

Socio-Economic Determinants of Financing of School Feeding Practices among Primary and Secondary School Children in Dar es Salaam, Tanzania

Elimeleck P. Akyoo¹ and Stephen Akyoo²

¹Department of Management Studies, Tanzania Institute of Accountancy

²Department of Community Economic Development,
Open University of Tanzania

Corresponding Author email: eparmena@gmail.com

<https://dx.doi.org/10.4314/ajasss.v7i1.9>

Abstract

The significance of school feeding to school children cannot be over-emphasized. Different school feeding programs provide different benefits that could support students' retention in schools, increase enrolment and attendance, increase academic performance and enhanced participatory learning. The study assessed socioeconomic determinants of school feeding financing in primary and secondary schools. Specifically, the study examined association between socio-economic status and food financing status in primary and secondary schools. The study adopted a cross-sectional research design whereby a sample of 519 households was selected. Quantitative data were analysed with the aid of IBM-Statistical Package for Social Sciences (SPSS) whereby descriptive statistics were computed to obtain frequencies and percentage distributions of the responses. A forward stepwise binary logistic regression model was used to assess relationship between socio-economic characteristics and provision of sufficient payment for school meals. The results of forward stepwise binary logistic regression indicated that number of girls in school in the family, lowest and second wealth quantile and fewer school boys were significantly related with provision of sufficient payment for school meals in primary schools at the $p < 0.05$ significance level, while employment status, sex, income, wealth quantile and number of children in and out of school were significantly related with provision of sufficient payment for school meals in secondary schools at the $p < 0.05$ significance level. The study concludes that socioeconomic factors influence ability of parents to afford payments for school meals in both primary and secondary schools. Based on this, it is recommended that development practitioners in the education sector should provide enabling environment including facilitation of income generating activities among parents with children in primary and secondary schools in order to improve their income status which will eventually enable them to have the ability to finance school feeding. The stakeholders in the education sector should create awareness to parents of school children on the importance of financing school feeding programs for their children. Local Government Authorities and other

stakeholders should develop mechanisms that will ensure effective financing of the school feeding programme in primary and secondary schools.

Keywords: *Finance school feeding, school feeding, Malnutrition*

INTRODUCTION

The significance of school feeding to school children cannot be over-emphasized. Different school feeding programmes provide different benefits that could support students' retention in schools, increase enrolment and attendance, increase academic performance and enhance participatory learning (Agu, 2023). Despite advancement in establishing programs designed to ensure that all school children suffering from hunger and malnutrition have access to nutritious food, more than 810 million people worldwide are still malnourished, with children accounting for a substantial proportion of the population. This may be attributed to the fact that many school-age children are commonly left out because many nutrition programs focus on addressing malnutrition during the first 1,000 days of a child's life (Healy, 2021). According to Drake (2016), Lemma (2020), and Wang and Fawzi (2020), more than 66 million primary school-age children in developing countries go to school hungry, with Africa accounting for 35 percent of the total. Furthermore, Banerjee *et al.* (2011) and Omobuwa *et al.* (2014) revealed that there are high levels of malnutrition and micronutrient insufficiencies in primary schools and underweight in secondary schools in many low and middle-income countries.

Malnutrition in children is typically connected with situations in which children do not consume enough nutrients to meet their energy and growth requirements. Prolonged malnutrition is frequently associated with muscle dysfunction as well as decreased immunity, which in turn increases the risk of infection. Under-nutrition has a negative impact on schoolchildren's ability to learn. The nutritional state of school-aged children has an impact on their health, cognition, and, as a result, their academic ability (Zenebe *et al.*, 2018). Furthermore, if allowed to persist, malnutrition will seriously impede the achievement of several United Nations' Sustainable Development Goals (UNSDGs), including ending poverty, ending hunger, achieving food security, ensuring healthy lives for all ages, and achieving inclusive and equitable quality education (Burgess, 2008; Farrow *et al.* (2009).

The school feeding program is one of the most widely used programs to alleviate hunger and malnutrition. It is a targeted social safety net that provides poor children with educational and health-related advantages, resulting in greater enrolment rates, lower absenteeism, and increased food security at the household

level (World Bank, 2012). In Tanzania, school meals for students are run by parents, guardians, and the WFP with limited involvement of the government via the Ministry of Education and Vocational Training (Sanya, 2015; Hassani, 2016). In terms of parental involvement in school feeding programs, most parents in Tanzanian urban and peri-urban areas are obliged to either pay school meal fees or contribute a private home-based amount of money for kids. Furthermore, the WFP and other associated international organizations have funded school feeding programs that have primarily targeted populations with high levels of poverty, high school dropout rates, low primary school performance, and high levels of malnutrition.

