

Effect of Provision of Nutritious School Meals on Educational Achievements in Secondary Schools in Kibra Sub-County in Nairobi, Kenya

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ABSTRACT

Over the past decade, a number of school health intervention programmes have been implemented in Kenya. Despite the implementation of these interventions, questions on their effectiveness to educational outcomes still arise. This study attempted to investigate effect of provision of nutritious school meals on educational achievements in secondary schools in Kibra Sub-county in Nairobi, Kenya. The research was guided by the question of how provision and access to adequate nutritional school meals affects educational achievements in secondary schools in Kibra Sub-County. The study used a mixed method design, namely convergent parallel design. The following people were included in the study's target population: form 3 and 4, and school matrons. A target population of the study was 3277 students and 18 matrons. A sample size of 354 respondents was selected through a combination of sampling techniques: cluster random sampling, homogeneous purposive sampling, proportionate sampling, simple random sampling and expert sampling. Student's questionnaires and matron's interview guide were used to collect data. The data gathered was both qualitative and quantitative. Thematic analysis was used to analyze qualitative data, and the results presented in verbatim and narrative form. The descriptive and inferential statistics were used to analyze quantitative data from students' questionnaires. The quantitative data obtained was analyzed using descriptive statistics such as percentages and frequency counts. SPSS statistical software was used to analyze the quantitative data (version 23). The data were then presented using frequencies and percentages and summarized using tables. The study found that nutritious school meals have a significant effect on education achievement in schools. The study recommended that concerted effort is required to ensure that quality and quantity of nutritious school meals was maintained at all times for better education outcome in secondary schools. Further, school management should promote healthy diets by providing a variety of foods, such as high-fiber foods, plenty of fruits and vegetables, legumes, and limiting intake of fats, free sugars, and sodium.

Keywords: *Nutrients provision, nutritious school meals, educational achievements, secondary school achievements, nutritional meals.*

1.0 INTRODUCTION

A nutritious meal is one that contains the right proportions of carbohydrates, proteins, fats, vitamins, and minerals to keep one healthy (FAO & WHO, 2014). Nutritional meals are important for allowing the brain to function at its best and enhancing learning (Dheressa, 2011). Proteins found in foods such as meat, milk, fish, beans, pigeon peas, cow peas, green grams, and

others are used to make most body tissues, including neurotransmitters, which are used to carry information in brain cells (Nabarro, Monon, Ruel & Yosef, 2012). Students become lethargic, withdrawn, and passive as a result of a protein deficiency, which has an impact on their ability to learn. Carbohydrates, which can be found in grains, fruits, and vegetables, provide enough energy to keep the brain going. Dizziness and mental confusion can be caused by fluctuating carbohydrate levels, both of which have an impact on cognitive performance and, as a result, learning outcomes. Fats, which make up to 60% of the brain, act as a messenger in the partial control of moods.

Students' foods should always be enriched with the proper amounts of fats because they are growing and learning at the same time. Vitamins and minerals aid in the transmission of messages as well as the cognitive process. As a result of their inadequacy, students' attention spans are short, resulting in poor academic performance (Dheressa, 2011). Each country has its own set of dietary guidelines for school meals, so schools should commit to providing high-quality meals that provide the energy and nutrients that students require to achieve their full potential.

According to a study on School Meals and Classroom Effort: Evidence from India (Afridi, Barooah, & Somanathan, 2013), school lunches have the potential to improve academic performance in the classroom. In concurrence, Prangthip, Soe, and Signar (2019) indicated that students who eat a balanced diet perform better in exams, have better behavior and attendance at school, and complete their assigned tasks more thoroughly than students who do not eat a balanced diet.

Ngussa, (2016) established that students in schools that provide food services have a significantly higher mean score in learning participation than students in schools that do not provide food services. As a result, food availability has a significant impact on the rate of learning participation. According to Rotimi's (2019), students who have access to a balanced diet perform better than students who do not; nourished students outperform malnourished students; and food availability has a significant impact on academic performance.

In Kenya, the school feeding program is a worthwhile intervention that is well-received by parents, teachers, and students because it improves access to education and school enrolment, particularly among poor communities living in informal settlements (Aila, 2012). As a result of the feeding program, students are more likely to participate in class since they have access to a well-balanced diet that keeps them active.

Students from low socioeconomic areas experience greater educational impact due to poor health emanating from poor nutrition. As such, improving their health through provision of nutritious school meals improves their ability to benefit from education. Furthermore, since students spend much time at school, schools that actively work to improve student's health through nutrition interventions report higher educational achievements. On the contrary, the unavailability of these interventions transforms schools into unfriendly environment with poor educational

achievements. Therefore, this study intended to examine effect of provision of nutritious meals on educational achievement in secondary schools in Kibra Sub-county in Nairobi, Kenya.

