

Predictors of Parental Involvement in School Feeding Programs in Tanzania: A Case of Mara Region

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Abstract

In Tanzania, school feeding programs (SFPs) have been introduced to improve children's nutrition, support school attendance, and enhance learning. However, these programs often rely heavily on donor support and external institutions, while parental involvement has remained limited. This raises concerns about long-term sustainability and local ownership. This study explored factors associated with parental involvement in school feeding programs in primary schools in the Mara Region of Tanzania. It was guided by Bronfenbrenner's Ecological Systems Theory (1979, 2001) and used a cross-sectional design. Data were collected from 500 parents from 20 primary schools using a questionnaire adapted from Hoover-Dempsey and Sandler's parental involvement model, previously validated in the Tanzanian context. A hierarchical multiple regression analysis was used to examine how different factors, such as parents' motivators, school-related invitations, and life context variables, are related to parental involvement. The results showed that parents' self-efficacy, positive attitudes toward school (valence), and skills and knowledge related to school feeding were significantly associated with higher levels of parental involvement. School-related factors were also significant, especially school invitations (such as communication and engagement efforts). However, invitations from children and teachers were not significant predictors. These findings suggest that parents' beliefs, confidence, knowledge, and how schools actively involve them may be important in supporting their participation. Strengthening school-community relationships may require clear communication, practical guidance, and trust-building. The 2021 National Guidelines on School Feeding and Nutrition Services could benefit more by clearly defining and supporting parental roles. This study adds to the growing body of evidence on the need for locally grounded

and multidimensional strategies to foster meaningful parental involvement in education.

Keywords: *Parental involvement, school feeding programs, Bronfenbrenner's Ecological Systems Theory, community engagement, primary education*

INTRODUCTION

Parental involvement in children's education has consistently been recognised as a critical factor influencing academic success, social behaviour, and the overall well-being of learners (Fan & Chen, 2001; Hoover-Dempsey et al., 2005). Within the educational context of Tanzania, parental participation has been identified as particularly vital, considering the challenges schools face, including resource limitations, inadequate infrastructure, and varying socioeconomic backgrounds (UNESCO, 2015; World Bank, 2021). School feeding programs, which aim to provide nutritional meals to students during school hours, have increasingly gained attention as effective interventions not only to address nutritional deficits but also to enhance educational outcomes through improved behaviour challenges, attendance, and retention rates (Bundy et al., 2018, Jomaa et al., 2011). For example, a quasi-experimental study in Kenyan primary schools found that parental volunteering in kitchen duties increased meal uptake by 22% and reduced tardiness by 15% (Mwangi & Gitonga, 2022). Thus, understanding the predictors of parental involvement in such programs is crucial for their sustainability and effectiveness.

Although a substantial body of research has examined parental involvement in school feeding and nutrition services in Tanzania, prompting the development of a national guideline implementation gaps and variable stakeholder commitment, remain the greatest obstacles to meaningful change (Haule & Mwinami, 2024; Swila et al., 2024; Athumani et al., 2024). Recent evidence suggests that parental involvement in Tanzania is influenced by economic conditions, with lower-income families less likely to engage actively in school-based programs due to resource constraints (Kadau, 2023; Swila et al., 2024). However, other potential factors, such as parental self-efficacy, knowledge, and school engagement strategies, remain understudied.

This study, therefore, aims to address this gap by examining predictors of parental involvement in school feeding programs within primary schools

in the Mara region, Tanzania. Specifically, it explores the contributions of economic status, psychological constructs (self-efficacy and role construction), school invitations, and parental knowledge and skills. This study contributes to the literature by providing nuanced insights into the factors influencing parental participation, offering valuable guidance for policymakers and educational stakeholders to enhance parental engagement in similar programs nationwide. By identifying the most significant predictors, targeted strategies can be developed to promote active parental participation, ultimately fostering better educational outcomes and improved child well-being across Tanzania. This study addresses a critical knowledge gap by empirically identifying the strongest predictors of parental involvement in SFPs. Focusing on primary schools in the Mara region, where high donor and government investments have not translated into sustainable engagement, allows us to isolate factors that policy and program designers can act upon.

SFPs Global, African and Tanzanian Perspectives on SFPs

School feeding programs (SFPs) have emerged as vital global interventions in low-income settings, alleviating short-term hunger, improving nutritional status, and boosting attendance, concentration, and academic performance (FAO, 2018; Raveenthiranathan et al., 2024). Over 368 million children across more than 160 countries benefit from these initiatives today, underscoring their strategic role in advancing education and health outcomes (World Food Programme, 2021).

In Sub-Saharan Africa, malnutrition and hunger significantly affect children's educational engagement and achievement, necessitating targeted strategies such as school feeding initiatives (Lukindo, 2018; Rector et al., 2021). Studies from Ghana, Kenya, and Uganda indicate that effective school feeding programs are associated with increased enrollment, improved academic performance, and reduced dropout rates (Appiah, 2024; Bundy et al., 2018; Peter et al., 2024; Tioko et al., 2021). However, inconsistent implementation, funding challenges, and insufficient parental and community involvement often undermine the sustainability of these programs across the continent.