In the early 2000s, WFP began implementing school feeding programs in three Tanzanian regions: Dodoma, Arusha, and Singida, where 72,120 daytime pupils in 210 schools received porridge in the morning and lunch in the afternoon (Roothaert *et al.*, 2021). Also, with the support of WFP and other international organizations, the New Partnership for Africa's Development (NEPAD) established home-grown school feeding (HGSF) in Tanzania in 2003. HGSF programs have been defined as cost-effective school feeding programs that use food grown locally by smallholder farmers, resulting in a triple win action that improves diets, increases school attendance, and improves farmer livelihoods. In some schools, parents donate foodstuffs from their farms to schools to directly feed their children. In other circumstances, families contribute money so that the schools can buy food from local markets (WFP and IFAD, 2018). Some of the constraints identified by Galloway (2009) for HGSF show that it necessitates community involvement, which is less necessary with alternative feeding programs such as snacks or take-home rations. According to WFP and IFAD (2018), the biggest hazards connected with HGSF include assessing and controlling food safety and quality.

There are widespread concerns that school feeding is one of the world's most effective social policies because every country provides school meals for at least some of its pupils, a metric of its performance (Noll *et al.* (2019). For example, studies by Kristjansson *et al.* (2016), Rahmani *et al.* (2011), Aliyar *et al.* (2015) and Kolbe (2020) reported that school feeding programs affected the physical and psychological health of pupils. These studies suggest that school food programs have a significant impact on the micronutrient levels of the children who receive them, but have a moderate and inconsistent effect on health outcomes. Studies by Drake *et al.* (2016) reported that strengthening national school feeding programs will contribute to reduce the vulnerability of the poorest, giving children a chance for education and a brighter future and eliminating poverty. In Botswana, Kristjansson *et al.* (2016) reported a considerable disparity

in school feeding costs per child per year among countries. The cost per child each year ranged from US \$10 in India to US \$270 in Botswana. Likewise, studies in Tanzania indicate a rapidly increasing number of out-of-school children; a substantial number of studies, such as ones by Gupta (2024), Drake *et al.* (2016), Agu *et al.* (2023), Rahmani *et al.* (2011), Aliyar *et al.* (2015) and Kolbe (2020) demonstrate that school feeding programs have a direct link to improving children's school enrolment as well as academic achievement, henceforth improving education quality.

Previous studies on impact of household characteristics and their influence on school feeding financing have shown mixed results; the prevalence of financing schooling has emerged as a significant policy strategy for student retention, students' attendance improvement and reduced school absenteeism (Agu, 2023). Likewise, few empirical studies have focused on the cost of student school feeding programmes, and the supplied information on school feeding costs per student is based on Western pricing and ignores the home-based cost of student meals, which every family incurs on every school day (Healy, 2021). Few studies have focused on school feeding. For example, studies by Gelli *et al.* (2009), Galloway *et al.* (2009) and Kristjansson *et al.* (2016) focused on the evidence of the home-based cost of school meals whereby the majority of them realized a significant difference in school feeding expenditures per student per year among countries. In Addition, studies by Healy (2021) and Wang and Fawzi (2020) focused on household related characteristics and their impact on school feeding programmes. A study by Gell *et al.* (2009) focused on school feeding outcomes and costs while a study by WFP (2005) focused on the financial and cost breakdown of school feeding practices. However, the WFP empirical study not only offered vague details, but also focused exclusively on the WFP's costs and made no other contribution from the government or civil society (Galloway *et al.*, 2009). In the Tanzanian context, a study by Shukia (2020) on secondary schools reported a need for fee-free meals due to high costs of students' meals. However, there has been under funding of school feeding despite its importance for academic performance, leaving significant understanding of broader implications of school feeding financing unexplored.

It is evident from the reviewed literature that studies on socio-economic determinants of school feeding financing are inconclusive. This is because some literature suggests that school feeding financing is context specific and depends on the government policy (Bundy, 2009). In this case, the socio-economic determinants of school feeding financing cannot be generalized based on the literature reviewed. A thorough knowledge on socio-economic determinants of school feeding is needed so as to inform school feeding financing responsible

institutions and policy makers on how to improve school feeding financing in primary and secondary schools. The study aimed to assess socio-economic determinants of school feeding financing in Dar es Salaam.

1.0 RESEARCH METHODOLOGY

The study was conducted in Dar es Salaam. The region was an extremely appealing location for this study because it has a higher average number of students (398) per school (URT, 2029). It was also selected because, with its population of six million by then, it was expected to grow to ten million within a decade, posing significant challenges for the delivery of social and economic services as well as physical facilities (Rose & Sobecki, 2019).

A cross-sectional research design was adopted in order to examine determinants of school feeding financing. The design was adopted as it allows quick and efficient assessment of the prevalence of a condition or characteristic within a population at a specific point in time. The cross-sectional research design enabled examination of association between socio-economic characteristics and ability to finance school feeding. Furthermore, the study employed quantitative analytic approaches to describe the relationship between household socio-economic characteristics and school feeding financing among primary and secondary schools. Stratified sampling of households was done, which was determined in proportion to the size of the population in each neighbourhood. This was accomplished by using a quota sample distribution in proportion to the population in each of the key neighbourhood categories. Furthermore, representative households within each neighbourhood category were chosen using a random sample selection technique. On the other hand, in planned neighbourhoods, the study employed random starting points, generated within each selected neighbourhood, and respondent selection was carried out using a Kish grid so that every individual aged 18 and older in the selected family could have equal chances of being chosen for the interview.