2.0 METHODOLOGY

This study employed a mixed research method. In a mixed method study, researchers gather, analyse, and combine both quantitative and qualitative data in one study. Because both quantitative and qualitative approaches provide a greater grasp of the research problem when used together, the researcher was able to examine multiple perspectives and identify links between the variables under inquiry by using a mixed methods approach (Creswell & Clark, 2011).

The study comprised of all the 18 secondary schools in Kibra Sub-County; 8 were public while 10 were private secondary schools. All the 18 school matrons, 3277 form 3 and 4 students. From this target population, samples for data collection were selected.

Cluster and random sampling procedures were used to select 4 public and 6 private secondary schools. The schools were categorized as: public/private day, public/private boarding secondary school. The selection made a total of 10 secondary schools. This formed 55% of the total 18 secondary schools that is higher than the minimum 10% as recommended by (Creswell, 2014).

Expert sampling was used to pick school matrons who, in the researcher's opinion, had a high level of understanding about the research subject. For form three and four students, homogeneous purposive sampling was utilized in the selection process. These students were expected to bring on board several characteristics that enabled the researcher to make generalizable conclusions because they were believed to have stayed longer in the schools and comprehended the nutrition and WASH resources put in place in the schools.

The study determined sample size of different respondents. Table 1 shows a summary of the sample size of the respondents.

Table 1
Summary of sample size of the respondents

Respondents	Target Population	Sample Size
Students	3277	344
School matrons/Cateress	18	10
Total		354

The sample size of students was 344 from a target population of 3277. The study sampled 10 matrons out of 18 giving a total of 354 respondents.

Data were collected using questionnaires and interview schedules. Questionnaires were utilized to collect information from students, while interview schedules were used to acquire information from school matrons. Students' questionnaire and matron's interview guide generally covered background information on effect of nutrition on students' educational achievement.

The descriptive and inferential statistics were used to analyze quantitative data from the matrons' and students' questionnaires. The quantitative data obtained were analyzed using descriptive statistics such as percentages and frequency counts. SPSS statistical software was used to analyze the quantitative data (version 23). On the other hand, qualitative data obtained from matron's interview schedule were analyzed by thematic analysis. This method is a concept of qualitative analysis for identifying, analyzing and interpreting themes from the acquired data. A six-stage thematic analysis framework devised by Braun and Clarke (2006) was followed. These stages included: transcription, initial coding, identifying themes, reviewing the themes, defining and naming the themes, and producing the report.

3.0 RESULTS

3.1 Demographic Characteristics

Slight below a half (47%) of the respondents were male and 53% were female. In terms of age, a vast majority (82.3%) were aged 17 years and above while 17.7% were aged between 15 and 16 years. Regarding the school category, 57.1% of respondents were from public schools while 42.9% were from the private schools.

All the 6 matrons interviewed were female. Besides, a vast majority (83.3%) had attained a certificate as the highest level of education and 16.7% had a diploma. In terms of their work experience, slightly above a third (33.3%) of the respondents had worked as matrons for less than 3 years, half (50%) of the respondents had work experience of between 3 and 5 years while 16.7% had an experience of more than 5 years. In determining whether the matrons had received training on health intervention of nutrition, slightly above two thirds (66.7%) of the respondents had never received such training while slightly above a third (33.3%) of respondents confirmed to have been trained.

3.2 Effect of Provision of Nutritious Meals on Student's Educational Achievements

The study was interested in establishing the effect of provision of nutritious meals on educational achievements in secondary schools in Kibra Sub-county in Nairobi, Kenya. In answering this objective, the study examined the level of availability and adequacy of nutritious school meal, nutritional composition of food served and effects of provision of nutritious meals on educational achievement.

3.2.1 Level of Availability and Adequacy of Nutritious School Meal

The level of availability and adequacy of nutritious school meals in the selected schools was assessed through the use of a questionnaire which sought the student's responses on availability of lunch programme, adequacy and composition of the meals offered. Table 2 shows the level of availability and adequacy of nutritious school meal.

Table 2

Level of Availability and Adequacy of Nutritious School Meal

Lunch program in schools	Category	Frequency	Percent
Lunch program offered	Yes	254	100%
	No	0	0.0%
Amount of meals served	Adequate	186	73.4%
	Not adequate	68	26.6%

All respondents (100%) strongly agreed that lunch program was offered in their respective schools as shown in Table 2. Majority (73.4%) of the respondents rated the portions of food served to them for lunch as adequate while 26.6% of the respondents reported that the amount of food served for lunch was not adequate. This was explained by one of the matron on an interview as follows:

It is always our wish that we provide students with adequate meals, but at times when the suppliers who provide us with foodstuffs are not paid in good time, they stop bringing food to the school and we are forced to cook and serve whatever food is in the store. This make the students complain of the small rations given to them (Interview with matron 3, March, 2021).

