Natural Resources for Human Health

eISSN: 2583-1194

Original Research

Received 09 July 2026
Revised 20 Aug 2026
Accepted 07 Sep 2026

Natural Resources for Human Health 2026, Vol. 6 (20s): 907–917

KEYWORDS:
family engagement, nutrition literacy, community oversight, collaborative governance, programme appraisal.

Participatory Management and School Feeding in Early Childhood Education: Diagnosis and Expert Appraisal of a Proposal in Tarapoto, Peru

Erika Del Milagro Lozano Flores[1]*

[1] Universidad César Vallejo, Perú
ORCID iD: https://orcid.org/0009-0006-1539-7743
Corresponding author/email address: Erika del Milagro Lozano Flores.
elozanof@ucvvirtual.edu.pe

ABSTRACT: School feeding programmes encompass food provision, family engagement, and nutrition education. This study aimed to characterise parental perceptions of participatory management and the food service and educational components of school feeding, and to develop a management proposal for expert appraisal. An applied, quantitative, non-experimental, cross-sectional study with a descriptive and proposal-oriented design was conducted at an early childhood education institution in Tarapoto, Peru, in 2025. The study included all 147 parents identified in the institutional census of classrooms serving children aged 3–5 years. Two 16-item Likert-type questionnaires were administered; Cronbach's alpha coefficients in a pilot study were 0.813 and 0.808. Frequencies and percentages were calculated using SPSS version 25. Participatory management was rated at a moderate level by 59.2% of respondents, while 62.6% assigned the same rating to the assessed food service and educational components. In addition, 27.9% reported receiving no training in healthy eating practices, and 35.4% reported receiving no technical support for food preparation. The proposed model incorporated participation, consensus-building, community oversight, and nutrition education. Five experts awarded a combined score of 396 out of 405 points (97.8%). The findings describe parental perceptions; the proposal's effectiveness remains to be evaluated after implementation.

PLAIN ENGLISH SUMMARY

In 2025, 147 parents at a preschool in Tarapoto, Peru, described their experiences of family participation and a school feeding programme. Moderate ratings were the most common for participatory management (59.2%) and the food service and education components (62.6%). The study proposed actions for parent involvement, oversight, and nutrition education. Five experts assessed the design at 396 of 405 possible points (97.8%). The proposed activities have not been implemented or demonstrated to improve children's food intake or nutritional health.

1. INTRODUCTION

School feeding programmes bring together food provision, the management of public resources, and educational processes associated with meal services. Reviews by Spill et al. (2024) and Raveenthiranathan et al. (2024) distinguish outcomes relating to meal participation, educational indicators, and nutritional status, with their assessment depending on the measures and study designs employed. In early childhood education, family engagement has a particular role because food choices and acceptance are also shaped within the home. In Latin America, Irizarry et al. (2025) examined the integration of food, health, and educational interventions. Accordingly, school feeding can be investigated in terms of its operational conditions, opportunities for family involvement, and nutrition education activities.

International evidence distinguishes food provision from the educational activities accompanying food consumption. In Finland, Laitinen et al. (2022) examined the implementation of food education in schools and its outcomes in relation to eating practices and participation in school dining. Kostecka (2022) investigated a long-term nutrition education programme for children aged 3–6 years, including parental knowledge and family practices. In a review of school-based interventions, Abderbwih et al. (2022) assessed dietary outcomes, knowledge, and health outcomes among parents and other family members, distinguishing interventions involving parents from those directed primarily at students. Xu et al. (2024) examined parental food education and food literacy among children aged 9–14 years, an older population than that included in the present assessment. Together, these studies highlight distinctions among educational interventions, caregiver involvement, and measures of food consumption.

School food environment interventions and policies have been evaluated using a range of study designs. Grigsby-Duffy et al. (2022) reviewed the effects of primary school nutrition policies on food and beverage availability, while Durão et al. (2024) synthesised health and non-health outcomes of policies and interventions targeting the school food environment. Matela et al. (2024) examined school food policy implementation and its relationship with nutritional outcomes in European and Western Pacific countries. Among intervention studies, Raut et al. (2024) assessed knowledge, attitudes, and diet quality, whereas Liao et al. (2025) conducted a pilot evaluation involving fruit and vegetable provision. Unlike these designs, a cross-sectional survey can describe existing conditions but cannot attribute dietary changes to a proposal that has not yet been implemented.