The dataset includes data from respondents in Dar es Salaam on the status of financing school feeding meals in Dar es Salaam. 7,104 observations were kept out of the 12,720 observations. Then, only 1,593 observations remained after maintaining only respondents' information. Finally, 519 observations remained after dropping all respondents whose observations did not relate to school food costs.

Data were analysed using IBM SPSS Statistics software whereby descriptive and inferential statistics were computed. The latter involved forward stepwise binary logistic regression model to determine influence of the predictor variables

described in Table 1 on the chances of financing school feeding practices among primary and secondary schools being sufficient. The model was adopted due to the fact that the outcome variable was a dummy. The variables included in the model were selected based on findings from empirical literature and theoretical reviews.

The model used was:

$Logit(p_i) = \log(p_i/1-p_i) = b_0 + b_1x_1 + b_2x_2 + \dots + b_{12}x_{12} + \mu_i$ (Agresti and Finlay, 2009)

where:

$Logit(p_i) = \ln(\text{odds (event)})$, that is the natural log of the odds of an event occurring

$p_i = \text{prob (event)}$, that is the probability that there is sufficient financing for school feeding

$1-p_i = \text{prob (non-event)}$, that is the probability that the respondent will not have sufficient financing for school feeding.

b_0 = constant of the equation,

b_1 to b_{14} = coefficients of the independent (predictor, response) variables,

k = number of predictor variables, and

x_1 to x_{14} = predictor variables entered in the model.

Table 1: Measurement of Variables entered in the Binary Logistic Regression Model

| Variable | Description | Measurement |
|-----------------------------------|--|--|
| Sufficient financing status | Status of the attainment of the recommended school meal cost per student per month | D =1 if school meal cost per student per month >41,500 and 0 otherwise |
| Neighbourhood | Income based type of the community | D = 0 if Low, D = 1 Mixed LM, D = 2 if Median, D = 3 if Mixed MH and D = 4 if High |
| Income | Expected month earnings | D = 0 if less than 50,000, D = 1 if 50,000 - 200,000, D = 2 if 200,001 - 500,000 and D = 3 if 500,001+ |
| Education level | Highest education level attained by the household head | D = 0 if None, D = 1 if Primary Education, D = 2 if Secondary Education and D = 3 if Tertiary Education |
| Distance | Duration to arrive home from school | D = 0 if < 30 min, D = 1 if 30 - 60 and D=2 if > 60 min |
| Household head Age | Less/more than 45yrs | D = 1 if age >45 and 0 otherwise |
| Household head Employment | Occupation status of the Head | D = 0 if employed, D = 1 if Unemployed and D = 2 if self-employed |
| Saving status | Household head saving status | D = 1 if Yes and D = 0 if otherwise |
| Family wealth Status | In terms of quintiles | D = 3 if Highest, D = 2 if Fourth, D = 1 if middle, D = 0 if second and D = Lowest |
| Long term illness | Head long term illness | D = 1 if Yes and D = 0 if otherwise |
| School vs. out-of-school children | Proportion of school and out-of-school children in the family | D = 0 if out school > children school, D = 1 if out school < children school and D = 2 if out school = children school |
| Out-of-school children | Number of out-of-school children in the family | Continuous |
| Children percent | Proportion of children in the family | D = 0 if None, D =1 if less than 25%, D = 2 if 26 - 50 percent and D = 3 if more than 50% |
| Relatives' percent | Proportion of relatives in the family | D = 0 if None, D = 1 if less than 25%, D = 2 if 26 - 50% and D = 3 if more than 50% |
| Number of school Boys vs. Girls | Proportion of school boys and girls in the family | D = 0 if Boys < Girls, D = 1 if Boys > Girls and D=2 if Boys = Girls |

2.0 RESULTS AND DISCUSSION

2.1 Frequency Distributions

The results in Table 2 indicate the prevalence of insufficient school feeding among 519 inhabitants in Dar es Salaam in terms of delivering a decent school feeding meal in terms of financing. Out of the whole sample (519), only 12 % had sufficient financing; this implies that very few inhabitants were able to finance school feeding.

