-related activities like gardening, storytelling, and food preparation reported higher levels of learner participation and attentiveness in class. These interactive methods increased pupils' understanding of nutrition concepts while instantaneously supporting their classroom engagement and cognitive development.

Furthermore, to assess the degree to which the nutritional educational activities enhanced the learning outcomes in the public pre-school centres in Homa Bay County, the teachers were asked to provide indicate their position on statements provided on Likert scale of five. The responses from teachers are illustrated in Table 1.

Table 1: Pre-School Teachers Responses on Nutritional Education and Learning Outcomes

Nutrition education	Agreement level					Mean	SD
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree		
Nutrition education training is highly valued by teachers and parents in the school	3 (1.2%)	20 (8.2%)	51 (20.9%)	87 (35.7%)	83 (34.0%)	3.9303	.99343
Nutritional education is helpful to increase pupils' performance in exam	7 (2.9%)	4 (1.6%)	41 (16.8%)	58 (23.8%)	134 (54.9%)	4.2623	.98802
Proper nutrition influence children behavioural development	12 (4.9%)	11 (4.5%)	56 (23.0%)	74 (30.3%)	91 (37.3%)	3.9057	1.10523
Parents are involved in nutrition programmes for their children in this school	8 (3.3%)	24 (9.8%)	53 (21.7%)	86 (35.2%)	73 (29.9%)	3.7869	1.07901
It is difficult to implement nutrition policy programmes in children learning in this school	32 (13.1%)	49 (20.1%)	74 (30.3%)	56 (23.0%)	33 (13.5%)	3.0369	1.22503
I teach nutrition to children in my school	3 (1.2%)	7 (2.9%)	52 (21.3%)	97 (39.8%)	85 (34.8%)	4.0410	.88794
I teach general hygiene to children in this school	4 (1.6%)	6 (2.5%)	55 (22.5%)	59 (24.2%)	120 (49.2%)	4.1680	.96888
I act as a role model to children on matters concerning nutritional hygiene	2 (.8%)	4 (1.6%)	41 (16.8%)	70 (28.7%)	127 (52.0%)	4.2951	.86246
Proper nutrition to children improves their engagement in class	3 (1.2%)	5 (2.0%)	48 (19.7%)	45 (18.4%)	143 (58.6%)	4.3115	.93915
Composite values						3.9709	1.0055

Findings show that 87 (35.7%) of pre-primary school teachers strongly agreed with the statement saying nutrition education training was very much appreciated by them and the parents. Hence, the findings in the Homabay County study suggest that teachers have a positive attitude towards provision of nutrition education with the aim of changing the children's nutritional status. In Brazil, teachers emphasised the importance of working together with parents to improve dietary habits in schools (Koutsaki et al. (2022). This is like the present study. Secondly, more than half 134 (54.9%) of teachers asserted that nutritional education strongly agree helps in increasing pupils' academic competencies. This is so because health learners can actively participate in class and retain knowledge that is necessary for the higher levels of education. Upon questioning concerning proper nutrition of children and its impact on behaviour development, 12 (4.9%) strongly disagreed, 11 (4.5%) disagreed, 56 (23.0%) were undecided, 74 (30.3%) agreed and 91 (37.3%) strongly agreed. Thus, the result indicates that the majority of teachers agree (mean=3.90, Std Dev=1.11) that children behavioural development is positively influenced by good nutrition in their pre-school years. This indicates that good behaviour development will be seen among pre-school children when they are given an appropriate diet in terms of quality and quantity. Hence, a well-nourished pupil will be more attentive, active, and better able to participate in classroom activities.