Institutional organisation also shapes programme operations. Hugues et al. (2021) reported non-compliance with school food environment guidelines in Mexican schools. Liguori, Amevinya, et al. (2024) investigated the quality and diversity of food provision in Ghana through interviews with food preparation providers. A review of African programmes additionally identified challenges involving infrastructure, coordination, distribution, and community participation at different stages of service delivery (Liguori, Osei-Kwasi, et al., 2024). Carducci et al. (2025) synthesised evidence on Canadian school-based interventions, policies, and programmes, distinguishing implementation barriers from dietary outcomes. In Chile, Goldsmith Weil and Olivares G. (2023) examined organisational changes to a school feeding programme during the pandemic. Collectively, this evidence differentiates management and supply conditions from educational components and dietary outcomes.

In Latin America and the Caribbean, access to healthy diets is an aspect of food security examined in the 2023 regional overview (FAO et al., 2023). In Peru, Cherres-Bernal et al. (2024) used data from the 2022 Demographic and Family Health Survey to identify socioeconomic and geographical differences in Qali Warma programme coverage. Using longitudinal records, Francke and Acosta (2021) analysed anaemia and chronic child malnutrition indicators among children aged 3–5 years, finding no effects on these indicators for the group and period studied. Both investigations address coverage and nutritional outcomes rather than perceptions of participatory mechanisms measured at the institutional level.

At an educational institution in Tarapoto serving 147 early childhood education beneficiaries, the feeding service was organised through a School Feeding Committee comprising institutional and family representatives. The local assessment reported for 2025 identified difficulties in sustaining parental participation, integrating nutrition content into educational activities, and establishing mechanisms to monitor and evaluate the programme.

The specific evidence gap concerns the absence, within a single early childhood education institution, of an integrated empirical assessment of parental perceptions of participation, consensus-building, and citizen oversight; perceptions of the food service and educational components; and the development of evaluable institutional actions. Peruvian studies of programme coverage and nutritional outcomes (Cherres-Bernal et al., 2024; Francke & Acosta, 2021) offer complementary evidence but address different research questions. The present study was therefore limited to assessing family experiences and developing and obtaining a technical appraisal of a proposal, without estimating statistical associations between variables or intervention effects.

This study aimed to characterise parents' perceptions of participatory management and the food service and educational components of a school feeding programme in Tarapoto during 2025, develop a management proposal informed by the assessment, and document its expert appraisal. This scope distinguishes the descriptive nature of the empirical data, the development of the proposal, and an appraisal of its potential application.

1.1. Theoretical framework

In this study, participatory management is understood as a governance arrangement that creates opportunities to contribute to planning, agreement-building, and the oversight of institutional decisions. The collaborative governance framework

distinguishes initial conditions, the design of decision-making forums, facilitative leadership, and dialogue processes that enable collective action (Ansell & Gash, 2008). From the classical perspective of citizen participation, Arnstein (1969) differentiated levels of effective influence over decisions, making it possible to distinguish the mere receipt of information from direct involvement in management.

In schools, participatory practices depend on internal organisation, assigned responsibilities, and monitoring mechanisms. Buthelezi and Ajani (2022) investigated participatory management practices in South African schools, and Montecinos et al. (2024) examined approaches to institutional leadership. Randby et al. (2024), meanwhile, evaluated a strategy for implementing Norwegian school meal guidelines that incorporated training, internal facilitation, and adherence measures. Although these studies were conducted in settings different from Tarapoto, they provide points of reference for distinguishing reported participation, institutional action, and verifiable compliance.

Participatory management was operationalised across three dimensions: participation, consensus-building, and citizen oversight. Participation covered institutional dialogue, consideration of family views, and involvement in planning; consensus-building encompassed conflict resolution, agreements, and the reception of suggestions; and citizen oversight included access to information, monitoring, outcome evaluation, and accountability. This distinction enables information access and involvement in decision-making to be investigated separately, without assuming that both processes occur to the same extent.

The second variable was labelled "eating habits" in the data collection instruments and comprised two components: food service and education. The former elicited parental views on food quantity, variety, perceived quality, nutritional value, delivery conditions, and satisfaction with the service. The latter captured responses concerning training to encourage healthy practices, technical assistance, and perceived energy levels and school performance. Given these indicators, the variable is interpreted in this article as a parental perception scale addressing the school feeding service and its educational component; it is not a direct measure of dietary frequency, food intake, or nutritional status.

