**Assessing the Influence of School Feeding Programs on Pupils’ Academic Engagement in Arusha District, Tanzania**

**Abstract**

This paper evaluated the impact of school feeding programs on the academic participation of pupils in Arusha District, Tanzania. The goal was to assess the impact of the provision of meals on pupils’ attendance, retention, and general schooling experience. Quantitative and qualitative data collection methods were integrated to form a mixed-method approach. Through the use of questionnaires, interviews, and observations, data was collected from 80 respondents which was analyzed using thematic and descriptive statistics. Findings show that the school feeding programs greatly impact the improvement of school attendance and retention rates. This is of particular importance for the younger children in the lower primary grades. Respondents noted that the provision of meals at school boosts attendance because pupils look forward to meals and parents are motivated to enroll and keep their children in school. Furthermore, the program was noted to have a positive impact on pupils’ attention in class and class participation which is likely a result of better nutrition. Among the difficulties noted were erratic food supplies, absence of kitchen facilities, and inadequate support from the community. The paper concludes that school feeding has programs is a vital strategy that fosters equal opportunistic education in food insecure areas. The paper further recommends the government and other concerned bodies to increase support for these programs to guarantee proper funding and active community involvement toward the continuation and growth of school feeding programs. These actions are critical to improve educational success and solve the problem of child malnutrition in Tanzania.

*Keywords: School feeding, pupils, academic engagement, nutrition*

**Introduction**

School feeding programs (SFPs) have emerged as a pivotal strategy for enhancing educational outcomes in various low- and middle-income countries, including Tanzania. In the Arusha District, as in other contexts, these programs play a crucial role in increasing school enrollment and attendance while simultaneously improving the nutritional health of school-age children. The importance of SFPs stems from their dual function: they not only provide meals that can alleviate hunger but also serve as an incentive for families to send their children to school. One study highlights that children who participate in such programs are less likely to miss classes and more likely to remain enrolled in school, with non-participating students reportedly twice as likely to be absent and six times more likely to drop out of school (Akkuş & Çinkir, 2022). This significant correlation underscores the necessity of implementing comprehensive SFPs to foster an environment conducive to learning.

Research indicates that the health benefits conferred by school feeding programs extend far beyond mere attendance. For instance, these programs have been shown to improve dietary quality, enhance energy intake, and boost micronutrient status among children, contributing to better overall health (Wang & Fawzi, 2020). Furthermore, nutrition directly influences cognitive functions, thereby affecting learning outcomes. Improvements in nutritional status, driven by the regular provision of meals during school hours, not only help to reduce short-term hunger but also support long-term cognitive development, thereby enhancing academic performance (Jomaa et al., 2011). In empirical studies, the presence of school meals has been associated with improved academic performance, including better grades and decreased behavioral issues, further demonstrating the multifaceted benefits of SFPs (Haile et al., 2016). Interventions targeting nutritional improvement can therefore create a conducive learning environment, particularly in educational settings characterized by high levels of poverty and malnutrition.

The influence of school feeding on educational outcomes is particularly pronounced among undernourished children, who tend to exhibit more substantial gains in participation and performance compared to their well-nourished peers (Desalegn et al., 2022). A meta-analysis reveals that regular access to school meals typically results in higher attendance rates and significant academic enhancements (Wang & Fawzi, 2020). In the context of Arusha District, these findings are essential for addressing the barriers to education, as they highlight the critical role of nutrition in academic success.

A qualitative study from Rwanda echoes these sentiments, suggesting that school feeding programs significantly reduce dropout rates while concurrently improving classroom participation (Janvier & Mugiraneza, 2023). The program creates a mechanism that not only encourages students to attend but also equips them with the necessary energy to engage with the educational material effectively. The observed increase in academic performance among students enrolled in schools with feeding programs indicates that these initiatives are substantial in promoting educational success (Janvier & Mugiraneza, 2023). Teachers and school administrators play a vital role in this process, as they can provide valuable insights and feedback on program implementation, ensuring that it meets students' needs effectively (Niyibizi, 2024).