It was also revealed from the study findings that 86 (35.2%) of teachers agreed that parents are involved in nutritional programmes for their children in schools. this statement appeared to be supported by majority of respondents (*mean*=3.78) but higher standard deviation values (Std Dev=1.07) suggests that there are some schools where parents appeared not to be involved by pre-school teachers on nutritional education matters of their children. Considering the teachers have to play their part on nutrition, the parents also need to be brought closer to ensure children are properly fed in school and at home for their physical and cognitive development. When asked whether it was difficult to implement policy on nutrition towards children learning in schools, 32 (13.1%) of teachers strongly disagreed, 49 (20.1%) disagreed, quite a number 74 (30.3%) were unsure, 56 (23.0%) agreed and 33 (13.5%) strongly agreed. The mean values show that teachers were undecided (*mean*=3.03, *Std Dev*=1.22) on the statement suggesting that some pre-school teachers find it easy to implement the policy on nutritional while others find it difficult. One challenge that could describe this kind of situation is in institutions where parents are unsupportive of school efforts of improving nutritional practices (school feeding programmes).

The study findings also revealed that most pre-primary school teachers actively integrated nutrition and hygiene education into their teaching. For instance, 97 (39.8%) of

pre-school teachers agreed and 85 (34.8%) strongly agreed that they taught nutrition to pre-school children in their classrooms. The outcomes were supported by majority of teachers (*mean*=4.04, *Std Dev*=0.88). This shows that despite some school not providing school feeding programme, teachers took a step of teaching the children on nutritional subjects in classroom. Close to half 120 (49.2%) of pre-school teachers reported that they always taught general hygiene practices (neatness, washing of hands, brushing of teeth, washing fruits before eating among others) to pre-school children in the county of Homa Bay. This is to ensure that children are prevented from contracting diseases associated with contamination of germs. Hygiene is also important for children concentration in class since they would be convenient environment for learning.

When asked as to whether they acted as role model on matters concerning nutritional hygiene in their schools, 2 (0.8%) strongly disagreed, 4 (1.6%) disagreed, 41 (16.85) were unsure, 70 (28.7%) agreed and 127 (52.0%) strongly agreed with the statement. The research therefore shows that most teachers are role models (*mean*=4.29, *Std Dev*=0.86) to their children in matters of nutrition and hygiene in the school. This is because, children would follow the behaviours and also appearance of their teachers and determined to be like them or look like them. This shows a positive personality exhibition by teachers in order to improve the nutrition and hygiene of pre-school children that is beneficial to

their growth and development. The findings coincide with Liguori et al. (2024) results revealed the benefits of the nutrition intervention led to increase in pupils' nutrition knowledge and pupils' implementation of that knowledge in daily living.

Importantly, the findings demonstrated that proper nutrition significantly improved pupil engagement in classroom activities. Result show that 3 (1.2%) strongly disagreed, 5 (2.0%) disagreed, 48 (19.7%) were undecided, 45 (18.4%) agreed and majority 143 (58.6%) strongly agreed that adequate proper nutrition improved learners' engagement in classroom. The result shows most teachers (*mean*=4.31, *Std Dev*=0.93) concurred with the statement that when pre-school children receive the required nutrient, their engagement in class increases. Equally, pupils who come to school hungry or receive inadequate meals were observed to be less active, easily distracted, and less engaged in learning tasks. This strengthens the crucial link between nutrition and cognitive functioning in pre-primary schools. Hence, above finding suggests that proper nutritional is an ingredient to effective learning by pre-school children in the county of Homa Bay, Kenya.

To establish the linkage between provision of nutrition education and learning outcomes, a Karl Pearson correlation was computed and results provided in Table 2.

Table 2: Correlations between Nutrition Education Provision and Learning Outcomes

		Nutrition education	Learning outcomes
Nutrition education	Pearson Correlation	1	.643**
	Sig. (2-tailed)		.000
	N	244	244
Learning outcomes	Pearson Correlation	.643**	1
	Sig. (2-tailed)	.000	
	N	244	244

** . Correlation is significant at the 0.01 level (2-tailed).

The findings revealed existence of a statistically significant strong positive relationship ($r = 0.643$, $p=0.01$) between nutrition education practices and pupils learning outcomes in Homa Bay County public pre-primary schools. This meant that improvements in nutrition education practices by teachers was strongly associated with improved learning outcomes among pre-school children. The strength of this relationship, findings reveal that nutrition education is a key determinant of children's engagement, behaviour, and academic performance. Nutrition education practices have demonstrated a stronger influence on learning outcomes, highlighting their critical role in pre-primary school learning.