The relationship between school feeding and family practices has been investigated using different study designs. Marconi et al. (2022) examined nutrition training among primary school teachers, while Kendel Jovanović et al. (2023) evaluated an educational and lifestyle intervention among Croatian schoolchildren. At the family level, Oliveira et al. (2024) investigated associations between the frequency of shared meals and dietary variables among Brazilian schoolchildren and their caregivers. Song et al. (2024) synthesised evidence on the nutritional composition of packed lunches brought to school from home. These studies distinguish meals supplied through school services, family food choices, and nutrition education processes, each of which requires specific measures.

Peruvian evidence distinguishes programme coverage and nutritional outcomes from the organisation of institutional processes. Cherres-Bernal et al. (2024) assessed coverage using population-level data, whereas Francke and Acosta (2021) analysed nutritional indicators among children aged 3–5 years. In Colombia, Téllez Navarro et al. (2023) examined the School Feeding Programme from a child rights perspective, providing a normative reference for the responsibilities of service providers. The present analysis in Tarapoto focuses on parents' experiences of participation and their perceptions of the food service and educational components, rather than clinical effects or the legal evaluation of policy.

Assessing sustainability requires distinguishing programme design, adoption, implementation, and continuity. Åhlfeldt et al. (2023) examined factors influencing the persistence of a social services programme, while Mainje et al. (2024) reviewed conditions supporting the sustainability of African school feeding initiatives, including community participation and resource coordination. Palmer et al. (2024) reviewed changes to policies, systems, and environments in child nutrition programmes, using indicators related to consumption and waste. Ahmed et al. (2024) documented organisational adaptations in Canadian school food programmes during the pandemic. Engler-Stringer et al. (2021) also presented a longitudinal protocol integrating school curriculum and lunch provision. These studies help distinguish the initial appraisal of a proposal, its institutional implementation, and the subsequent measurement of outcomes.

2. MATERIALS AND METHODS

2.1. Study design and setting

An applied, quantitative, non-experimental, cross-sectional study with a descriptive and proposal-oriented design was conducted. The empirical phase involved surveys administered in 2025 to parents of children receiving a school feeding service at an early childhood education institution in Tarapoto, Peru. The findings informed the development of a participatory

management model, which was subsequently appraised by experts. There was no group allocation, experimental intervention, or post-implementation assessment of the model.

2.2. Participants and selection

The sampling frame recorded in the institution's SIAGIE system comprised 147 parents of children enrolled in classrooms for ages 3, 4, and 5 years who received the school feeding service. A census approach was used, including all 147 parents in the recorded population. Eligibility required being the mother or father of a beneficiary enrolled in one of these classrooms and agreeing to participate voluntarily; families not enrolled in the programme or not providing consent were excluded. The unit of analysis was the parent, not the child. No random selection was conducted, and no additional records of invitations, refusals, or incomplete questionnaires were available to reconstruct participant flow.

2.3. Instruments and measurement properties

Two questionnaires developed for the study were administered, each comprising 16 items with five response options: never (1), almost never (2), sometimes (3), almost always (4), and always (5). The participatory management questionnaire drew on the Ministry of Education's CONEI framework, with items covering participation (5), consensus-building (5), and citizen oversight (6). The instrument labelled "eating habits" was developed on the basis of MIDIS service components and covered food service (10 items) and education (6 items). For both scales, possible total scores ranged from 16 to 80. The specified cut-offs were low (16–37), moderate (38–58), and high (59–80), forming three intervals of similar width. These cut-offs were used to describe perceptions and are not presented as clinical thresholds or normative standards for food consumption.

Content validity was assessed through expert judgement. Aiken's V values exceeded 0.90, and an overall index of 0.96 was reported. Reliability was estimated in a pilot study involving 30 individuals who were not included in the main sample. Cronbach's alpha was 0.813 for participatory management and 0.808 for the instrument labelled "eating habits".

2.4. Procedure and data analysis

Following institutional authorisation, the questionnaires were administered in person during 2025, taking approximately 20 minutes to complete. Data were organised in Excel and analysed using SPSS version 25. Absolute frequencies and percentages were calculated for the response categories and predefined levels.

