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EDUCATION

INFLUENCE OF NUTRITION PRACTICES IN NOMADIC COMMUNITIES ON LEARNING OUTCOMES OF LEARNERS IN PUBLIC PRE-PRIMARY SCHOOLS IN SAMBURU NORTH SUB-COUNTY, SAMBURU COUNTY, KENYA

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ABSTRACT

Purpose of the Study: To determine the influence of nutrition practices in nomadic lifestyles on learning outcomes of learners in public pre-primary schools in Samburu North Sub-county.

Statement of the Problem: Nutrition practices which are adopted by nomadic communities are crucial in improving learner participation in pre-primary school activities. However, in Samburu North Sub-county, pre-primary school learners from nomadic communities have manifested low learning outcomes in basic numeracy, language and creativity skills.

Methodology: The study adopted a mixed methodology and thus adopted both descriptive survey and phenomenological research designs to address quantitative and qualitative methods respectively. Target population was 9214 respondents comprising 147 headteachers, 100 pre-primary school teachers, 147 parents' representatives and 8820 pre-primary school learners from which a sample of 384 respondents was calculated using Yamane's Formula. Stratified sampling was used to create three strata based on the number of zones in Samburu North Sub-county. From each zone, 5headteachers, 5 parents' representatives and 46 pre-primary school teachers were selected using purposive sampling. However, from each zone, 72 learners were selected using simple random sampling. This realized a sample of 15 headteachers, 15 parents' representatives, 138 pre-primary school teachers and 216 pre-primary school learners. Qualitative data were analyzed thematically along the objectives and presented thematically in narrative forms. Quantitative data were analyzed descriptively using frequencies and percentages and inferentially using Pearson's Product Moment Correlation Analysis with the help of Statistical Packages for Social Number work (SPSS 23) and presented using tables.

Result: The study found that learning outcomes of learners in public pre-primary schools in nomadic communities in Samburu Sub-county has been low with many of them manifesting poorly-developed basic numeracy and language skills. This is attributed to nutrition practices which are adopted in such communities.

Recommendations: The study recommends that headteachers and the Ministry of Education should continue ensuring that pre-primary school learners are provided with lunches through school-feeding programmes as a way of keeping these learners in school.

Keywords: *Nutrition practices, pre-primary school learners, learning outcomes, public pre-primary schools.*

INTRODUCTION

Nomadic lifestyles entail movement from place to place and region to region depending on variables such as climate, season, availability of water, and the movement of animal herds. According to Awan and Noureen (2016), nomadic pastoralists are people who keep livestock as a source of livelihood through sale and use of livestock and its products and move from place to in search of pasture for their livestock. Nomadic way of life has survived through centuries, and even in these modern times, pastoral nomadism is recognized as an efficient cost-effective method of utilizing marginal lands. Awan and Noureen (2016) posit that nomadic lifestyles involves feeding, language, religious and dressing practices which have been established to influence participation of pre-primary school learners.

In Kuala Lumpur, nomadic lifestyles influence learners' enrolment and accessibility to schools, cognitive development, motivation levels, attention spans and time of study. However, the extent to which nutrition practices adopted in nomadic communities influence learning outcomes of pre-primary school learners is yet to be fully explored. Globally, nutrition plays a critical role in enhancing holistic growth and learning outcomes of early childhood learners. According to World Health Organization (2015), nutrition, hygiene and sanitation practices are critical in the lives of school-going nomadic children. World Health Organization (2015) posits that it is important to make sure that schools have adequate and safe water, hygiene and sanitary facilities. The provision of school hygiene and sanitation facilities ensures the rights of students to acceptable hygiene practices, safe water supply, latrines and a healthy school environment in general. The impact could have further beneficial effect. For example, healthy environment facilitates more effective learning, it provides opportunities for pastoralist children to gain life-long positive hygiene behaviours and opportunities for increased school enrolment, retention and attendance for children.