It is also important to recognize that SFPs can have broader socio-economic implications. By providing meals at schools, these programs contribute to household food security, reducing the economic burden on families and enabling them to allocate resources towards educational expenses (Desalegn et al., 2022). Moreover, SFPs can enhance gender equity in education, as they create an environment where all children, regardless of gender, have equal access to nutritional support during the school day. This is particularly important in regions like Arusha, where traditional gender roles might hamper girls' educational opportunities (Desalegn et al., 2022). Evidence demonstrates that when nutritional programs are well implemented, they not only tackle immediate hunger but also contribute to long-term community growth and development (Kremer et al., 2014).

Despite the multiple benefits associated with SFPs, challenges remain in their successful implementation. Factors such as logistics, funding, and community involvement must be navigated strategically to maximize the impact of these initiatives. Regular assessment and adaptation of the feeding programs, based on community feedback and nutritional assessments, are crucial for ensuring that the programs meet their intended outcomes while fostering a supportive educational environment (Semegn et al., 2023). Furthermore, building partnerships across sectors including health, nutrition, and education can enhance the effectiveness and sustainability of these interventions.

**Methodology**

## Study area

The study was conducted in three wards of Arusha district council namely Olturumet, Lengijave and Oldonyosambu where by five schools of Ngaramtoni, Lengijave, Kambi ya maziwa, Ngurbob and Lovylukuny were selected. The wards were selected because they have highest number of traditional pastoral society who do not give priority in school feeding program to their children. Ejore (2020) argue that pastoralist parents are not ready to contribute school food and tend to be reluctant to send their children to school. According to data collected in Arusha district council indicate that there is more school dropout in aforementioned wards compare to other wards. The sample included public primary school going pupils ranging between class one to class seven studying in selected primary schools within Arusha district council.

## Sample and sampling techniques

## The study targeted pupils from public primary schools in Arusha District Council. Since the total number of pupils in the selected schools (2,344) was known, a sample size was conveniently determined. At least 10% of the population was selected, resulting in 235 respondents. According to Anderson (2021), a representative sample should replicate the characteristics of the population, with a minimum of 0.5% recommended if no inferences are made.

A sample of 235 pupils was used for the conducted study from five selected schools (Ngaramtoni, Lengijave, Kambi ya Nyasa, Ngurbob and Lovilukuny) regarding school feeding programs. A two-stage cluster (class and age) simple random sampling method was employed such that pupils were clustered firstly by class and age, and randomly selected from classes. Simple random sampling was opted so it is among the most statistically efficient sampling method and statistically significant data can be derived for different sub-populations. Moreover, purposive sampling was applied to select key informants including teachers, school heads and district educational offciers.

**Methods of Data Collection**

**Questionnaires**

Collection of data about school feeding program was made using semi-structured questionnaire to 235 pupils in Arusha district council. The questionnaire comprised with demographic information attendance and retention close-ended questions that were administered to the respondents.

## Methods of Data Analysis

 Descriptive statistics including the frequency and percentage distribution were used to illustrate the general characteristics of the population sampled. The outcome of the school feeding program on pupils’ attendance and retention in public primary schools in Arusha District Council analyzed using frequencies and percentages.

**Results and Discussion**

## The outcome of school Feeding Program on Pupils’ Attendance

This section presents information on the attendance rate of pupils in primary schools in Arusha District Council. Respondents involved in this section were teachers, head teachers and pupils in selected schools of Arusha District Council. It particularly focused on establishing the outcome of the school feeding program on pupils’ attendance in public primary schools in the region. Respondents were requested to express their views pertaining to the nature of attendance rate of pupils at their schools, extent to which they attribute the attendance rate at their schools to school feeding programme and whether school feeding programme has an outcome on pupils’ attendance rate.

## Nature of the Attendance of Pupils in Schools

This subsection presents information from the respondents on the nature of attendance of pupils in their schools. From the findings, most of the respondents (81.5%) stated that the attendance was on a regular basis, implying that most pupils turned up for their classes frequently. However, 15.5% of them had a contrary opinion and stated that the attendance of their pupils was inconsistent, implying that there are times when their pupils could attend classes regularly and there are times they could miss. A further 3% of them stated that it was seasonal, implying that the attendance of their pupils was characterized by a lot of absenteeism.