In Tanzania, chronic malnutrition remains a major barrier to child development despite a long history of nutrition initiatives. Pilot schemes began in 1956, and the Tanzania Food and Nutrition Centre was established in 1974 (Lukindo, 2018). Recent data show modest gains in 30 per cent stunting among under-fives in 2022, down from 32.1 per cent

in 2016 (MoHCDEG et al., 2023). A 31.8 per cent stunting rate with 3.5 per cent wasting, according to the Global Nutrition Report 2023 (GRN, 2023), yet acute malnutrition and micronutrient deficiencies persist in regions like Ruvuma, Iringa and Kigoma (USAID Advancing Nutrition, 2023). To tackle these challenges, the Government and partners have layered multiple interventions: the 2021 National Guidelines on School Feeding and Nutrition Services to standardise coordination (URT-MoEST, 2021); the WFP-led Home-Grown School Feeding pilot in Singida and Mara, reaching over 28,000 students (World Food Programme, 2016); the PCI-implemented McGovern-Dole "Chakula Chetu" project in Butiama and Musoma Rural (Foreign Agricultural Service, 2022); the School Milk Action Plan 2023–2028 supplying dairy in 125 schools (MoEST, 2023); and biofortified school gardens supported by WFP Tanzania (WFP Tanzania, 2023). Complementary community efforts include Amani's nutrition clubs (Amani, 2021), Doe et al.'s integrated school-health outreach (Doe et al., 2022), and parent-teacher garden co-operatives (Msafiri & Lianyu, 2022).

Despite these robust initiatives, a 2022 evaluation of 250 primary schools found that over 70 per cent suffered from minimal parental engagement due to vague role definitions regarding financial contributions undermining both program effectiveness and long-term sustainability (SFI, 2022; MoEST, 2023).

Parental Involvement in SFPs

A study by Zuercher et al. (2024) showed that parents are very important partners in implementing SFPs. Across Sub-Saharan Africa, empirical evidence demonstrates that school feeding programs (SFPs) with active parental engagement yield significantly better educational and nutritional outcomes. Studies in Ghana, Kenya, and Uganda show that when parents participate in meal planning, monitoring, or funding, students experience higher enrollment rates, improved academic performance, and reduced dropout rates (Appiah, 2024; Bundy et al., 2018; Peter et al., 2024; Tioko et al., 2021). In Uganda, for example, parental attendance at SFP-organized nutrition workshops led to a 0.35 increase in children's BMI-for-age z-scores over six months (Okello et al., 2023).

In Tanzania's Ruvuma region, schools that integrated parent-run gardens into their feeding schemes witnessed a 20 per cent reduction in lunchtime absenteeism, directly linking parental stewardship of feeding activities to increased student attendance (Mgaya & Luhanga, 2022). Similarly, in

Mara, parents who understood clearly defined roles in the SFP, whether contributing cash, foodstuffs, or volunteer time, were twice as likely to engage, underscoring the importance of explicit expectations in mobilising resources and support (Haule & Mwinami, 2024).

Despite these successes, barriers such as misinterpretation of fee-free education policies, socioeconomic constraints, and limited awareness of parental roles continue to hinder meaningful involvement in Tanzania's SFPs (Chaula, 2015; Oganga, 2013). Although pilots and national guidelines provide a strong framework, the long-term sustainability of these programs ultimately depends on securing robust parental buy-in.

This study, therefore, seeks to identify the key predictors of parental involvement in Mara's school feeding programs. By disentangling economic, psychological (self-efficacy and role construction), and school-driven invitation factors, the research will inform targeted interventions, policy refinements, and collaborative strategies to enhance the effectiveness and sustainability of SFPs in Tanzania.

Theoretical framework

This study is anchored in Bronfenbrenner's Ecological Systems Theory (1979, 2001), which provides a comprehensive lens for understanding the multiple levels of influence on parental involvement in school feeding programs (SFPs). Bronfenbrenner posits that human development is shaped by interactions within nested environmental systems, ranging from immediate family contexts to broader societal structures. The theory comprises five interconnected systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem, each influencing an individual's behaviours and attitudes differently.

Within the microsystem, the most immediate layer, direct interactions occur between parents, children, and teachers. Parental involvement in SFPs significantly depends on the quality of these interactions and parents' perceptions of their roles in supporting their children's educational and nutritional needs. Positive interactions with teachers and school leaders, clear communication, and the perceived relevance of parental roles enhance parents' motivation to engage actively in SFPs.

The mesosystem encompasses connections between different microsystems, such as home-school collaborations. The effective linkage between schools and homes, as demonstrated through regular invitations,

meetings, and clear school guidelines, facilitates higher parental engagement in SFPs. Active school outreach efforts and encouragement strongly predict parents' participation levels, reinforcing the importance of school-initiated strategies.