Consistent with these assertions, Moorck and Leslie (2016) in a study conducted in Nepal among 112 nomadic communities about childhood malnutrition and cognition, indicated that, in an educational world filled with failing schools and apathetic learners, school committees on education have searched for solutions on how to increase test scores and create school systems where all learners receive the best education possible. According to Moorck and Leslie (2016), among the plethora of possible solutions have included a look at the nutritional substance of what pastoralist school-aged children are eating each day as they struggle through a day of learning. Increasing awareness of the importance of diet for health promotion and disease prevention has led to a greater concern about the diet and eating patterns of school children and adolescents. Eating patterns such as eating frequency, skipping of breakfast, and frequency of meals eaten away from home might influence school-going children's nutritional status, which then influences their health and learning outcomes (Shaw, 2016). In a study conducted in Rome to ascertain the efficacy of eating patterns on learning outcomes, World Food Programme (2017) indicated that eating patterns established during childhood shape the diet later in life. Eating breakfast is important for the health and development of children. The study further suggests that breakfast is a central component of nutritional well-being, contributing to total daily energy and nutrient requirements. WFP (2017) demonstrated that moderate under nutrition affects children's cognitive development and school performance and skipping meals can adversely affect pastoralist children's performance in problem-solving tasks.

Pollit, Jacoby and Cueto (2015), in a study conducted in Paris, echoed similar views in which they asserted that skipping breakfast, lunch, supper or dinner can negatively affect pastoralist children’s problem-solving ability and low energy intake at breakfast can negatively impact physical endurance, creativity and well-being. The study further indicated that learners who eat breakfast have improved academic, behavioral and emotional functioning. Pastoralist schools, like other non-home food sources, now offer a more extensive and varied mix of eating options than in past decades. In most countries in Sub-Saharan Africa, school meal programs have been adopted to ensure that children in pre-primary school settings have regular and adequate lunches and breakfasts on an average school day (Schweinhart & Weikart, 2016). Schweinhart and Weikart (2016) indicate that lunch contributes 31 percent of daily calories, whereas breakfast contributes 22 percent. Nearly all children who eat school breakfast also eat school lunch; for such children, school meals may account for approximately half of their daily caloric intake.

In Kenya, provision of nutritious meals and snacks are essential for optimal growth and development of children from nomadic communities. Despite the fact that parents and physicians may rightfully encourage a well-balanced diet for their kids, but a new study shows that the Maasai nomads of Kenya in Eastern Africa remain surprisingly healthy despite a fairly one-sided and poor diet consisting mainly of cornmeal and milk (Whaley, 2018). In a study carried out among the Maasai nomads, Wilson and Parnell (2018) established that breakfast typically consists of sweetened milk tea and sometimes porridge made of cornmeal, water, milk and sugar. Lunch and dinner include milk and a polenta made from cornmeal and water. According to Ministry of Finance and National Treasury (2018), feeding patterns and provision of energy provided by healthy foods ensures that children will be ready to fully participate in the day's learning opportunities. During meals and snacks pastoralist pre-primary school learners learn to make nutritious choices, discover a wide variety of different foods and develop healthy eating patterns. Similar instances are witnessed in Samburu North Sub-county where pre-primary school learners from nomadic communities with healthy feeding patterns register impressive learning outcomes. A report by the Ministry of Finance and national Treasury (2018) shows that negative social and health consequences of pastoral sedentarization, including poorer nutrition, inadequate housing, lack of clean drinking water, and higher rates of certain infectious diseases despite better access of settled populations to formal education and health care. These findings corroborate the assertions of Whaley (2018) that nomadic pastoral diets are typically protein-rich and calorie-poor. Based on three food groups: milk, meat products (meat, bone, fat, blood), and cereals acquired by trade or cultivation. Meat products are rarely consumed, where animals are slaughtered for ritual occasions or social obligations. However, Whaley (2018) as did other empirical studies have not interrogated the extent to which nutrition practices adopted by the nomadic communities influence learning outcomes among pre-primary school learners; hence the need for this study.

STATEMENT OF THE PROBLEM

Pre-primary school learners from nomadic communities in Samburu North Sub-county have manifested and still continue to manifest low learning outcomes. A report by KHRC (2018) shows that 67.9% of pre-primary school learners in Samburu North Sub-county manifest low reading, writing and oral skills, 78.7% cannot perform basic tasks in number work whereas 65.1% lack creativity skills. Efforts by the Ministry of Education to introduce mobile education to mitigate on the challenges of low learning outcomes have not yielded much progress. Despite these statistics, few empirical studies have interrogated the extent to which nutrition practices

among nomadic communities influence learning outcomes among pre-primary school learners; thus, the need for this study.