2.5. Proposal development and expert appraisal

The proposal was developed from the findings for participation, consensus-building, and citizen oversight, together with the food service and educational components. Actions, responsible stakeholders, and monitoring criteria were specified. The appraisal matrix involved five experts and nine criteria, each with a maximum score of 9 per expert. The maximum possible total was 405 points (5 experts × 9 criteria × 9 points), compared with an observed total of 396. The aggregated scores for individual criteria were 45, 45, 44, 44, 44, 45, 44, 43, and 42; their mean was 44 out of 45, or 97.8% of the maximum. This score summarised appraisal of the proposed design rather than measured nutritional or behavioural effects.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Overall distribution of scale ratings

The results comprised 147 questionnaires for each variable. Moderate ratings predominated on both scales. The overall distributions are presented together in Table 1 to facilitate descriptive comparison without implying a statistical association between the variables.

Moderate ratings accounted for 59.2% of participatory management scores and 62.6% of scores on the scale labelled "eating habits". These percentages reflect categories constructed from parental questionnaire responses. They neither establish a statistical relationship between the two scales nor, on their own, describe children's dietary behaviour.

Table 1. Distribution of ratings across the assessed variables (n = 147)

Variable	Low n (%)	Moderate n (%)	High n (%)
Participatory management	13 (8.8)	87 (59.2)	47 (32.0)
Assessed components of the "eating habits" scale	13 (8.8)	92 (62.6)	42 (28.6)

Source: compiled from the study data.

3.1.2. Indicators of family experiences

The item-level distributions identified specific aspects of parents' experiences. Table 2 summarises indicators directly related to participation, consensus-building, oversight, and educational support.

Responses differed between perceived access to information and family involvement in decision-making and monitoring. Although 45.6% stated that transparent information was always provided, 27.2% reported that activities were monitored only sometimes, and 26.5% gave the same response regarding family evaluation of programme outcomes. Within the educational component, 41 participants reported receiving no training, and 52 reported receiving no technical assistance with food preparation.

Table 2. Selected indicators of family experiences with the programme

Dimension	Indicator assessed	Response	n (%)
Participation	A culture of dialogue with teachers is promoted	Always	54 (36.7)
Participation	Family views are considered in decisions	Sometimes	46 (31.3)
Consensus-building	Agreements with parents are fulfilled	Always	56 (38.1)
Citizen oversight	Transparent information is provided	Always	67 (45.6)
Citizen oversight	Activities are monitored	Sometimes	40 (27.2)
Citizen oversight	Parents evaluate programme outcomes	Sometimes	39 (26.5)
Food service component	The variety of foods provided is adequate	Almost always	50 (34.0)
Food service component	Food quality meets nutritional requirements	Sometimes	46 (31.3)
Educational component	Received training in healthy eating habits	Never	41 (27.9)
Educational component	Received technical assistance with food preparation	Never	52 (35.4)

Source: compiled from the study data.

3.1.3. Management proposal and expert appraisal

These findings informed the development of a model linking identified needs to proposed mechanisms for action. Table 3 outlines the model components; the associated outputs are stated as expected outcomes rather than empirically observed changes.

Table 3. Components and actions of the participatory management model

Component	Planned actions	Outcome to be evaluated
Participation and coordination	Quarterly assemblies and committees; institutional communication channel	Family attendance and documented involvement in decisions
Consensus-building and planning	Management agreements and integration of nutrition content into institutional planning	Fulfilment of agreements and activities incorporated into the annual plan
Nutrition education	Workshops involving parents, teachers, and students; capacity-building for the committee	Training coverage and knowledge acquired
Citizen oversight and monitoring	Participatory monitoring; public accountability and periodic monitoring forms	Regularity of supervision, transparency, and comparable data over time
Territorial coordination	Coordination with local producers and awareness-raising activities	Records of agreements and characteristics of food provision

Source: compiled from the study data.

Five experts assessed the proposal against nine criteria. The combined score was 396 out of a possible 405 points (97.8%). The mean aggregated score per criterion was 44 out of a maximum of 45; this represents the sum of ratings across all five experts, not an individual expert's score. Table 4 presents the calculation underlying the model appraisal without attributing effects to an implementation that was not evaluated.