Table 2: Frequency Distribution

| Household Variables | Obs | Mean | Household head Variables | Obs | Mean |
|--|-----|----------|---------------------------------|-----|-----------|
| School vs. out school children | | | <i>Less than 45</i> | 514 | 0.4377432 |
| <i>Out school > children school</i> | 517 | 0.034816 | <i>More than 45</i> | 514 | 0.5622568 |
| <i>Out school < children school</i> | 517 | 0.851064 | Head Sex | | |
| <i>Out school = children school</i> | 517 | 0.11412 | <i>Male</i> | 514 | 0.692607 |
| School children | 517 | 1.825919 | <i>Female</i> | 514 | 0.307393 |
| Out-school children | 517 | 0.280464 | Head education | | |
| Girls in school | 517 | 0.961315 | <i>Primary or less</i> | 514 | 0.6245136 |
| Boys in school | 517 | 0.864604 | <i>Secondary</i> | 514 | 0.2315175 |
| Monthly income | | | <i>Post-secondary level</i> | 514 | 0.1439689 |
| <i>Less than 150,000</i> | 517 | 0.651838 | Head employment status | | |
| <i>150,000-500,000</i> | 517 | 0.27853 | <i>Employed</i> | 508 | 0.1712598 |
| <i>500,001-1,000,000</i> | 517 | 0.036751 | <i>Self employed</i> | 508 | 0.5452756 |
| <i>More than 1,000,000</i> | 517 | 0.032882 | <i>Unemployed</i> | 508 | 0.2834646 |
| Children percent (7-18 age) | | | Distance (30 min) | | |
| <i>Zero</i> | 517 | 0.359768 | <i>Less than 30 min</i> | 517 | 0.688588 |
| <i>Less than 25%</i> | 517 | 0.321083 | <i>More than 30 min</i> | 517 | 0.311412 |
| <i>26-50 percent</i> | 517 | 0.294004 | Head saving status | | |
| <i>More than 50%</i> | 517 | 0.025145 | <i>No</i> | 507 | 0.6193294 |
| Number of school Boys vs. Girls | | | <i>Yes</i> | 507 | 0.3806706 |
| <i>Boys < Girls</i> | 517 | 0.357834 | Head Health (long term illness) | | |
| <i>Boys > Girls</i> | 517 | 0.431335 | <i>Yes</i> | 514 | 0.1945525 |
| <i>Boys = Girls</i> | 517 | 0.210832 | <i>No</i> | 514 | 0.8054475 |
| Relatives' percent | | | | | |
| <i>Zero</i> | 517 | 0.471954 | | | |
| <i>Less than 25%</i> | 517 | | | | |
| <i>26-50 percent</i> | 517 | 0.208898 | | | |
| <i>More than 50%</i> | 517 | 0.162476 | | | |
| Household size by categories | | | | | |
| <i>1-2 households</i> | 517 | 0.025145 | | | |
| <i>3-4 households</i> | 517 | 0.286267 | | | |
| <i>5-6 households</i> | 517 | 0.404255 | | | |
| <i>7+</i> | 517 | 0.284333 | | | |

| Household Variables | Obs | Mean | Household head Variables | Obs | Mean |
|---------------------|-----|-----------|--------------------------|-----|------|
| Wealth quintiles | | | | | |
| <i>Highest</i> | 469 | 0.2324094 | | | |
| <i>Fourth</i> | 469 | 0.3113006 | | | |
| <i>Middle</i> | 469 | 0.228145 | | | |
| <i>Second</i> | 469 | 0.1449893 | | | |

In terms of household head characteristics, descriptive statistics showed that male-headed households were 69% of the whole sample, with just 43% of those less than 45 years old. Primary school leavers (62%) made up the majority of the sample, with employed people accounting for 17% and self-employed people accounting for 54%. Finally, long-term diseases affected around 19% of all households. In terms of household characteristics, around 65% of the overall sample earned less than TZS150, 000 per month on average. Furthermore, the largest proportion of the households (35.9%) did not have children, and only 16% of the total sample lived with many relatives (approximately outnumbering household members). When compared to out-of-school children, most households had a substantial proportion of schoolchildren (85%).

2.2 Association between Socio-economic Status and Financial Status for Food in Primary and Secondary Schools

The results indicate that monthly income, household head age, household head education, household head employment, saving status, and wealth status had significant associations (at 5% level) with the provision of sufficient payment for school meals under the TZS 41,500 threshold. From the cross-tabulation results, the percentage of sufficient provision increased with income, household age, household size, education level of the household head, and wealth status. Furthermore, when compared to others, household heads who were not ill for an extended period of time, those who had savings, and those who were employed (formal or self-employed) provided adequate school meal payments.