## Outcome of School Feeding Programme on Pupils Attendance

This sub-section presents information on the respondents’ opinion on the outcome of school feeding programme on the attendance of pupils at their schools. The study established that, from the respondents who had acknowledged existence of school feeding programmes in their schools, all of them pointed out that it had positively influenced the attendance of their pupils. By this they meant that it had increased the attendance rates of pupils in their various schools.

The study presents information on the outcome of school feeding programme on the attendance of pupils in primary school. Respondents involved in this section were teachers, head teachers and pupils in selected schools of Arusha District Council. The respondents were presented with statements on the influence of the school feeding programme on pupils’ attendance in which they were supposed to state their level of agreement with each of them. From the findings, most of the respondents (87.2%) acknowledged that the school feeding programme had increased the attendance rate of the pupils at the lower level classes of their schools. However, 7% of them were of a contrary opinion and asserted that the programme had not increased attendance rate of pupils at the lower level classes. The arithmetic mean of 1.89 indicated that the respondents generally acknowledged that school feeding programme increased attendance rate of pupils in lower level classes in their schools.

On the mid and upper level classes, most of the respondents (87.1% and 85.9%) pointed out that the school feeding programme had increased the attendance rate of the pupils at the mid and upper level classes of their schools respectively. However, 5.8% and 9.6% of them thought otherwise and asserted that the programme had not increased attendance rate of the pupils at the mid and upper level classes respectively. The arithmetic mean of 1.87 and 1.98 indicated that the respondents generally acknowledged that the school feeding programme had increased attendance rate of pupils in mid and upper level classes in their schools respectively.

On each of the class levels, most of the respondents acknowledged that the programme had contributed to the increase of attendance rate in lower, mid and upper level classes. The findings are supported by a number of studies. Among these studies include; Ahmed and Del-Ninno (2013) with a study in Bangladesh and obtained similar findings on the impact of school feeding programme on attendance rate. In their study Ahmed and Del-Ninno (2013) established an increase in attendance rates by 20% at school due to the introduction of school-based feeding programme in their schools. Similarly, Ahmed (2017) also arrived at the same findings after evaluating the school feeding programme impacts on school going children in Bangladesh whereby he established that the programme had positively impacted on the attendance rates of children in schools. Ahmed (2017) established that the attendance rates had increased by 43% since the parents were so much motivated by the programme to ensure their children attended school without fail. The findings of this study were also in line with the findings of Adelman et al. (2018) who did a study in Peru and established that attendance rates in schools where breakfast was served increased by a significant percentage for higher grade students due to the commencement of the school feeding programme.

On punctuality of pupils, the majority of the respondents (81.4%) pointed out that the school feeding programme had improved on punctuality among pupils at their schools. However, 10.2% of them thought otherwise and asserted that the programme had not improved on pupils’ punctuality. The arithmetic mean of 2.10 indicated that the respondents generally acknowledged that school feeding programme improved on punctuality among pupils in their schools. On pupils’ activeness and participation in the classroom, most of the respondents (76.9%) acknowledged that the school feeding programme had improved on pupils’ level of activeness and participation in the classroom at their schools. However, 12.2% of them were of a contrary opinion and asserted that the programme had neither improved pupils' level of activeness nor participation of pupils in the classroom. The arithmetic mean of 2.15 indicated that the respondents generally acknowledged that the school feeding programme improved pupils' level of activeness and participation in the classroom. The composite mean of 2.00 obtained implied that the general outcome of the school feeding programme on pupils’ attendance in primary school was great. The findings are presented in Table 1.

**Table 1: The outcome of School Feeding Programme on Pupils’ Attendance Rate**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **SA**  | **A**  | **NS**  | **D**  | **SD**  | **Mean ± S.D**  |
| F (%)  | F (%)  | F (%)  | F (%)  |  F (%)  |
| It has increased attendance rate of lower level classes  | 51(32.7)  | 85(54.5)  | 9(5.8)  | 8(5.1)  | 3(1.9)  | 1.89±0.869  |
| It has increased attendance rate of mid level classes  | 52(33.3)  | 84(53.8)  | 11(7.1)  | 7(4.5)  | 2(1.3)  | 1.87±0.828  |
| It has increased attendance rate of upper level classes  | 45(28.8)  | 89(57.1)  | 7(4.5)  | 10(6.4)  | 5(3.2)  | 1.98±0.940  |
| School meals have improved on punctuality among pupils  | 32(20.5)  | 95(60.9)  | 13(8.3)  | 13(8.3)  | 3(1.9)  | 2.10±0.888  |
| School meals have improved on pupils’ level of activeness and participation in classroom  | 37(23.7)  | 83(53.2)  | 17(10.9)  | 14(9.0)  | 5(3.2)  | 2.15±0.989  |
| **Composite mean** |  |  |  |  |  | **2.00±0.111**  |