Table 4. Summary of the proposal's expert appraisal

Appraisal indicator	Recorded result
Number of experts	5
Criteria assessed	9
Total score across nine criteria	396 out of 405
Mean score per criterion (sum across five experts)	44 out of 45
Percentage of maximum possible score	97.8%

Source: compiled from the study data.

3.2. Discussion

The assessment found that moderate ratings predominated on both parental perception scales and that experts awarded the management proposal 396 out of 405 points (97.8%). These findings describe perceived coordination, monitoring, and nutrition education practices within the institution. They do not demonstrate a statistical effect of participation on responses concerning the feeding service or indicate that the proposed model produced changes among students.

The coexistence of positive responses concerning transparency with less consistent reports of monitoring and evaluation highlights a distinction between access to information and participation in decision-making. Arnstein (1969) distinguished levels of effective influence in participatory processes, while Ansell and Gash (2008) identified the roles of institutional arrangements,

dialogue, and collaboration. At the institution studied, "sometimes" responses concerning the consideration of parental opinions and monitoring refer to specific mechanisms that could be documented. In an implementation evaluation, Randby et al. (2024) identified the importance of organisational compliance and school staff participation; assessing the applicability of that finding in Peru would require direct measurement of implementation.

The findings can also be considered in relation to school leadership practices. Buthelezi and Ajani (2022) described management conditions that constrain or promote participation in South African schools, whereas Montecinos et al. (2024) distinguished leadership approaches involving varying degrees of distributed responsibility. Although the educational settings and research designs of those studies differ from the present investigation, they provide a basis for understanding why formalising meetings, agreements, and responsibilities constitutes a separate dimension from individuals' willingness to collaborate. The Tarapoto assessment documented responses concerning institutional mechanisms but did not verify meeting minutes, actual frequency, or consequences for decision-making.

Within the educational component, some respondents reported receiving no training or technical assistance. These responses describe the support perceived by families rather than students' nutritional status. Kostecka (2022) examined food education among children aged 3–6 years and their families, while Marconi et al. (2022) and Laitinen et al. (2022) investigated teacher training and food education in school settings. The review by Abderbwih et al. (2022) considered parental outcomes of school-based nutrition interventions; Xu et al. (2024) examined parental food education and children's food literacy. In Brazil, Oliveira et al. (2024) investigated associations between family meals and dietary practices. These studies involve different mechanisms and measures, so drawing on them to design a proposal does not establish behavioural changes in Tarapoto.

Intervention studies and school feeding programme reviews help identify outcomes for subsequent evaluation. Raut et al. (2024) and Kendel Jovanović et al. (2023) included measures of knowledge, attitudes, and dietary characteristics, while Liao et al. (2025) evaluated an intervention involving food provision. Raveenthiranathan et al. (2024) synthesised findings on free school lunches in India, and Spill et al. (2024) examined universal school meal programmes in the United States; both reviews distinguished educational from nutritional outcomes. Unlike these designs, the Tarapoto study included no pre- and post-intervention measurements, comparison group, or observed food consumption variables. The reported 97.8% therefore summarises experts' appraisal of the proposal's design, not the magnitude of any dietary effect.

The school management findings must also be considered alongside conditions in the school food environment. Hugues et al. (2021) identified gaps in the implementation of guidelines in Mexico. Liguori, Amevinya, et al. (2024) documented food provision and dietary diversity in Ghana, while Liguori, Osei-Kwasi, et al. (2024) synthesised challenges involving coordination, infrastructure, and community participation across African programmes. Reviews by Grigsby-Duffy et al. (2022), Durão et al. (2024), and Matela et al. (2024) examined policies, school food environments, and guideline adherence, whereas Carducci et al. (2025) identified barriers to and facilitators of implementation in Canada. Goldsmith Weil and Olivares G. (2023) analysed the reorganisation of a Chilean feeding service. The Tarapoto proposal brings together information provision, agreements, monitoring, and education as distinct components, each with its own implementation indicators.

National research allows distinctions to be drawn between food policy outcomes and perceptions of school management. Using population-level data, Cherres-Bernal et al. (2024) examined programme coverage and beneficiary characteristics, while Francke and Acosta (2021) assessed anaemia and chronic malnutrition using an analytical design different from that employed in Tarapoto. Their indicators are not equivalent to those used in the present assessment, which focused on parents' responses concerning participation and service delivery. Although this methodological difference precludes direct comparison of estimates, it indicates a need to combine institutional monitoring with measures of food consumption or nutritional outcomes in future evaluations. At the regional level, Irizarry et al. (2025) examined the integration of food, health, and education, while the FAO et al. (2023) regional overview provides context on access to healthy diets.