Table 3: Association between Socio-economic status and Financial Status for Food in Primary and Secondary Schools

| Socio-economic variables | Sufficiency status in Primary School (41,500) | | | Association testing statistics | | Sufficiency status in Secondary School (30,000) | | | Association testing statistics | |
|---------------------------|---|--------|-----|--------------------------------|-------|---|--------|-----|--------------------------------|-------|
| | Yes (%) | No (%) | n | ch2 | p(z) | Yes (%) | No (%) | n | ch2 | p(z) |
| Monthly income | | | | | | | | | | |
| Less than 150,000 | 8.90 | 91.10 | 270 | 11.0 | 0.000 | 79.9 | 20.1 | 270 | 2.5 | 0.101 |
| 150,000-500,000 | 14.58 | 85.42 | 130 | | | 39.3 | 60.7 | 130 | | |
| 500,000-1,000,000 | 10.53 | 89.47 | 17 | | | 13.2 | 86.8 | 17 | | |
| More than 1,000,000 | 52.94 | 47.06 | 16 | | | 80.6 | 19.4 | 16 | | |
| Household size | | | | | | | | | | |
| 1-2 | 14.2 | 85.8 | 11 | 0.74 | 0.44 | 81.7 | 18.3 | 11 | 0.5 | 0.537 |
| 2-4 | 28.2 | 71.8 | 119 | | | 40.4 | 59.6 | 119 | | |
| 5-6 | 53.7 | 46.3 | 178 | | | 67.4 | 32.6 | 178 | | |
| 7+ | 29.6 | 70.4 | 125 | | | 53 | 47 | 125 | | |
| Household head age | | | | | | | | | | |
| Less than 45yrs | 8 | 92 | 188 | 11.7 | 0.001 | 14.2 | 85.8 | 188 | 18.0 | 0.000 |
| More than 45yrs | 66.2 | 33.8 | 244 | | | 85.8 | 14.2 | 244 | | |
| Household head sex | | | | | | | | | | |
| Male | 39.3 | 60.7 | 303 | 0.17 | 0.672 | 53.4 | 46.6 | 303 | 0.3 | 0.599 |
| Female | 51.7 | 48.3 | 129 | | | 67.7 | 32.3 | 129 | | |
| Household head Education | | | | | | | | | | |
| Primary or less | 17.8 | 82.2 | 263 | 9.08 | 0.001 | 34.3 | 65.7 | 263 | 4.2 | 0.018 |
| Secondary | 7.2 | 92.8 | 108 | | | 52.8 | 47.2 | 108 | | |
| Tertiary | 83.7 | 16.3 | 61 | | | 89.6 | 10.4 | 61 | | |
| Household head employment | | | | | | | | | | |
| Employed | 79.8 | 20.2 | 72 | 9.24 | 0.000 | 89.3 | 10.7 | 72 | 7.1 | 0.003 |
| Unemployed | 70.6 | 29.4 | 107 | | | 80.1 | 19.9 | 107 | | |
| Self-employed | 7.8 | 92.2 | 242 | | | 30.7 | 69.3 | 242 | | |
| Distance | | | | | | | | | | |
| Less than 30 min | 53 | 47 | 294 | 1.3 | 0.254 | 69.7 | 30.3 | 294 | 2.1 | 0.145 |
| More than 30 min | 24.6 | 75.4 | 139 | | | 34.2 | 65.8 | 139 | | |
| Saving status | | | | | | | | | | |
| No | 6.6 | 93.4 | 261 | 9.0 | 0.003 | 20.5 | 79.5 | 261 | 6.7 | 0.01 |
| Yes | 49.4 | 50.6 | 172 | | | 64.7 | 35.3 | 172 | | |

| Socio-economic variables | Sufficiency status in Primary School (41,500) | | | Association testing statistics | | Sufficiency status in Secondary School (30,000) | | | Association testing statistics | |
|--------------------------|---|--------|-----|--------------------------------|-------|---|--------|-----|--------------------------------|-------|
| | Yes (%) | No (%) | n | ch2 | p(z) | Yes (%) | No (%) | n | ch2 | p(z) |
| Wealth status | | | | | | | | | | |
| Highest | 4.8 | 95.2 | 100 | | | 21.3 | 78.7 | 100 | | |
| Fourth | 4.3 | 95.7 | 130 | | | 12.8 | 87.2 | 130 | | |
| Middle | 30.3 | 69.7 | 103 | 6.6 | 0.009 | 36.9 | 63.1 | 103 | 2.2 | 0.136 |
| Second | 16.6 | 83.4 | 65 | | | 44.9 | 55.1 | 65 | | |
| Lowest | 75 | 25 | 35 | | | 80 | 20 | 35 | | |
| Long term illness | | | | | | | | | | |
| Yes | 28.5 | 71.5 | 81 | 432 | 0.5 | 89.9 | 10.1 | 81 | 3.4 | 0.064 |
| No | 50.4 | 49.6 | 351 | | | 58.7 | 41.3 | 351 | | |

Under TZS 30,000, household head age, household head education, household head employment, and saving status were found to have a significant association at the 5% level with the provision of adequate payment for school meals. From the cross tabulation, the percentage of sufficient provision increased with household age and the education level of the household head. Moreover, if the head of household was employed (formal or self-employed) and having savings, it was associated with the provision of sufficient school meal payment compared to otherwise. These results imply that older, educated, saving and employed parents were more likely to have sufficient money to finance school feeding. These results resemble those of a previous study by Lemma (2020) who found that more educated parents were likely to save from their salaries and hence were able to finance their children's costs of food in their schools.