The exosystem represents broader contexts indirectly affecting parental involvement, including community socioeconomic conditions and policies like the national SFP guidelines. In Tanzania, ambiguous implementation policies and insufficient stakeholder coordination negatively impact parental engagement (SFI, 2022). Enhancing clarity and coordination at this level is essential for increasing parents' participation in school feeding initiatives.

At the macrosystem level, cultural values, societal norms, and economic conditions profoundly shape parental behaviours toward educational involvement. Socioeconomic constraints, prevailing cultural beliefs about education, and misinterpretations of policies like fee-free education substantially impact parents' decisions and ability to engage in school programs (Chaula, 2015; Oganga, 2013). Addressing these larger societal and cultural barriers is crucial for fostering meaningful parental involvement in SFPs.

Finally, the chronosystem recognises the influence of temporal changes on parental involvement, highlighting historical developments and policy shifts. Historical experiences with previous feeding programs in Tanzania, including the establishment and cessation of initiatives over time, shape parental attitudes and trust toward current programs (Lukindo, 2018). Understanding these historical dynamics can inform strategies to rebuild trust and encourage sustained parental involvement.

Overall, Bronfenbrenner's theory provides a robust framework for analysing how multiple environmental factors collectively influence parental involvement in SFPs, guiding the identification of practical intervention points at various systemic levels to enhance program effectiveness and sustainability.

Present Study

Despite substantial investments and stakeholder efforts in establishing SFPs in Tanzania, particularly in the Mara region, parental involvement remains limited, posing significant threats to program sustainability and effectiveness (Chaula, 2015; Doe et al., 2022; Oganga, 2013). Global

education research has shown that parental self-efficacy is a powerful driver of engagement in various aspects of child development (Garbacz et al., 2017; Allee-Herndon et al., 2020), while positive emotional valence toward school shaped by parents' own schooling experiences strongly predicts active participation in school activities (Topor et al., 2010; Tseng, 2022). Moreover, parents' specific skills and knowledge about school feeding programs deepen their buy-in and continuity of support (Woldehanna & Jones, 2010; Gelli et al., 2019). While socioeconomic factors have long been seen as the primary barriers to parental engagement, recent research reveals that parents' internal motivations and school trust can often counteract material constraints (Flores, 2023; Jeynes, 2011; Bergnehr, 2019). Likewise, schools that extend clear, welcoming invitations through newsletters, meetings, or personalised outreach regularly succeed in drawing parents into program activities (Epstein, 2011; Đurišić, 2017). By contrast, other strategies, such as children personally inviting their parents, parents' sense of what their role should be, or their available time and energy, have produced inconsistent results across different settings (Patall et al., 2008; Anderson & Minke, 2007). These mixed findings underscore the importance of testing which factors truly drive the involvement of parents in the Tanzanian SFP context. These insights underscore the need to pinpoint which psychological, school-based, and life-context factors most powerfully predict parental involvement in SFPs. *The present study, therefore, aimed to identify the key predictors of parental engagement in school feeding programs in primary schools in Tanzania's Mara region* by examining (1) parent personal related factors (self-efficacy, role construction), (2) school-based engagement strategies (general invitations, teacher- and child-initiated invitations), and (3) life-context variables (parents' skills and knowledge, available time and energy). The following research questions guided the inquiry:

1. What are the significant parent personal-related predictors influencing parental involvement in school feeding programs in primary schools in the Mara region?
2. What are the significant school-related predictors influencing parental involvement in school feeding programs in primary schools in the Mara region?
3. What are the significant life-context-related predictors influencing parental involvement in primary school feeding programs in the Mara region?

The study seeks to generate actionable evidence for enhancing sustained parental participation and improving educational and nutritional outcomes across the region by directly linking established theory and empirical findings to these objectives and questions.

METHODOLOGY

Research Approach and Design

This study employed a quantitative survey research approach using a cross-sectional design to capture a snapshot of predictors of parental involvement in school feeding programs (SFPs) across Mara region primary schools.

Sampling Strategy and Power Analysis

From the 231 public primary schools that participated in PCI's "Pamoja Tuwalishe" feeding project, we conducted an a priori power analysis ($\alpha = .05$, power = .80, medium effect size) which indicated a minimum of 20 schools would yield sufficient statistical power. Those 20 schools were then selected purposively for their engagement in the PCI program, and within each school, simple random sampling was used to invite one parent per family to participate.

Participants

Based on our a priori power analysis for multiple regression ($\alpha = .05$, power = .80, medium effect size $f^2 = .15$), we determined that a sample of approximately 400 parents would be sufficient to detect significant predictors. To allow for school-level comparisons and potential attrition, we targeted 20 schools with 25 parents per school, yielding an overall sample size of 500 respondents. However, in some schools, parents exceeded the required number. This ensured both adequate statistical power and meaningful representation across each participating school. One parent per family participated, with 53% mothers and 47% fathers. Regarding marital status, 69% of participants were married, 26% unmarried, and 5% did not specify their status. Participants' education levels varied: 6% had no formal education, 68% completed primary school, 18% secondary school, 5% attained college diplomas, and 3% held university degrees. Family sizes showed 24% with one child, 22% with two children, 21% with three children, 18% with four children, and 15% with five or more children. Concerning income status, 65% of parents earned below 2,000 Tsh per day (less than 1 USD), 21% earned between 2,000 and 5,000 Tsh per day (1 to 2 USD), 9% earned 5,000–

10,000 Tsh per day (2 to 4 USD), and 5% had incomes of 20,000 Tsh and above per day (over 9 USD).