Expert appraisal describes the degree of consistency attributed to the proposed design before implementation but provides no evidence of sustainability or effectiveness. Åhlfeldt et al. (2023) examined factors associated with the continuation of social programmes, and Mainje et al. (2024) reviewed determinants of continuity in school feeding programmes, including community organisation and institutional resources. Palmer et al. (2024) reviewed strategies for operational change in child nutrition services, and Ahmed et al. (2024) documented how school programmes adapted during disruptions to regular operations. The protocol developed by Engler-Stringer et al. (2021) also incorporated measurements at multiple time points. A subsequent

evaluation in Tarapoto should document coverage, activity completion, verifiable participation, and dietary variables independently of expert ratings.

The second scale captured parental perceptions of food quantity, variety, service quality, support received, and perceived changes in energy levels or school performance. Its content describes experiences related to food provision and the educational component but does not measure dietary frequency or food intake among children. Song et al. (2024) directly examined the composition of lunches supplied by families, illustrating the distinction between assessing the characteristics of food and collecting opinions about a service. Similarly, the absence of joint analyses of the two scales precludes determining whether higher management scores were accompanied by higher scores on the second scale among the same respondents.

Overall, the empirical contribution consists of a census-based assessment of parental perceptions and the specification of management actions derived from identified needs. The proposal provides a structure for moving from descriptive categories to indicators of action and evaluation. The next methodological step is to establish its operational feasibility and assess its outcomes under implementation conditions, distinguishing administrative outputs from educational and dietary changes.

4. CONCLUSION

Participatory management of the school feeding programme at the institution studied was rated at a moderate level by 59.2% of the parents surveyed. The scale addressing food service and educational components showed a similar distribution, with 62.6% of responses in the moderate category. These figures describe family perceptions in 2025 and do not establish a statistical relationship between the variables or permit estimates of changes in students' nutritional status.

Item-level findings distinguished institutional information practices from mechanisms for participation in decision-making, monitoring, and evaluation. A proportion of families also reported receiving no training or technical assistance related to healthy eating. In response to these needs, a proposal was developed that integrates family participation, consensus-building, citizen oversight, and nutrition education into procedures and monitoring indicators.

The combined assessment by five experts yielded 396 out of 405 possible points (97.8%), equivalent to a mean aggregated score of 44 out of 45 points per criterion. This represents a technical appraisal of the design's structure and relevance, not an estimate of the model's effectiveness. The result identifies a proposed intervention that can be monitored and evaluated subsequently.

4.1. Limitations

The study was restricted to a single educational institution and a cross-sectional assessment in 2025. The findings represent parental perceptions rather than direct measurements of food consumption, dietary quality, or children's nutritional status; the relationship between the two scales was not statistically tested. The cut-off scores defined descriptive categories, and the reliability coefficients were obtained from a 30-person pilot study without further examination of internal structure. Neither the eligibility process nor the refusal rate was documented. Expert appraisal was limited to design criteria and did not constitute a test of feasibility, implementation, or effectiveness.

4.2. Future research

The proposal specifies procedures for family participation, consensus-building, oversight, and nutrition education, with designated responsibilities and verifiable indicators. During future implementation, monitoring could include meeting minutes, attendance, fulfilment of agreements, frequency of training activities, and meal acceptance. In their Canadian review, Carducci et al. (2025) identified community participation, operational capacity, and continuity of leadership as implementation factors warranting assessment. These indicators concern institutional processes and should be distinguished from outcomes relating to food consumption and nutritional status.

Future studies could use longitudinal or quasi-experimental designs with pre- and post-implementation measurements, include comparable institutions, and collect separate measures of administrative performance, nutrition knowledge, food selection, and consumption. Further research could also examine the scales' internal structure and the alignment between their components and the constructs defined. Reviews by Spill et al. (2024) and Durão et al. (2024) show that comparisons between programmes require clearly specified interventions and outcomes. Combining institutional records, observations of distributed foods, and surveys would make it possible to compare family perceptions with practices observed in the programme.