On the outcome of the school feeding program on the attendance rate of pupils in public primary schools, all the respondents who had acknowledged existence of school feeding programmes in their schools pointed out that it had increased the attendance rate of their pupils. To support these findings, a study by UNESCO (2007) also established that, since the introduction of the school feeding programme, it has significantly contributed to improved attendance of learners in schools globally. Similarly, the World Food Programme (2015) arrived at the same findings after conducting randomized trials which demonstrated a rise in attendance rates among the school going children through school feeding programme. On the same note, the findings of Del Rosso (2013) were in line with the findings of this study since he established that food provision for children at school acted as a powerful incentive for them to go to school regularly hence boosting their attendance rates.

Similar findings were also obtained by World Food Programme (2013) when it carried out a pilot study in Malawi for three months after initiating a school feeding programme and established that the programme had resulted in a 36% improvement in attendance of pupils in the selected schools. Dheressa (2011) also arrived at a similar finding in this study by establishing that the school feeding programme had significantly contributed to the increase in class attendance due to the meals the children received only when they attended school. On the same note, Bundy *et al* (2009) also established that in-school meals are a conditional transfer to children in the sense that the school meals act as conditional on enrollment to promote regular attendance. Bundy *et al.* (2009) stated that parents can be motivated by school feeding programs and other related programs like the school-based nutrition to enroll their children and ensure they attend school on a regular basis hence boost their attendance.

A composite mean which was obtained in this study implied the general impact of the school feeding programme on the attendance rate of pupils in primary school was great. These findings were in line with the findings of World Food Program (2015) which did research in Malawi on the impact of school feeding programme on attendance of school going children. In its research, the World Food programme conducted a pilot study over a period of three months and established that there was an improvement of attendance by 36% when comparisons were made between the treatment group and control group over the same period. Similarly, Ahmed (2017) did research on a programme that was initiated by the Pakistan government which involved providing revenue information of two bottles of cooking oil to homes whose girls went to school for at least 20 days in a month. In the pilot phase of the programme, the oil incentive significantly contributed to improved attendance of girl children. In schools involved, the attendance among participants rose from 73% to 95%.

 This means that the attendance rate of pupils is more likely to increase with the enhancement of the school feeding programme. These findings were in line with the findings of Ahmed (2017) who did a research on evaluation of the impact of SFP on school attendance in Bangladesh and established that the program had a statistically significant positive impact on attendance rate. He stated that the programme had significantly increased class attendance of school going children.

Similarly, in their study Ahmed and Del-Ninno, (2013) also established that the attendance in schools with school feeding programmes in Bangladesh was higher by 12% as compared to schools without school feeding programme (70% for the ones with SFP as compared to 58% for the ones without the programme) implying that there exists a positive association between the programme and attendance rate. On the same note, Espejo (2009) did a study in Jamaica and assessed attendance rates amongst schools with school feeding programme and those without the programme. The study established a significant difference in attendance rates among the two sets of schools. Espejo (2009) established that the schools which had the feeding programme in place recorded high attendance rates as compared to the ones that did not have the feeding programmes, which registered very low attendance rates. This signifies that there is a positive association between school feeding programme and attendance rate of pupils.

## The outcome of School Feeding Program and Pupils’ Retention to school

The study examined information on the retention rate of pupils in primary schools in Arusha City Council. It particularly focused on establishing the outcome of the school feeding program on pupils’ retention in public primary schools in Arusha district council. Respondents were requested to express their views pertaining to the nature of retention rate of pupils at their schools, extent to which they attribute the retention rate at their schools to school feeding programme and whether school feeding programme has impacted on pupils’ retention rate.