Procedure

This study was part of a larger research initiative designed to investigate challenges related to sustainability school feeding programmes in the Mara Region, Tanzania. Questionnaires were self-administered during parent-teacher meetings organised at each school. Although all parents were invited regardless of literacy level, research assistants provided one-on-one support to any parent unable to read or write. Ward Education Officers (WEOs) and head teachers facilitated meeting logistics but were not interviewed for this study. Of the 520 questionnaires distributed, 500 were returned fully completed, yielding a 96% response rate and indicating that parents could accomplish the task effectively with assistance. To minimise social desirability bias and maintain confidentiality, questionnaires were administered under the guidance of 10 trained research assistants recruited from local institutions. Participants provided informed consent before participation. Ethical approval was obtained from the Open University of Tanzania's Ethics Committee, the President's Office of Regional Administration and Local Government (PO-RALG) and the regional education office.

Measures

The measures used were adapted from Hoover-Dempsey and Sandler's (2005) revised model of parental involvement (Walker et al., 2005), previously validated in the Tanzanian context by Kigobe et al. (2018). All instruments were translated into Swahili, with back-translations ensuring consistency.

Parental Personal Motivators

Parental Role Construction: Parental role construction regarding involvement in SFP was measured using nine items on a 6-point Likert scale (1 = strongly disagree; 6 = strongly agree). Items assessed parents' beliefs about their responsibilities in supporting SFP, such as volunteering and regularly communicating with teachers about the program. Higher scores indicated stronger beliefs in their role in supporting SFP. The internal consistency was good (Cronbach's $\alpha = .81$).

Parental Sense of Efficacy: Parental self-efficacy related to involvement in school feeding programs was measured using four items on a 6-point Likert scale. Items such as "I know how to support the feeding

programme effectively" and "I feel successful in contributing to SFP" were used. Higher scores indicated greater parental self-efficacy. The scale demonstrated acceptable internal consistency (Cronbach's $\alpha = .78$).

Parent Self-Reported Valence Towards School: Parent self-reported valence towards school was assessed using a six-item scale measuring parents' attitudes and previous experiences with their child's school. Participants rated their general school-related experiences, e.g., "My school 1 = I disliked, 6 = I liked"; "My teachers: 1 = ignored me, 6 = cared about me". Higher scores indicated stronger positive feelings and experiences towards the school. This scale demonstrated good internal consistency (Cronbach's $\alpha = .88$).

Parents' Perceptions of Invitations to be Involved

School Invitations: School invitations were measured using a four-item scale assessing how effectively schools invited parental involvement in the feeding programme. Items like "The school informs me promptly about meetings and events related to SFP" and "The school schedules SFP-related activities conveniently" were rated from 1 (strongly disagree) to 6 (strongly agree). Higher scores reflected better school communication and invitation practices (Cronbach's $\alpha = .76$).

Teacher Invitations: This dimension was assessed using five items, and parents rated how frequently teachers invited them to participate in SFP-related activities. Responses ranged from 1 (never) to 6 (daily). Sample items included "My child's teacher asks me to assist with SFP-related events" and "Teachers regularly communicate with me regarding my child's participation in SFP." The internal consistency of this scale was good (Cronbach's $\alpha = .84$).

Child Invitations: Child invitations were measured with five items evaluating how often children requested their parents to engage with SFP activities, including home contributions or attending school meetings. The scale ranged from 1 (never) to 6 (daily) (e.g., "My child asked me to talk to his/her teacher on something related to SFP in her/his school"; "My child asked me to help out with food contribution in his/her school"). Higher scores indicated more frequent invitations from children (Cronbach's $\alpha = .82$).

Parents' Perceived Life Context

Time and Energy: Parental perceptions of available time and energy to engage in SFP activities were measured using six items. Respondents

rated statements such as "I have sufficient time and energy to participate in school feeding programme activities" on a 6-point Likert scale (1 = strongly disagree; 6 = strongly agree). Higher scores indicated greater availability of time and energy. The internal consistency was acceptable (Cronbach's $\alpha = .75$).

Skills and Knowledge: Parents' perceived skills and knowledge related to participating effectively in SFP activities were assessed through six items. Example items included "I understand clearly how I can support the school feeding programme" and "I have the necessary skills to contribute positively to SFP." Higher scores indicated better perceived skills and knowledge for involvement (Cronbach's $\alpha = .77$).