OBJECTIVES OF THE STUDY

i. To assess the status of learning outcomes among learners in public pre-primary schools in Samburu North Sub-county.
ii. To examine the influence of nutrition practices in nomadic communities on learning outcomes among learners in public pre-primary schools in Samburu North Sub-county.

THEORETICAL FRAMEWORK

This study was guided by the Walberg's learning outcomes theory. This theory posits that psychological characteristics of individual learners and their immediate psychological environments influence educational outcomes, that is, cognitive, behavioral, and attitudinal. Walberg (2012) identified nine key variables that influence educational outcomes as: learners' ability/prior achievement, motivation, age/developmental level, quantity of instruction, quality of instruction, classroom climate, parental involvement, home environment, peer group, and exposure to mass media outside of school.

Walberg (2012) shows that psychosocial characteristics of classroom learning environments demonstrate incremental validity in predicting learner achievement. Walberg (2012) further asserts that psychosocial characteristics such as self-concept, attitudes, behaviors, intrinsic motivation, and overall learner engagement in learning are useful in curriculum evaluation studies and can provide teachers with useful information to arrange more optimally functioning classrooms.

In this study, to improve learning outcomes and educational productivity of children, educational process goals as well as achievement goals must be considered. Thus, the relevance of this theory is that learning outcome goals are interpreted to include learner perceptions of the social environment, creativity, self-concept, participation in extra-curricular activities, and interest in subject matter. In other words, ignoring these perceptions and experiences in favor of traditional goals measured by test scores decrease motivation and ultimately lower educational achievement.

RESEARCH METHODOLOGY

The study adopted a mixed methodology and thus adopted both descriptive survey and phenomenological research designs to address quantitative and qualitative methods

respectively. Target population was 9214 respondents comprising 147 headteachers, 100 pre-primary school teachers, 147 parents' representatives and 8820 pre-primary school learners from which a sample of 384 respondents was calculated using Yamane's Formula. Stratified sampling was used to create three strata based on the number of zones in Samburu North Sub-county. From each zone, five headteachers, five parents' representatives and 46 pre-primary school teachers were selected using purposive sampling. However, from each zone, 72 pre-primary school learners were selected using simple random sampling. This sampling procedure realized a sample of 15 headteachers, 15 parents' representatives, 138 pre-primary school teachers and 216 pre-primary school learners. Questionnaires were used to collect quantitative data from pre-primary school teachers, interviews were used to collect qualitative data from headteachers and parents' representatives as well as observation checklist for learners. Qualitative data were analyzed thematically along the objectives and presented thematically in narrative forms whereas quantitative data were analyzed descriptively using frequencies and percentages and inferentially using Pearson's Product Moment Correlation Analysis with the help of Statistical Packages for Social Number work (SPSS 23) and presented using tables.

RESULTS AND DISCUSSIONS

This section presents the findings of the study based on the objective. It also outlines the methods of presentation of the study findings and discussions.

RESPONSE RATE

In this study, 138 questionnaires were administered to pre-primary school teachers, out of which 133 were successfully filled and returned. The researcher also interviewed 12 headteachers and 12 parents' representatives. The researcher also undertook observation schedules among 178 pre-primary school learners. Response rates are shown in Table 1;

Table 1: Response Rate

Respondents	Sampled Respondents	Those Who Participated	Achieved Return Rate (%)
Headteachers	15	12	80.0
Pre-primary School Teachers	138	133	96.4
Parents' Representatives	15	12	80.0
Pre-primary School Learners	216	178	77.1
Total	**384**	**335**	**87.2**

Source: Field data (2023)

Table 1 shows that headteachers registered a response rate of 80.0%, pre-primary school teachers registered a response rate of 96.4%, parents' representatives registered 80.0% whereas

pre-primary school learners registered a response rate of 77.1%. This yielded an average response rate of 87.2% which affirmed the assertions of Creswell (2014) that any response rate above 75% is sufficient and of the acceptable levels to enable the generalization of the results to the target population.