2.3 Determinants of Provision of Sufficient Funds to Primary and Secondary School Children

Money used to finance school feeding practices was regressed on monthly income, household size, household head age, household head sex, household head education, household head employment, distance, saving status, wealth status, and long-term illness status in a forward stepwise binary logistic regression to identify possible predictors associated with the provision of sufficient funds to primary and secondary school children. Variables were included at each stage, based on having p-value thresholds (a variable was included if its p-value was between 0.25 and 0.05). The results indicated that the Hosmer and Lemeshow Test had a Chi-Square statistic of 7.028 ($p = 0.526$). This implies that the overall model predicted the outcomes effectively because that statistic was insignificant. The Nagelkerke pseudo R^2 statistic, which represents the adjusted Cox and Snell Pseudo R^2 , was 0.256, which means that approximately 25.6% of the variation in school feeding financing ability was due to the predictor variables entered in the forward stepwise binary logistic regression. The overall model indicated a good predictive ability as indicated by the Omnibus Chi-Square statistic that was highly significant ($p=0.000$).

With regard to the sufficiency status threshold of TZS 41,500, the number of girls in school in the family, wealth quintiles, and the difference in the number of school boys and girls in the family were strongly associated with the children's provision of sufficient school meal payment. By having one more girl student, the family had a chance to provide sufficient payment for the children's school meals by 44.2%. Therefore, the chances of providing insufficient payment were less likely to happen with the addition of one more child in the family. This result agrees with results by Ochieng (2010), who found that the low retention rate of girls in secondary schools in Ndhiwa sub-county, Homabay County, Kenya, was

associated with many parents' inability to afford to pay for their children's school needs.

Furthermore, it was found that families in the lowest and second wealth quintiles were 18% and 6% more likely, respectively, to provide satisfactory school meal payments for students than families in the highest wealth quintile. Therefore, the chances of providing insufficient payment were less likely to happen when a student came from a family which was in the lowest or second-wealth quintiles. This finding confirms previous results by Wekesa (2015) who reported that school feeding financing is associated with socio-economic characteristics, including wealth of the parents.

Table.4: Determinants of Factors associated with Provision of Sufficient Funds to Primary and Secondary School Children

| Variables | Sufficiency status Primary School (41,500) | | | Sufficiency status Secondary School (30,000) | | |
|--|--|-------|-------|--|-------|-------|
| Insufficiency status | Coefficient (B) | S. E | Wald | Coefficient (B) | S.E. | Wald |
| School vs. out-of-school children | | | | | | |
| <i>Out school < school</i> | 0.77 | 0.072 | 8.251 | | | |
| <i>Out school = school</i> | 0.258 | 0.022 | 3.039 | | | |
| Head age 45 | 0.561 | 0.281 | 1.119 | 0.514*** | 0.32 | 0.827 |
| Boys in school | | | | 0.676* | 0.451 | 1.014 |
| Girls in school | 0.442*** | 0.28 | 0.696 | 0.727 | 0.49 | 1.078 |
| Wealth quintiles | | | | | | |
| <i>Fourth</i> | 0.392 | 0.128 | 1.202 | 1.024 | 0.561 | 1.87 |
| <i>Middle</i> | 0.374 | 0.116 | 1.209 | 0.919 | 0.488 | 1.729 |
| <i>Second</i> | 0.188*** | 0.054 | 0.658 | 0.695 | 0.324 | 1.491 |
| <i>Lowest</i> | 0.061*** | 0.015 | 0.241 | 0.211*** | 0.076 | 0.585 |
| Number of school Boys vs. Girls | | | | | | |
| <i>Boys < Girls</i> | 3.190** | 1.144 | 8.893 | 0.891 | 0.3 | 2.648 |
| <i>Boys = Girls</i> | 0.811 | 0.34 | 1.937 | 0.567 | 0.266 | 1.209 |
| Relatives' percent | | | | | | |
| <i>Less than 25%</i> | 0.798 | 0.348 | 1.828 | 1.647 | 0.872 | 3.11 |
| <i>26-50 percent</i> | 2.132 | 0.848 | 5.362 | 1.873** | 1.01 | 3.473 |
| <i>More than 50%</i> | 2.282 | 0.767 | 6.796 | 3.768*** | 1.73 | 8.207 |
| Head education | | | | | | |
| <i>Secondary</i> | 2.450* | 0.922 | 6.506 | | | |
| <i>Post-secondary level</i> | 0.553 | 0.209 | 1.465 | | | |
| Monthly income | | | | | | |
| <i>150,000—500,000</i> | | | | 0.575*** | 0.357 | 0.926 |
| <i>500,001-1,000,000</i> | | | | 1.406 | 0.432 | 4.582 |
| <i>More than 1,000,000</i> | | | | 0.529 | 0.131 | 2.14 |
| Head sex | | | | 0.523*** | 0.315 | 0.868 |
| Head employment status | | | | | | |