Parents' Actual Involvement in School Feeding Programs

Parents' involvement in school feeding programs was measured using a 14-item scale adapted and motivated by Geyer and Feng (1993) and Walker et al. (2005). The scale captured the frequency and extent of parents' direct engagement with the school feeding activities. Parents rated their involvement on a 4-point Likert scale ranging from 1 (Always) to 4 (Seldom). Sample items included: "Every day, I follow up to see if my child has eaten at school" and "From time to time, I follow up on the availability of food for my child". Lower scores indicated higher parental involvement. The scale demonstrated excellent internal consistency (Cronbach's $\alpha = .93$).

Statistical Analysis

All statistical analyses were conducted using SPSS Statistics software version 30. To assess the normality of data, skewness and kurtosis were examined for each continuous variable (Kline, 2005). The skewness values for the variables ranged between -3.263 to -0.159, indicating acceptable distribution for most variables except "Valence", which showed slightly higher skewness (-3.263, SE=.109). Kurtosis values ranged between -0.800 and 14.446, again showing an acceptable distribution for all variables except "Valence", with slight kurtosis (14.446, SE = .218). Descriptive statistics were computed for all variables, including means and standard deviations. Before regression analysis, Spearman non-parametric correlations were calculated between the parent's characteristics and other variables; Pearson correlations were calculated between all other variables to examine initial relationships. Table 1 provides detailed descriptive statistics and correlations of the variables analysed.

Given that the data met the necessary assumptions of linearity, homoscedasticity, and multicollinearity (with all Variance Inflation Factors below 10), a hierarchical multiple regression analysis was conducted to determine predictors of parental involvement in school feeding programs.

A hierarchical multiple regression analysis was conducted in four sequential steps to examine the incremental contribution of each predictor group to the variance in parental involvement in school feeding programs. In the first step, economic status was entered into the model to assess its unique predictive value. In the second step, *parental personal motivators*, parental self-efficacy, role construction, and valence toward school were added to determine whether these internal motivators explained additional variance beyond economic status. The third step introduced *parents' perceptions of invitations to be involved*, including school, teacher, and child invitations, to evaluate whether external invitations from the school environment further explained parental involvement. In the final step, *parents' perceived life context*, specifically their perception of available time and energy and skills and knowledge related to school feeding, was added to examine the influence of practical capabilities and constraints. At each step, changes in explained variance (ΔR^2) were assessed for statistical significance, and multicollinearity was checked using Variance Inflation Factors (VIFs) to ensure the accuracy and stability of the regression model.

FINDINGS

Correlations between Study Variables

Table 1 presents the means, standard deviations, Cronbach's alpha coefficients, and inter-correlations among all study variables, including demographic characteristics of the parents, parental personal motivators, parents' perceptions of invitations to be involved variables, parents' perceived life context variables and parental involvement variables (see Table 1).

Table 1
Correlations, Means, Standard Deviations, and Cronbach's alphas of all Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Gender															
Employment	.01														
Education	-.02	-.00													
Marital status	.02	-.21	.17												
Children	-.05	.03	-.21***	-.11*											
Economics	.03	-.03	.22***	.20***	-.02										
Parental involvement	-.04	.08	-.03	-.08	-.06	-.19***									
School Valence	.02	-.08	.10*	.08	.03	.13**	-.22***								
Sense of efficacy	-.04	.08	-.11*	-.05	-.01	-.15***	.14**	.17***							
Role Construction	-.05	.04	-.05	-.06	.06	.15***	-.23***	.29***	.39***						
School Invitation	-.05	.02	-.13*	.01	.12*	.02	-.21***	.18***	.41***	.64****					
Teacher Invitation	-.05	-.01	-.08	-.06	.11*	-.07	.04	-.02	.46***	.39***	.39***				
Child Invitation	.05	-.01	-.08	-.00	.08	-.02	-.09*	.16***	.39***	.46***	.63***	.50***			
Skills and Knowledge	-.06	-.03	-.06	.01	.06	.09*	-.27***	.26***	.36***	.80***	.75***	.39***	.61***		
Time and Energy	-.08	-.03	-.01	-.04	.06	.12*	-.25***	.31***	.40***	.77***	.75***	.41***	.56***	.87***	
<i>M</i>	1.60	3.88	2.69	2.09	2.04	1.40	2.72	5.64	4.36	4.90	4.22	4.04	4.76	4.74	4.74
<i>SD</i>	.49	1.59	1.67	1.41	1.23	.59	.84	.71	1.28	1.22	1.52	1.46	1.19	1.23	1.24
<i>Cronbach's alpha</i>							.93	.88	.81	.78	.76	.84	.82	.75	.77

Note. * $p < .05$ ** $p < .01$ *** $p < .001$. Spearman non-parametric correlations were calculated between the parent's characteristics and other variables; Pearson correlations were calculated between all other variables

Predictors of Parental Involvement in School Feeding Programmes

A hierarchical multiple regression analysis was conducted in four sequential models to examine the predictors of parental involvement in school feeding programmes and answer our three research questions. This approach allowed for the incremental evaluation of predictor groups in explaining variance in parental involvement. All assumptions of multiple regression were checked and met, including linearity, normality, and multicollinearity.