Assessment of Learning Outcomes of Learners in Public Pre-primary Schools

The study sought to assess the levels of learning outcomes of learners in public pre-primary schools.

This was measured by assessing manifestation of basic numeracy, language and creativity skills among pre-primary school learners. Descriptive data were collected from pre-primary school teachers and results are shown in Table 2.

Table 2: Levels of Learning Outcomes of Learners in Public Pre-primary Schools

Learning Outcomes	Exceeding Expectations	Approaching Expectations	Below Expectations
	%	%	%
Basic numeracy skills such as number recognition, ordering and basic operations	31.6	18.0	50.4
Language skills such as reading, writing and speaking	30.1	21.1	48.8
Creativity skills such as drawing, coloring, etching, painting and pattern formation	45.1	25.6	29.3

Source: Field Data (2023)

Table 2 shows that the slightly less than a third, 42(31.6%), of the pre-primary school teachers indicated that their learners manifest basic numeracy skills such as number recognition, ordering and basic operations which exceed expectations, 24(18.0%) indicated approaching expectations whereas slightly more than half, 67(50.4%) indicated below expectations. Table 2 also shows that 40(30.1%) of the pre-primary school teachers indicated that their learners exceed expectations in language skills such as reading, writing and speaking, 28(21.1%) indicated that they approach expectations whereas slightly more than half 65(48.8%) indicated that pre-primary school learners manifest language skills which are below expectations.

Table 2 further shows that 60(45.1%) of the pre-primary school teachers indicated that their learners manifest creativity skills such as drawing, coloring, etching, painting and pattern formation which exceed learning expectations, 34(25.6%) indicated they approach expectations whereas 39(29.3%) indicated below expectations. These findings lend credence to a report by the Ministry of Education (2022) which indicated that, in many pre-primary

schools in Samburu Sub-county, the learning outcomes of learners in public pre-primary schools of learners is low with many pre-primary school learners manifesting poorly developed basic numeracy, language and creativity skills.

According to MoE (2022), only 23.9% of pre-primary school learners have competency in mathematics skills and have a well-developed communicative competency in reading, writing and oral skills whereas only 22.6% manifest creativity skills such as drawing, shape formation and coloring among others.

This implies that, despite the efforts by different stakeholders to improve the learning outcomes of learners in public pre-primary schools, many pre-primary school learners still register low grades in basic numeracy, language and creativity skills.

Thematic Analysis

During the interviews, the headteachers disagreed with pre-primary school teachers that their syllabus coverage is good. They, however, noted that many pre-primary school teachers are slow in covering the syllabus. Headteacher, H1, observed:

> *In my pre-primary school, teachers rarely complete their syllabi on time. Sometimes, learners are rushed through the content just to cover the syllabus. This has hurt the learning outcomes of learners in public pre-primary schools*

The researcher also observed that many pre-primary school learners have challenges with solving basic number work tasks such as number recognition, counting and basic operations like addition and subtraction. The researcher observed;

> *The majority of the preprimary school learners recognize numbers from slabs, cannot add or subtract operations like 3 +9 or 8-3 with ease nor were they able to state the values of numbers.*

The researcher also observed that the ability of pre-primary school learners to communicate fluently is a real problem. That is, many pre-primary school learners could not read, write or sound specific words or even state the meanings of words. However, just as indicated by headteachers and pre-primary school teachers, many pre-primary school learners manifest good levels of creativity. They could colour shapes, form patterns, draw diagrams with ease and undertake crayon etching with little difficulty. As noted in quantitative findings, these views further point to the fact that dynamics within schools are key in enhancing syllabus coverage and pre-primary school learners' performance. Likewise, these views are indicative of the fact

that pre-primary school learners still register low grades in basic numeracy and language and creativity skills, though their level of creativity and innovativeness is good.