Another matrons' view was that girls received lesser amounts of food than boys and supported her sentiments by saying that:

In future, boys and girls should be served separately since when the food is being distributed, boys by virtue of being stronger than girls demand a bigger share of food. This result to some girls retreating and sharing the little food that boys remain (Interview with matron 5, March, 2021)

Another matron emphasizing the need for adequate school meals posited that:

Lack of adequate school meals has a bearing in school discipline. When we serve little food, some students who are not satisfied with the amount end up stealing money from their peers to buy snacks from the school canteen. Since this behavior is socially unacceptable, they end up being rejected and isolated by others. Hence, they develop low self-esteem and this even makes them miss school (Interview with matron 6, March, 2021).

Still in support of these findings, another matron reported that the challenge of inadequate food was not difficult to sort but according to her views, schools received little support from the stakeholders especially parents. She had this to say:

Actually, when the administration invite parents to come to school and discuss the issue of students' meals, many do not turn up. This leaves the school with no option but to tell us to cook and serve what is available in the stores (Interview with matron 1, March, 2021).

These findings implied that all of the schools sampled in this study had a lunch program. The findings also showed that majority of the sampled schools provided adequate food to the learners. The findings further revealed that the school administration had an administrative role in ensuring that parents participated actively in the issue of providing adequate nutritious meals to students.

3.2.2 Nutritional Composition of Food Served

On composition of food served to the students, the study established that a combination of rice, maize, beans, cabbage/sukumawiki, beef, ugali, cooking fat and salt was provided for lunch but on alternate days. This was in line with the Homegrown School Meals Guidelines (2009) on composition of nutritious school meals. The guidelines outline the composition of nutritious school meal as one which comprises of cereals (maize, rice, sorghum, and millet), pulses (beans, pigeon peas, cow peas, and green grams), vegetable oil and iodized salt. Table 3 gives a summary of the composition of food provided to students in both public and private schools.

Table 3

Nutritional composition of food served

Food composition	Public (n=145)		Private (n=109)	
	frequency	percent	Frequency	percent
Rice + beans + cabbage + oil + salt	145	100%	109	100%
Maize + beans+ cabbage +oil + salt	145	100%	65	59.6%
Ugali + meat + Sukuma + oil + salt	83	57.2%	86	78.9%

Research findings on Table 3 showed that the composition of rice, beans, cabbage, oil and salt was the most popular meal served across public and private secondary schools as confirmed by all of the respondents (100%). On the other hand, all of the respondents (100%) interviewed from the public schools indicated that composition of maize, beans, cabbage, oil and salt food was offered in their schools while 59.6% of respondents from private schools category admitted presence of maize, beans, cabbage, oil and salt food meal in their school. This implied that the composition of maize, beans, cabbage, oil and salt was a dominant meal in the public schools. In addition, majority (78.9%) of the respondents in private schools indicated that the composition of ugali, meat, sukumawiki, oil and salt was the one mostly served in their schools while 57.2% of the respondents from public schools confirmed that this meal was offered in their schools. The variation in meal composition between the two school categories could be explained by the difference in parents' socio-economic status. Parents in private secondary schools were thought to be more financially endowed, hence could afford to provide their children with a choice of school meals. Overall, children in Kibra Sub-County in both private and public secondary

schools received nutritious meals; however, different meal compositions were more popular in one school category than the other.

3.2.3 Effects of Provision of Nutritious Meals on Educational Achievement

On effects of provision of nutritious school meals on educational achievement, respondents were given questionnaires with statements on which they were asked to indicate their level of agreement or disagreement on a five-point Likert scale. This was to help the researcher gain a better knowledge of the impact of appropriate nutritious school meals on students' educational achievements. To make it easy for inferential analysis, the responses were condensed into three continuous scales of either agree, undecided or disagree. A comprehensive descriptive analysis of these statements on effect of provision of nutritious school meals on educational achievement is summarized in table below.