Model 1 included only parents' economic status as a predictor and was statistically significant, $F(1, 438) = 17.08, p < .001$, accounting for 3.8% of the variance in parental involvement, $R^2 = .038$. **Model 2** added parental personal motivators: self-efficacy, role construction, and school valence. This model significantly improved the prediction of parental involvement, $F(4, 435) = 15.38, p < .001$, explaining 12.4% of the variance, $R^2 = .124$, with an R^2 change of .086 from Model 1. **Model 3** added school-related factors: child, teacher, and school invitation. The model accounted for 14.5% of the variance in parental involvement, $R^2 = .145, F(7, 432) = 10.43, p < .001$, with a modest R^2 change of .021. **Model 4**, the final model, included perceived life context factors: time, energy, skills, and knowledge. This model explained 16.0% of the variance in parental involvement, $R^2 = .160, F(9, 430) = 9.11, p < .001$, with an R^2 change of .015 compared to the previous model.

In the final model, several predictors emerged as statistically significant. Parental self-efficacy was a strong positive predictor of involvement, $\beta = .261, p < .001$, indicating that parents who felt more capable of influencing school matters were more likely to be involved in feeding programmes. Similarly, school valence ($\beta = .142, p = .003$) and parents' skills and knowledge ($\beta = .247, p = .036$) were significantly associated with increased parental involvement. Notably, school invitation ($\beta = .192, p = .006$) also remained a significant positive predictor, highlighting the importance of proactive communication from schools. Other variables, including economic status ($\beta = -.087, p = .070$), role construction ($\beta = -.068, p = .409$), child invitation ($\beta = .021, p = .722$), teacher invitation ($\beta = .063, p = .260$), and time and energy ($\beta = -.014, p = .894$), were not statistically significant predictors in the final model.

These findings suggest that psychological beliefs (such as self-efficacy), positive parental attitudes toward the school, and sufficient knowledge

and skills related to the school feeding programme are key drivers of parental involvement. Additionally, schools' efforts to actively invite and engage parents play an essential role. The results are summarised in Table 1.

Table 2
Hierarchical Multiple Regression Predicting Parental Involvement in the School Feeding Programme

Predictor	B	SE	β	t	95% CI (Lower, Upper)
Step 1					
(Constant)	3.137	0.100		31.23	[2.940, 3.335]
Parents' Income	-0.273	0.066	-0.194***	-4.13	[-0.403, -0.143]
Model 2					
(Constant)	4.265	0.356		11.99	[3.566, 4.965]
Parents' Income	-0.121	0.068	-0.086	-1.79	[-0.254, 0.012]
School Valence	0.183	0.064	0.135**	2.87	[0.058, 0.309]
Parents' Self-efficacy	0.165	0.036	0.253***	4.55	[0.094, 0.236]
Role Construction	-0.209	0.039	-0.298***	-5.35	[-0.286, -0.132]
Model 3					
(Constant)	4.446	0.372		11.94	[3.715, 5.178]
Parents' Income	-0.126	0.067	-0.089	-1.88	[-0.258, 0.006]
School Valence	-0.190	0.064	-0.140**	-2.95	[-0.317, -0.063]
Parents' Self-efficacy	0.173	0.038	0.266***	4.54	[0.098, 0.248]
Role Construction	-0.135	0.048	-0.193**	-2.79	[-0.230, -0.040]
Child Invitation	-0.007	0.033	-0.013	-0.22	[-0.071, 0.057]
Teacher Invitation	0.039	0.032	0.067	1.20	[-0.025, 0.102]
School Invitation	-0.139	0.051	-0.192**	-2.74	[-0.238, -0.039]
Model 4					
(Constant)	4.438	0.378		11.75	[3.696, 5.181]
Parents' Income	-0.122	0.067	-0.087	-1.82	[-0.255, 0.010]
School Valence	0.192	0.065	0.142**	2.94	[0.064, 0.321]
Parents' Self-efficacy	0.170	0.038	0.261***	4.44	[0.095, 0.246]
Role Construction	-0.047	0.057	-0.068	-0.83	[-0.160, 0.065]
Child Invitation	0.012	0.033	0.021	0.36	[-0.053, 0.077]
Teacher Invitation	0.036	0.032	0.063	1.13	[-0.027, 0.099]
School Invitation	-0.063	0.058	0.192**	1.10	[0.050, 0.176]
Time and Energy	-0.010	0.074	-0.014	-0.13	[-0.154, 0.135]
Skills and Knowledge	0.167	0.079	0.247*	2.11	[0.011, 0.322]

Note. N = 500. CI = Confidence Interval. $p < .05$, $p < .01$, $p < .001$

DISCUSSION

This study aimed to examine the factors predicting parental involvement in school feeding programmes in Tanzania by integrating parents' variables, school-based variables and life context. The findings illuminate

how psychological characteristics, particularly parental self-efficacy, school valence, and parental skills and knowledge, play a more significant role in predicting parental involvement than socioeconomic or structural variables. These findings reflect and expand upon existing literature on family-school partnerships and educational involvement, offering a nuanced understanding of school feeding in Sub-Saharan Africa.