Nutrition Practices among Nomadic Communities and Learning Outcomes of Pre-primary School Learners

The study sought to establish how nutrition practices among nomadic communities influence the learning outcomes of learners in public pre-primary schools. Descriptive data were collected from pre-primary school teachers and results are shown in Table 3:

Table 3: Influence of Nutrition Practices among Nomadic Communities on Learning Outcomes of Learners in Pre-primary Schools

Summary of Test Items	SA %	A %	U %	D %	SD %
Feeding patterns in nomadic communities is a practice for improving learning outcomes of pre-primary school learners	71.7	11.8	1.5	10.1	5.3
Nomadic parents rarely ensure that their children have quality diets thus compromising their learning outcomes in pre-primary schools	46.9	13.2	7.4	27.7	4.8
Among the nomadic communities, food is rarely available for children which influence their concentration in class	57.5	12.4	4.6	23.3	2.2
Pre-primary school learners among the nomadic communities rarely take all the recommended meals in a day which impact on their learning outcomes	67.4	19.7	3.5	5.3	4.1
Nutrition practices adopted by nomadic communities has influenced learning outcomes of pre-primary school learners	69.6	13.8	1.6	10.6	4.4

Source: Field Data (2023)

Table 3 reveals that the majority, 95(71.7%) of the pre-primary school teachers strongly agreed with the view that feeding patterns in nomadic communities is a practice for improving learning outcomes of pre-primary school learners while 16(11.8%) agreed with the statement, 2(1.5%) were undecided, 13(10.1%) disagreed whereas 7(5.3%) strongly disagreed. These findings corroborate the assertions of World Health Organization (2015) that nutrition, hygiene and sanitation practices are critical in the lives of school-going nomadic children. According to WHO (2015), it is important to make sure that schools have adequate and safe water, hygiene and sanitary facilities. These findings point to the fact that feeding patterns is key in children's education since good food and healthy environment facilitate more effective learning and provide opportunities for pastoralist children to gain life-long positive hygiene behaviours and opportunities for increased school enrolment, retention and attendance for children.

Slightly more than two-thirds, 62(46.9%) of the pre-primary school teachers strongly agreed with the view that nomadic parents rarely ensure that their children have quality diets thus compromising their learning outcomes in pre-primary schools as did 18(13.2%) agreed, 10(7.4%) were undecided, 37(27.7%) disagreed whereas 6(4.8%) strongly disagreed. Majority of the pre-primary school teachers, 76(57.5%), strongly agreed with the view that, among the nomadic communities, food is rarely available for children which influence their concentration in class while 16(12.4%) agreed. However, 6(4.6%) were undecided, 31(23.3%) disagreed whereas 3(2.2%) strongly disagreed.

This lends credence to the assertions of a report by the Ministry of Finance and National Treasury (2018) that feeding patterns and provision of energy provided by healthy foods ensures that children will be ready to fully participate in the day's learning opportunities. According to the report, during meals and snacks pastoralist pre-primary school learners learn to make nutritious choices, discover a wide variety of different foods and develop healthy eating patterns. These findings are indicative of the fact that, though a challenge in nomadic communities, provision of nutritious meals and snacks are essential for optimal growth and development of children from nomadic communities.

Most, 90(67.4%), of the pre-primary school teachers strongly agreed with the view that learners among the nomadic communities rarely take all the recommended meals in a day which impact on their learning outcomes whereas 26(19.7%) agreed, 5(3.5%) were undecided, 7(5.3%) disagreed whereas 5(4.1%) strongly disagreed. Majority, 93(69.6%) of the pre-primary school teachers strongly agreed with the view that nutrition practices adopted by nomadic communities has influenced learning outcomes of learners wile 18(13.8%) agreed, 2(1.6%) were undecided, 14(10.6%) disagreed whereas 6(4.4%) strongly disagreed. These findings corroborate the assertions of Shaw (2016) that feeding patterns such as eating frequency, skipping of breakfast, and frequency of meals eaten away from home might influence school-going children's nutritional status, which then influences their health and learning outcomes. This indicates that negative social and health consequences of pastoral sedentarization, including poorer nutrition as well as lack of clean drinking water compromise quality of education which learners from nomadic communities receive.

Diets of learners from nomadic communities are typically protein-rich and calorie-poor. Their diets are based on three food groups, that is, milk, meat products (meat, bone, fat, blood), and cereals acquired by trade or cultivation. This is further indicative of the fact that the inability

of pre-primary school learners from nomadic communities is attributed to the nutrition practices adopted by their communities.