Table 2 shows that most of the respondents (58.3%) stated that the retention rate of their pupils at school was moderate while 25.6% and 6% of them pointed out that the rate was high and very high respectively. However, 5.4% and 4.8% of them had a contrary opinion and stated that the retention rate was low and very low respectively. The study established that, from the respondents who had acknowledged existence of school feeding programmes in their schools, all of them pointed out that it had positively influenced the retention of their pupils at schools. By this they meant that it had increased the retention rates of pupils in their various schools.

The study captured statements on the outcome of the school feeding programme on pupils’ retention in which they were supposed to state their level of agreement with each of them. From the findings, most of the respondents (78.8%) ascertained that the school feeding programme had increased the retention rate of the pupils at the lower level classes of their schools. However, 12.8% of them thought otherwise and asserted that the programme had not increased retention rate of pupils at the lower level classes (Table 2). The arithmetic mean of 2.13 indicated that the respondents generally acknowledged that the school feeding programme had increased retention rate of pupils in lower level classes in their schools.

On the mid and upper level classes, most of the respondents (77% and 78.2%) pointed out that the school feeding programme had increased the retention rate of the pupils at the mid and upper level classes of their schools respectively. However, 12.8% of them (for each of the class levels) had a contrary opinion and asserted that the programme had not increased retention rate of the pupils at the mid and upper level classes. The arithmetic mean of 2.15 and 2.19 indicated that the respondents generally acknowledged that the school feeding programme had increased retention rate of pupils in mid and upper level classes in their schools respectively. The composite mean of 2.16 obtained implied that the general influence of the school feeding programme on pupils’ retention in primary school was great. The findings are presented in Table 2.

**Table 2: The outcome of School Feeding Programme on Pupils’ Retention Rate**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Items  | **SA** | **A** | **NS** | **D** | **SD** | **Mean ± SD**  |
| F (%) | F (%) | F (%) | F (%) | F (%) |
| It has increased retention rate of lower level classes  | 39(25) | 84(53.8) | 13(8.3) | 14(9.0) | 6(3.8) | 2.13±1.014 |
| It has increased retention rate of mid level classes  | 38(24.4) | 82(52.6) | 16(10.3) | 15(9.6) | 5(3.2) | 2.15±1.002 |
| It has increased retention rate of upper level classes  | 29(18.6) | 93(59.6) | 14(9.0) | 15(9.6) | 5(3.2) | 2.19±0.958 |
| **Composite mean**  |  |  |  |  |  | **2.16±0.03** |

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## Discussion

On the outcome of the school feeding program on the retention rate of pupils in public primary schools, all the respondents who had acknowledged existence of school feeding programmes in their schools pointed out that it had increased the retention rate of their pupils. To support these findings, a study by World food Programme (2016) obtained similar findings by establishing that in schools where universal breakfast programmes were introduced there was an improvement in retention rates among school going children. Similarly, Ahmed and Del-Ninno (2013) were of the same notion when they indicated that the school feeding programme has significantly improved on the retention rates of school going children since the meals acted as an incentive for the learners to attend school. Equally, a study by The International Food Policy Research Institute (IFPRI) on the outcome of school feeding programme in Bangladesh arrived at the same findings as this study.

In its findings, IFPRI (2014) established that there was a decline in the dropout rate by 7.5% due to the school feeding programme initiative, implying that retention rate at schools were enhanced. Both studies by Ahmed and Del-Ninno (2013) and IFPRI (2014) established that, provision of meals at school to chronically hungry children is an effective way of encouraging them to attend classes hence boosting on the retention rates. In a different study with equally similar findings, Mohammed and Sakara (2014) established that the significant increase in retention is due to the fact that the school feeding programme motivates the learners to be in school and study leading to improvement of the universal basic education in the country. Equally, Bundy *et al* (2009) also stated that parents can be motivated by school feeding programs and other related programs like the school-based nutrition to enroll their children and ensure they attend school on a regular basis hence reducing absenteeism and boosts retention.