Parental self-efficacy emerged as a powerful predictor of involvement, confirming earlier research highlighting the importance of parents' belief in their capacity to support their child's education (Hoover-Dempsey et al., 2005). When parents feel competent, they are more likely to engage, irrespective of economic or logistical challenges. This is consistent with studies in both high- and low-income countries, which have found that higher parental self-efficacy leads to more frequent and sustained engagement with school activities (Garbacz et al., 2017). For instance, Allee-Herndon et al. (2020) reported that self-efficacious parents are likelier to participate in school initiatives, including feeding schemes, homework support, and decision-making bodies. In Tanzania, where school infrastructure and parental literacy levels are uneven, fostering self-efficacy through structured outreach and capacity-building may offer a practical pathway to enhance parental engagement.

Similarly, parental school valence parents' past experiences and perceptions of schools significantly predicted involvement, which aligns with previous findings suggesting that positive school memories and relationships with school staff increase the likelihood of active participation (Topor et al., 2010). In particular, Tseng (2022) emphasises that emotional valence toward education formed during a parent's schooling years significantly influences their present-day attitudes and behaviours toward school involvement. This underscores the importance of cultivating positive, inclusive school climates that reshape community narratives around schools, especially in areas where public education has historically been underfunded or devalued. In the Tanzanian context, schools that prioritise respectful engagement with parents and foster trust may see higher levels of participation in initiatives such as feeding programmes.

The significance of parental skills and knowledge in predicting involvement adds a compelling layer to our understanding of programme sustainability. Studies in nutritional and educational domains show that

when parents understand programme objectives, mechanisms, and expected outcomes, their engagement deepens (Woldehanna & Jones, 2010). Moreover, Gelli et al. (2019) demonstrated that informational access and training in school feeding systems enhanced parental buy-in and continuity of programme benefits in Ethiopia and Ghana. In Tanzania, where such programmes rely heavily on donor support, empowering parents with the knowledge to engage meaningfully through sensitisation meetings or local governance structures can provide a more stable support base when external resources dwindle.

Contrasting with these significant predictors, traditional demographic and socioeconomic variables such as income, marital status, and employment were not significantly associated with parental involvement in the final model. These findings align with the findings by Flores (2023), who found no strong correlation between parental engagement and demographic characteristics. While this may appear counterintuitive, it resonates with emerging perspectives in global education research that stress the relative power of psychosocial over structural determinants (UNESCO, 2021). For example, despite persistent assumptions about economic limitations as barriers to engagement, recent studies by Jeynes (2011) and Bergnehr (2019) argue that motivation, agency, and relationship quality often override material constraints in determining parental participation. This does not negate the impact of poverty but suggests that psychological and relational variables can mediate or buffer against it.

Equally important is the role of school-led invitations to involvement, which were found to be significant. This supports Hoover-Dempsey et al.'s (2005) proposition that school-initiated invitations are among the most powerful levers for fostering engagement. When schools proactively reach out, clarify expectations, and create welcoming environments, parental participation increases, even in settings where other barriers are present (Epstein, 2011; Đurišić, 2017). In this study, the effect of school invitations highlights the need for Tanzanian schools to institutionalise communication practices that invite, respect, and value parental voices, particularly around programmes that directly affect student health and learning outcomes.

Interestingly, factors such as teacher and child invitations, role construction, and time and energy availability were not significant

predictors in the final model. While previous research suggests these can influence engagement (Patall et al., 2008; Anderson & Minke, 2007), their non-significance may reflect cultural or contextual nuances. For instance, the collectivist orientation in Tanzanian communities may prioritise school- or community-led cues over child-driven prompts. Additionally, limited teacher-parent engagement outside formal channels may dilute the impact of teacher invitations, pointing to the need for professional development in parental communication strategies.

These findings suggest that policy and programme efforts should move beyond assumptions of economic constraint and instead emphasise psychological empowerment, relational trust, and informational clarity. Effective parental engagement strategies in school feeding should not be limited to logistical contributions, such as food or financial support, but also include capacity-building initiatives that elevate parents' sense of purpose, ability, and belonging within the school ecosystem. This echoes Bundy et al. (2018) global call for "school feeding 2.0", a model that integrates health, education, and community participation into a holistic framework for student well-being.

The study generally advances a more psychologically grounded and relational understanding of parental involvement in school feeding programmes. It suggests that meaningful engagement hinges more on how parents think and feel about their roles and relationships with the school rather than on what they materially possess. Future interventions should thus prioritise psychosocial empowerment, structured communication, and school climate reforms to enhance sustainable parental participation across Tanzanian schools and comparable contexts.

IMPLICATIONS OF THE STUDY

The findings of this study underscore the need for future research to move beyond traditional socioeconomic models and delve deeper into the psychological and relational dimensions of parental involvement in school feeding programs. Longitudinal and intervention studies should explore how parents' self-efficacy and emotional connections to school environments develop over time and respond to targeted school-based strategies to boost confidence and positive perceptions (Hoover-Dempsey et al., 2005; Garbacz et al., 2017).