Inferential Analysis

To verify the influence of nutrition practices among nomadic communities on learning outcomes of learners in public pre-primary schools, data were collected on the number of meals (breakfast, lunch and supper) learners from the 12 sampled public pre-primary schools take per day and their average learning outcomes in basic numeracy, language and creativity skills obtained from teachers' records. Results are shown in Table .4

Table 4: Number of Meals Learners in Public Pre-primary Schools Take Per Day and their Average Learning Outcomes

Number of Meals Taken Per Day by Learners in Public Pre-primary Schools	Average Learning Outcomes of Pre-primary School Learners (%)
1	19
1	36
2	23
3	48
1	50
1	33
1	44
2	51
3	57
2	47
3	56
1	35

Table 4 shows that, in public pre-primary schools where learners take many meals per day, learners register improved learning outcomes in basic numeracy, language, creativity and essential environmental skills. This further indicates that the frequency with which parents and schools practise sound nutrition practices determine the learning outcomes of pre-primary school learners. These results were subjected to Pearson's Product Moment Correlation Analysis and results are shown in Table 5.

Table 5: Relationship between Numbers of Meals and Learning Outcomes of Learners

		No. of Meals	Learning Outcomes
No. of Meals take by Pre-primary School Learners	Pearson Correlation	1	.583*
	Sig. (2-tailed)		.047
	N	12	12
Learning Outcomes	Pearson Correlation	.583*	1
	Sig. (2-tailed)	.047	
	N	12	12

*. Correlation is significant at the 0.05 level (2-tailed).

Table 5 shows that there is a strong positive correlation between nutrition practices among nomadic communities practices and learning outcomes of learners in public pre-primary schools ($r(12) = 0.583$, $p = 0.047$ at $\alpha = 0.05$). These findings further support the fact that learning outcomes of pre-primary school learners depends, to some extent, on the nutrition practices among nomadic communities. In other words, for learners to register impressive grades in basic numeracy, language and creativity skills, feeding patterns must be frequent and quality of diets be maintained at high standards.

Thematic Analysis

During the interviews, headteachers also responded in favour of the view that feeding patterns in nomadic communities is a practice for improving learning outcomes of pre-primary school learners. Headteacher, H2, noted that;

> *Though their feeding patterns maybe different, the patterns of feeding for children are often considered key in enabling learners take part in school activities. However, most of children from such communities rarely have quality diets. In most instances, these children rarely concentrate in class which has compromised their academic activities and thus low learning outcomes.*

On their part, parents' representatives responded on the contrary. They stated that they often feed their children regularly to enable them be active in class and fully participate in their academic activities. Parents' representative, PR1, noted that;

> *Despite my economic situation, I always ensure that my child is fed regularly. They always take breakfast and carry with themselves packed food ratios to last them for the day.*

Despite these contradictions, these findings underscore the vitality of feeding patterns since it contributes to improved learning outcomes among pre-primary school learners. Just like quantitative findings, these views are consistent with the assertions of WHO (2015) that nutrition, hygiene and sanitation practices are critical in the lives of school-going nomadic children. These mixed findings are indicative of the fact that feeding children regularly on nutritious diets is key to their academic activities. In other words, though a challenge in nomadic communities, provision of nutritious meals and snacks are essential for optimal growth and development of children.

SUMMARY OF FINDINGS AND CONCLUSIONS

The study established that learning outcomes of learners in public pre-primary schools in Samburu Sub-county has been low with many of them manifesting poorly-developed basic numeracy and language skills. Many learners in public pre-primary schools cannot perform basic number operations, do not have the ability to communicate fluently is a real problem, could not read, write or sound specific words or even state the meanings of words. However, many pre-primary school learners manifest good levels of creativity. They could colour shapes, form patterns, draw diagrams with ease and undertake crayon etching with little difficulty. It is also evident that people from nomadic communities hold the view that feeding patterns play a key role in improving learning outcomes among learners in public pre-primary schools. However, learners from these communities do not have access to quality diets necessary for them to actively take part in school activities.

RECOMMENDATIONS

The study recommends that headteachers and the Ministry of Education should continue ensuring that pre-primary school learners are provided with lunches through school-feeding programmes as a way of keeping these learners in school.

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