Discussion

The objective of this paper was to examine how nutritional practices in public preschools affected learning outcomes in the classroom. As part of the improving children learning through addressing the unique nutritional needs of pre-school children, the study found that many pre-school teachers did not talk or work with parents. This was found to be a missing link in ensuring proper nutrition to facilitate learning in schools. Nevertheless, majority of pre-school teachers agreed that proper nutrition to children increased their engagement in classroom. Teachers reported actively teaching nutrition and hygiene concepts, integrating them into classroom activities such as discussions, storytelling and demonstrations. When learners are engaged, they become active in class, complete tasks, perform well in exams and transit to primary level of education easily (Cotton et

al., 2020). Many pre-primary teachers also said that they served as role models in promoting healthy eating and hygiene behaviours amongst their learners.

The study also found that appropriately fed children demonstrated superior cognitive skills, increased memory recall, and greater levels of class participation. Teachers stated that well-fed students tended to be more responsive to questions, followed directions, and participated in discussions. This is consistent with the Onyango et al. (2022) research which emphasises the relationship between nutrition and cognitive functions in the context of early childhood education. On the other hand, children who skipped meals or ate poorly were much more likely to show symptoms of lethargy, frustration, and loss of interest towards learning (Mabukela et al., 2025). These differences in attentiveness highlight the importance of nutrition in determining the learning outcomes. Furthermore, the research indicated that pre-school centres that had organised school feeding programmes had lower rates of absences and higher attendance in the classroom. Many children from low-income families were encouraged to persistently attend classes due to the meal provisions. Wekesa et al. (2020) noted that school feeding programmes not only enhance the health of the children but also improve their school attendance as well as academic performance. In some schools with sporadic or poorly funded feeding programmes, absenteeism, particularly among children from food insecure families, was much more common.

Head teachers reported efforts to involve parents and other stakeholders through meetings and school forums, although such engagements were not consistently conducted. The ECDE field officers interviewed indicated that they regularly sensitised stakeholders during school visits and community events, emphasising the importance of nutrition in pre-primary school learning. These officers also highlighted the need for stronger collaboration between national government agencies, county government, schools, parents and not for profit organisations to reinforce nutrition education beyond the classroom. The study established a significant strong positive relationship ($p < 0.05$) between nutritional education practices and learning outcomes in public pre-primary schools in Homa Bay County. The result indicated that pupils exposed to nutrition education were more attentive, engaged, and exhibited positive behaviours during classroom learning. Researcher own observation further showed that such learners practiced better hygiene and demonstrated improved participation in classroom learning activities. These results suggest that nutrition education performed a crucial role in shaping children's knowledge, skills, and attitudes, making it the most influential factor in enhancing learning outcomes among the variables examined in this study.

5. Conclusion and Recommendations

5.1 Conclusion

The study established that nutritional education practices came out as the most influential practice influencing learners' outcomes. The strong correlation values implied that equipping pupils with knowledge and skills on nutrition and hygiene considerably improved their behaviour, engagement in class and academic performance from KSA domains. Different from other nutritional practices, provision of nutrition education addressed both cognitive and behavioural learning aspects making it a key tool for enhancing learning outcomes even in resource limited public pre-primary schools. Systemic challenges like lack of clear policy frameworks from the government, inadequate funding for nutritional programmes, limited parental involvement, and poverty significantly affected effective implementation of nutritional practices in public pre-primary schools in Homa Bay County. Calling for concerted and coordinated efforts from parents, schools, governments, communities and non-governmental organisations.

5.2 Recommendations

This study makes the following recommendations:

1. Nutrition education topic needs to be fully integrated into pre-primary school curriculum with measurable learning outcomes on food awareness, hygiene and healthy eating.
2. A policy needs to be developed which mandates structured partnership between schools and parents to support nutrition education at school and home levels.
3. Teachers should integrate nutrition education into regular learning activities such as storytelling, play-based learning, gardening, and demonstration lessons.
4. Pre-primary schools should also establish regular parent engagement forums focused on child nutrition awareness and behaviour change communication.
5. County ECDE officers should conduct continuous professional development sessions for teachers on nutrition pedagogy.

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