Likewise, capacity-building emerges as critical: research must evaluate the design and delivery of culturally appropriate training initiatives that

enhance parents' skills and knowledge about nutrition programs, assessing their long-term impact on program sustainability and student outcomes (Gelli et al., 2019; Aurino et al., 2020). Although economic and contextual constraints (e.g., time, energy) did not predict involvement in the final model, mixed-method and ethnographic studies are essential to illuminate how poverty, food insecurity, and competing demands interact with psychosocial factors to shape parents' engagement strategies (Jeynes, 2011; UNESCO, 2021).

Equally important is understanding the mechanisms of school–community communication: the predictive power of school-initiated invitations calls for an in-depth investigation into how schools can institutionalise inclusive outreach and build trust and what professional development teachers need to enhance family engagement (Epstein, 2011; Đurišić & Bunijevac, 2017).

Framing this work within Bronfenbrenner's Ecological Systems Theory will allow researchers to situate individual behaviours within nested environmental layers from policy and cultural norms to emerging digital mesosystems and to examine how increasing digital access in low-income regions reshapes parental involvement in both nutrition and broader educational initiatives (Lim, 2022). A multidimensional, theory-driven lens will yield more effective, contextually grounded strategies for positioning parents as co-educators and co-implementers in efforts to improve child nutrition and learning outcomes.

STRENGTHS AND LIMITATIONS OF THE STUDY

This study's strengths begin with its grounding in Bronfenbrenner's Ecological Systems Theory, which offers a holistic lens to examine how individual, school and broader contextual systems intersect to shape parental involvement in school feeding programmes. Moreover, conducting the research in Tanzania's Mara Region, a mature SFP environment nurtured for over a decade through initiatives like PCI's Pamoja Tuwalishe, allowed for in-depth insights into long-term engagement patterns. Moreover, the large and diverse sample of 500 parents drawn from Bunda, Butiama, and Musoma districts ensured broad regional representation and increased confidence that the findings reflect common trends across varied socioeconomic backgrounds.

Another strength lies in using a structured, theory-driven questionnaire adapted from the Hoover-Dempsey and Sandler model of parental

involvement and contextualised for Tanzania (building on Kigobe et al., 2018). The careful translation and back-translation process into Swahili ensured conceptual and linguistic equivalence, enhancing measurement reliability for constructs such as self-efficacy, role construction, and perceptions of school invitations.

Despite the study's many strengths, we acknowledge the limitations also: the cross-sectional design prevents the establishment of causal relationships, and reliance on self-reported data may introduce social desirability bias into the findings.

CONCLUSION AND RECOMMENDATIONS

This study demonstrates that parental self-efficacy, positive attitudes toward school (valence), and knowledge of feeding programs are associated with parental involvement in school feeding programmes (SFPs). These factors exert a greater influence than structural barriers, underscoring the need to rethink how parental engagement is understood and promoted in Tanzanian education.

The findings carry important implications for education policy, school practice, and community engagement. As Tanzania continues implementing SFPs as part of its broader educational and child welfare strategy, there is a pressing need to move beyond material contributions and acknowledge parental involvement's psychological, relational, and contextual dimensions. Schools must become spaces that actively welcome and invite parents into the educational process. Whether verbal, written, or action-based, invitations are critical in shaping parents' perceptions of their value in supporting SFPs. When schools proactively reach out and establish open lines of communication, they foster a culture of inclusion and shared responsibility.

Parents' personal beliefs, including their sense of efficacy, perceived role value, and knowledge about school feeding initiatives, also influence their level of involvement. These are not innate qualities but can be cultivated through regular engagement and targeted capacity-building efforts. Educators, especially those serving rural and marginalised communities, need support and training to engage parents effectively. Therefore, teacher education and school leadership programs should incorporate strategies for fostering welcoming environments, initiating inclusive communication, and acknowledging diverse forms of parental support.

Life-contextual factors, such as work schedules, literacy levels, and economic pressures, shape parents' participation capacity. While these constraints are often unavoidable, schools can adopt flexible approaches that accommodate varying circumstances. For example, inviting parents to contribute in ways that align with their availability or skills can make participation more feasible and meaningful.

Given these insights, stakeholders should prioritise awareness campaigns and training sessions to increase parental understanding of SFPs and their complementary role within the fee-free education framework. These initiatives could be embedded into school meetings, ward forums, and parent-teacher days, giving parents the information and confidence to engage meaningfully.

The 2021 National Guidelines on School Feeding and Nutrition Services provide a useful policy anchor but require localisation. Ambiguities in parental roles must be addressed through accessible community dissemination, school orientations, and coordination at the district level. Embedding parental engagement as a central strategy in school development plans and national education frameworks will enhance programme ownership and sustainability.

Ultimately, this study underscores the need for inclusive, knowledge-driven, and context-sensitive approaches to parental engagement. Sustainable and community-owned school feeding models must replace externally driven interventions if long-term impact is to be realised. By addressing the interplay of personal, interpersonal, and contextual influences on parental involvement, Tanzania can improve SFP outcomes and move closer to achieving its education and nutrition development goals.

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