| Variables | Sufficiency status Primary School (41,500) | | | Sufficiency status Secondary School (30,000) | | |
|--|--|-------|---------|--|-------|--------|
| Insufficiency status | Coefficient (B) | S. E | Wald | Coefficient (B) | S.E. | Wald |
| <i>Self employed</i> | | | | 1.355 | 0.734 | 2.5 |
| <i>Unemployed</i> | | | | 1.898* | 0.902 | 3.994 |
| Head Health (long term illness) | | | | 1.705* | 0.967 | 3.006 |
| Distance (30 min) | | | | 0.74 | 0.467 | 1.172 |
| Constant | 56.077*** | 3.817 | 823.796 | 4.107*** | 1.298 | 12.991 |

Omnibus Tests of Model Coefficients (Chi-square = 136.241; sig. = 0.000); Cox & Snell R Square = 0.256; Hosmer and Lemeshow Test (Chi-square = 7.028) Sig. = 0.526); Nagelkerke R Square = 0.547; * and ** indicate levels of significance at 1%, and 5% respectively

The families with fewer school boys than girls had more chances to provide insufficient payment for student school meals per month. In contrast, when it comes to the sufficiency status threshold of TZS 30,000, household head's employment status, sex, monthly income, relative percent of wealth quintile, and number of in school and out-of-school children were all significant at the 1% level. This implies that parents who had those attributes had high chances to sufficiently finance their children's school meals. The findings are consistent with findings of a previous study by Agu *et al.* (2023).

Wealth quintile was also significant in influencing parents to provide sufficient school meal payments. Families that were in the lowest wealth quintile were more likely to provide sufficient school meal payments to students by 21%, compared to those in the high wealth quintile. Therefore, the chances of providing insufficient payment was less likely to happen when a student came from families that were in the lowest or second wealth quintile. The results concur with those of a previous study by Gupta (2024) who found that wealth status of the parents determines their ability to provide sufficient school meal payments for their children in school.

Also, there was a significant influence on the provision of sufficient school meal payments by families that earned an income of between TZS 150,000 and 500,000 per month, compared to those that earned less than TZS 150,000 per month. The results show that a family earning between TZS 150,000 and 500,000 per month was 50% less likely to influence insufficient provision of school meal payments to school children than a family earning less than TZS 150,000 per month. Similar results were reported by Drake *et al.* (2016), Zenebe *et al.* (2018), and Adokunle and Christiana (2016).

With regard to the percents of relatives in the household, it was found that as the number of relatives increased in the family, the likelihood of the family providing insufficient school meal payment for children increased. The findings indicated families with an average of 26–50% and more than 50% of relatives were more likely to enhance insufficient payment of school meals by more than 87% and 276%, respectively. This implies that households with large household size were less likely to have sufficient money to finance their children's school meals. Previous studies by Gupta (2024) and Eigbobo and Onyejeka (2020) reported that large family size contributed to vulnerability of children and reduced their chances for an education and a brighter future without poverty.

With respect to the head of the family characteristics, this study found that there was a significant influence on the provision of a sufficient amount for school

meals between female-headed households and male-headed households. Results of stepwise binary logistic regression revealed that a female-headed household was more likely (about 51%) to provide a sufficient amount for children's school meals, compared to a male-headed one. On the other hand, if the household head age was greater than 45 years and above, then the household was about 52% more likely to provide a sufficient amount of money for school meals, compared to a less than 45-year-old household head. These results correspond with those of previous studies, particularly ones by Wekesa (2015) and Wolde and Belachew (2019) who reported that socio-economic characteristics influence home-based school feeding financing.

3.0 CONCLUSION AND RECOMMENDATIONS

The study concludes that socioeconomic factors influence ability of parents to afford payments for school meals in both primary and secondary schools. Based on this, it is recommended that development practitioners in the education sector should provide an enabling environment including facilitation of income generating activities among parents with children in primary and secondary schools in order to improve their income status which will eventually enable them to have the ability to finance school feeding. Also, stakeholders in the education sector should create awareness to parents of school children on the importance of financing school feeding programmes for their children. Moreover, Local Government Authorities and other stakeholders should develop mechanisms that will ensure effective financing of the school feeding programme in primary and secondary schools. Lastly, school boards and management should ensure that parents and communities are involved in organizing and financing school feeding.

REFERENCES

- Agresti, A. and Finlay, B. (2009). *Statistical Methods for the Social Sciences*. (Fourth Edition). Person Prentice Hall, New Jersey.609pp.
- Agu, C. I., Ossai, E. N., Ogah, O. E., Agu, I. C., Akamike, I., Ugwu, G. O., & Azuogu, B. N. (2023). An appraisal of the implementation of the national school feeding programme and its effect on enrolment and attendance in public primary schools in Southeast, Nigeria: perception of heads of schools. *BMC nutrition*, 9(1), 37.
- Aliyar, R., A. Gelli, and S.H. Hamdani, (2015). A review of nutritional guidelines and menu compositions for school feeding programs in 12 countries. *Frontiers in Public Health*, 3: 128- 148.
- Banerjee, S., Dias, A., Shinkre, R., & Patel, V. (2011). Under-nutrition among adolescents: A survey in five secondary schools in rural Goa. *The National medical journal of India*, 24(1), 8.