Table 4

Effect of Provision of Nutritious Meals on Educational Achievement

	Agree	undecided	Disagree
Good nutrition in my school leads to high attention and retention among students.	145 (57.2%)	23 (9.0%)	86 (33.7%)
Provision of adequate nutritious school meals has resulted to high student's enrolment.	127 (50.0%)	20 (7.7%)	106 (41.6%)
Provision of adequate nutritious school meals has reduced absenteeism among students.	101 (39.6%)	26 (10.1%)	128 (50.3%)
Quality school nutrition improves students' performance through improved cognitive functions.	172 (67.6%)	27 (10.6%)	55 (21.8%)
Provision of adequate nutritious school meals has led to reduced cases of health problems in my school.	175 (69.0%)	23 (8.9%)	56 (22.0%)

As shown in Table 4, 57.2% of the respondents agreed to the statement "Good nutrition in my school led to high attention and retention among students," while slightly above a third (33.7%) of the respondent disagreed. Another 9% of the respondents was unsure of whether good nutrition played any role in students' attention and retention. This demonstrated that providing good nutrition in the school resulted in high levels of attention and retention among students.

The statement "Provision of adequate nutritious school meals had resulted to high student enrolment" was agreed by half (50%) of the respondents while 41.6% disagreed. Others 7.7% were completely undecided. As a result, it was concluded that providing regular school meals led to higher students' enrollment.

The statement "Provision of adequate nutritious school meals had reduced absenteeism among students" was agreed by 39.6% of the respondents, while slightly more than half (50.3%) disagreed. Others 10.1% were undecided. This could have been due to the fact that school meals

were provided every day; hence the daily routine provision of school meals did not serve as a motivation for students to attend school. This implied that school meals could increase attendance only when they were served intermittently in alternate days.

Slightly above two thirds (67.6%) of the respondents agreed to the statement “Quality school nutrition improved students' performance through improved cognitive functions” while 21.8% disagreed. The rest 8.9% were undecided. This inferred that good school nutrition helped boost performance by improving cognitive functions such as attention, alertness, memory among students.

The majority (69.0%) of respondents agreed to the statement “Provision of adequate nutritious school meals had led to reduced cases of health problems in school,” while 22% disagreed with the same statement. The remaining 8.9% of them were undecided. As a result, providing adequate nutritious school meals reduced the number of cases of health problems in schools.

4.0 DISCUSSION

The study examined nutritional composition of food served in secondary schools in Kibra Sub-county in Nairobi, Kenya. The study found that there was no micro-nutrient supplementation to protect students from micronutrient deficiencies. The findings were consistent with those of Yendaw and Dayour (2015), who found that meals prepared for students were of moderately low quality and quantity. This finding highlighted the importance of good monitoring of nutrition intervention implementation in secondary schools by the Quality Assurance and Standard Officers.

The study looked into the effects of proper nutrition on student attention and retention. According to the findings, students with good nutrition had better attention and retention. The finding was in agreement with a study conducted by (Golley et al., (2010). In the study, the researchers discovered that school food and dining room interventions increased alertness, concentration, memory and engagement among students in the hours following lunch.

The researcher investigated the effect of providing adequate nutritious school meals on student enrolment. The study found that providing regular school meals resulted in a high level of student enrolment. This was in line with the findings by Githuku (2015), who concluded that the frequency of school feeding programmes aided in increasing early childhood education. Indeed, presence of well-organized school meals programmes was reported to encourage parents to enroll their children in such schools.

The effect of providing adequate nutritious school meals on student absenteeism was also examined by the study. The availability of adequate healthy school meals, according to the study findings, had no effect on students' absences. This was explained by what Anderson, Gallagher and Ritchie (2018) discovered in their study; that school meals boost attendance only in schools where meals are not served on a daily basis but learners receive the meals only when they attend school.

Furthermore, the study investigated how nutritious school meals affected student performance. According to the study findings, good school nutrition boosts performance by improving cognitive functions such as alertness, attention, memory and good visual display. These study findings were in agreement with what Anderson, Gallagher, and Ritchie (2018) found that providing quality nutritious meals influenced students' academic achievement.

The study also looked at how providing adequate nutritious school meals had affected cases of students' health at school. According to the findings of this study, providing adequate nutritious school meals reduced the number of health problems in schools. In concurrence, the National School Health Policy reports that poor students' nutrition leads to ill health, which has detrimental influences on school attendance and enrolment (Government of Kenya, 2009).

5.0 CONCLUSION

The study examined effects of provision of nutritious school meals on educational achievements in secondary schools in Kibra Sub-county in Nairobi, Kenya. Overall, the findings suggested that provision of nutritious meals to students was associated with higher educational achievements. However, despite the fact that nutritious school meals had a significant effect on education achievements in schools there were gaps in terms of provision, quality and quantity. As such, the study recommended that concerted effort was required to ensure that the quality and quantity of nutritious school meals was maintained at all times for better education outcome in secondary schools. Further, school management should promote healthy diets by providing a variety of foods, such as high-fiber foods, plenty of fruits and vegetables, legumes, and limiting intake of fats, free sugars, and sodium. This should not be a difficult task for school administrators, as the Ministry of Education in Kenya, like many other countries, has a National School Food Guidelines in place.

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