On each of the class levels, most of the respondents acknowledged that the programme had contributed to the improved retention rate of pupils in lower, mid and upper level classes. In line with the findings of this study, Ahmed and Del Ninno (2013) also established that the Food for Education (FFE) programme issued take-home rations conditional on attendance had a significant impact on the retention rates of children at primary school in Bangladesh. They did it by studying the trends of 40 learners from schools which were providing take-home rations to their learners and compared findings to a control group which were not under the program. Retention rates of the two groups were compared and significant differences were realized, whereby only 6% of the learners under the program dropped out of school while 15% of the learners from the control group dropped out.

They attributed the differences in the dropout rates to the Food For Education take-home rations program. In a different study with similar findings, World Food Programme (2013) conducted a pilot study on school feeding programme in Malawi after the programme was initiated. From its findings, it noted an improvement on the rate of retention of children in schools. In its conclusion, WFP (2013) stated that retention rate was boosted as a result of children being attracted to school by the food offered at schools and opted to stay so that they could continue accessing it. A study by Yendaw and Dayour (2015) also got similar findings by assessing the impact of the national school feeding programme on the retention of pupils in Ghana. They did the study by assessing the retention rates within two periods; before implementation of the school feeding programme and after its implementation. The findings of their study established a significant improvement of the retention rate and attributed it to the school feeding programme.

A composite mean which was obtained in this study implied the general impact of the school feeding programme on the retention rate of pupils in primary school was great. To support these findings, the World Food Programme (2010) conducted a study on the retention of children in schools in Niger and obtained similar results. It established that there were significant improvements in the retention rate of learners at schools when households received food incentives conditional to ensuring good school attendance of their children. The report concluded that school meals have a significant and a positive impact on learning indicators such as primary completion rates, secondary education continuation and exams scores. Similarly, Ahmed (2004) stated that the school feeding programme results in an increase on the time spent by a learner in school by reducing the dropout rates, sentiments shared by the findings of this study. He further states that it motivates parents to get their children enrolled in schools and ensure that they regularly attend classes hence boosting the retention of pupils in schools.

 These findings were in line with the findings of Yendaw and Dayour (2015) who explored retention by observing the dropout rates of learners before and after school feeding programme implementation in Ghana. The findings of their study revealed that the dropout rate among pupils in schools before the introduction of the SFP was high at 73.8% as compared to a dropout rate of 26.2% after introduction of the school feeding programme. Statistical tests conducted by Yendaw and Dayour (2015) established that there was a significant and positive association between school feeding programme implementation in Ghana and the school dropout rates among its learners. This suggested that the school feeding programme significantly improved on the retention rates of learners at school when comparison is made to the period before the programme was implemented.

**Conclusion and Policy Implications**

The study reveals that feeding programs in schools greatly aid in improving not only participation but also retention rates in Arusha's primary schools. Many respondents noted increased attendance levels, especially among younger primary school pupils. It is clear that the provision of meals within the school framework serves as a powerful motivator for participation, particularly within marginalized pastoralist communities that face persistent food scarcity obstacles to consistent education. In addition, school feeding programs achieve a dual purpose of curtailing absenteeism and dropout rates while worsening pupils’ nutritional status, which reduces cognitive functioning and classroom participation. Thus, feeding programs in schools have the greatest potential for fostering inclusive equitable education in this region.

**Policy Implications**

The government, together with local government units and other partners, should prioritize expanding school feeding programs to include more schools, especially in pastoral and remote areas where the school dropout rates is high.

The mobilizing community support with particular involvement of parents and the school committees is fundamental in promoting local ownership and ensuring the sustainability of feeding programs at the community level. Advocacy strategies can be useful in overcoming social and economic constraints to participation.

Nutritional support should provide meals that sufficiently meets the minimum prescribed standard necessary for the support of health, learning and education. There should be adequate revision and re-modification of meals served towards meeting the specific tested nutritional standards.

The paper also recommends all the other sectors such as education, health, agriculture and social welfare need to work together towards the successful implementation of the school feeding programs. Policies that enhance school feeding programs should also promote linkages with local food systems both to provide school feeding and to enhance rural livelihoods.

Moreover, effective frameworks for data collection and monitoring and evaluation need to be put in place to enable tracking of the impact of the program, identifying issues, and guiding flexible implementation.

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