- Bundy, D. A. (2009). Rethinking school feeding: social safety nets, child development, and the education sector. world bank publications. 330pp
- Burgess, A., (2008). Undernutrition in Adults and Children: causes, consequences and what we can do. *South Sudan Medical Journal*, 1(2): p. 18-22.
- Drake, L., Woolnough, A., Burbano, C., and Bundy, D. A. (2016). Global school feeding sourcebook: lessons from 14 countries. *World Scientific*. 8(2): 28-32
- Farrow, C., A. Galloway, and K. Fraser, (2009). Sibling Eating Behaviour and Differential Child Feeding Practices Reported by Parents. *Appetite*, 52(2): 307-312.
- Galloway, Rae, Elizabeth Kristjansson, Aulo Gelli, Ute Meir, Francisco Espejo, and Donald Bundy. (2009). "School feeding: outcomes and costs." *Food and Nutrition Bulletin* 30, (2): 171-182.
- Gupta, S. D. (2024). School Food Policies and Perspectives: An examination of policy, funding models and caregivers' perceptions (Doctoral dissertation, PhD Thesis, University of Saskatchewan Saskatoon, 2024. <https://harvest.usask.ca/bitstreams/3605eec1-0fa1-4054-aaf1-934d4147aa2b/download>).
- Healy, B. (2021). Hunger and Obesity: Intertwined Epidemics. *Green Left Weekly*, 2021 (1318): p. 17.
- Kolbe, L.J. (2020). School Health as a Strategy to Improve both Public Health and Education. *Annual Review of Public Health*, 40: 443-463.
- Kristjansson, E. A., Gelli, A., Welch, V., Greenhalgh, T., Liberato, S., Francis, D., and Espejo, F. (2016). Costs, and cost-outcome of school feeding programmes and feeding programmes for young children. Evidence and recommendations. *International Journal of Educational Development*, 48, 79-83
- Lemma, M. (2020). The Practice and Challenges of School Feeding Program at Yenat Weg Charitable Society (Doctoral dissertation, St. Mary'S University). 173pp
- Noll, P. R. E. S., Noll, M., de Abreu, L. C., Baracat, E. C., Silveira, E. A., and Sorpreso, I. C. E. (2019). Ultra-processed food consumption by Brazilian adolescents in cafeterias and school meals. *Scientific Reports*, 9(1), 7162.
- Omobuwa, O., Alebiosu, C. O., Olajide, F. O., & Adebimpe, W. O. (2014). Assessment of nutritional status of in-school adolescents in Ibadan, Nigeria. *South African Family Practice*, 56(4), 246-250.
- Roothaert, R., Mpogole, H., Hunter, D., Ochieng, J., and Kejo, D. (2021). Policies, Multi-Stakeholder Approaches and Home-Grown School Feeding Programs for Improving Quality, Equity and Sustainability of School Meals in Northern Tanzania. *Frontiers in Sustainable Food Systems*, 5, 43.

- Sanya, H., (2015). Impact of School Feeding on Student Attendance in Secondary School: A case of Kiteto District in Tanzanian. 2015, The Open University of Tanzania.
- Shukia, R., (2020). Fee-free Basic Education Policy Implementation in Tanzania: A 'Phenomenon' Worth Rethinking. *Huria: Journal of the Open University of Tanzania*, 27(1): 22-42
- URT (2019). Mochdre, M.o.H.C.D.G.E.a.C., Tanzania Demographic and Health. 104pp.
- Wang, D. and Fawzi, W. W. (2020). Impacts of school feeding on educational and health outcomes of school-age children and adolescents in low-and middle-income countries: protocol for a systematic review and meta-analysis. *Systematic reviews*, 9(1): p. 1-8.
- Wekesa, K. N. (2015). Impact of School Feeding Programme on Pupils' Retention Rates in Public Primary Schools in Fafi Sub-County Garissa County Kenya (Doctoral dissertation, University of Nairobi).195pp.
- WFP, F., N. IFAD, and P. GCNF, Home-Grown School Feeding. (2018). Resource Framework. Technical Document, Rome. 120pp.
- World Bank (2012). Scaling up School Feeding: Keeping Children in School while Improving their Learning and Health. 2012, WB Washington.
- Zenebe, M., Gebremedhin, S., Henry, C. J., & Regassa, N. (2018). School Feeding Program has resulted in Improved Dietary diversity, nutritional status and class attendance of school children. *Italian journal of pediatrics*, 44, 1-7.