5. DECLARATIONS

5.1. Ethics approval and informed consent

Participation was voluntary and based on informed consent. Procedures included explaining the study objectives, maintaining the confidentiality of information, and treating participants equitably. Informed consent forms and institutional authorisation to use the information were available as study appendices. No research ethics committee approval number was reported; accordingly, no undocumented institutional ethics approval is claimed.

5.2. Use of artificial intelligence

ChatGPT (OpenAI) was used to support adaptation of the manuscript to the journal template, reorganisation of sections, and linguistic editing. This assistance did not generate data or alter the original measurements, statistical results, or conclusions. The author retains full responsibility for reviewing and approving the final manuscript.

5.3. Conflict of interest

The author declares no conflicts of interest.

5.4. Funding

The study was funded through the author's own resources, with no external funding reported.

5.5. Data availability

Aggregated distributions and the appraisal criteria are reported in this article.

5.6. Author contributions

[The sole listed author should confirm specific contributions to conception, design, data collection, analysis, writing, and manuscript approval.]

5.7. Acknowledgements

[To be completed by the author, if applicable.]

REFERENCES

[1] Abderbwih, E., Mahanani, M. R., Deckert, A., Antia, K., Agbaria, N., Dambach, P., Kohler, S., Horstick, O., Winkler, V., and Wendt, A. S., 2022. The impact of school-based nutrition interventions on parents and other family members: A systematic literature review. Nutrients, 14(12), 2399. https://doi.org/10.3390/nu14122399

[2] Åhlfeldt, E., Isaksson, D., and Winblad, U., 2023. Factors explaining program sustainability: A study of the implementation of a social services program in Sweden. Health & Social Care in the Community, 2023, Article 1458305. https://doi.org/10.1155/2023/1458305

[3] Ahmed, M., Richardson, A., Riad, J., McPherson, C., Sellen, D. W., and Malik, V. S., 2024. Impact of the COVID-19 pandemic on the adaptability and resiliency of school food programs across Canada. Frontiers in Public Health, 11, Article 1296620. https://doi.org/10.3389/fpubh.2023.1296620

[4] Ansell, C., and Gash, A., 2008. Collaborative governance in theory and practice. Journal of Public Administration Research and Theory, 18(4), 543–571. https://doi.org/10.1093/jopart/mum032

[5] Arnstein, S. R., 1969. A ladder of citizen participation. Journal of the American Institute of Planners, 35(4), 216–224. https://doi.org/10.1080/01944366908977225

[6] Buthelezi, A. B., and Ajani, O. A., 2022. Enhancing participative management practices among secondary schools in patriarchal South Africa. Journal of Educational and Social Research, 12(5), 172. https://doi.org/10.36941/jesr-2022-0132

[7] Carducci, B., Dominguez, G., Kidd, E., Oh, C., Jain, R., Khan, A., and Bhutta, Z. A., 2025. Promoting healthy school food environments and nutrition in Canada: A systematic review of interventions, policies, and programs. Nutrition Reviews, 83(2), e356–e391. https://doi.org/10.1093/nutrit/nuae030

[8] Cherres-Bernal, A. L., Rodríguez-Massa, P., and Romaní-Romaní, F., 2024. Cobertura de los programas Vaso de Leche y Qali Warma en niños menores de 5 años y sus factores asociados. Horizonte Médico (Lima), 24(4), e2627. https://doi.org/10.24265/horizmed.2024.v24n4.13

[9] Durão, S., Wilkinson, M., Davids, E. L., Gerritsen, A., and Kredo, T., 2024. Effects of policies or interventions that influence the school food environment on children's health and nonhealth outcomes: A systematic review. Nutrition Reviews, 82(3), 332–360. https://doi.org/10.1093/nutrit/nuad059

[10] Engler-Stringer, R., Black, J., Muhajarine, N., Martin, W., Gilliland, J., McVittie, J., Kirk, S., Wittman, H., Mousavi, A., Elliott, S., Tu, S., Hills, B., Androsoff, G., Field, D., Macdonald, B., Belt, C., and Vatanparast, H., 2021. The Good Food for Learning universal curriculum-integrated healthy school lunch intervention: Protocol for a two-year matched control pre-post and case study. JMIR Research Protocols, 10(9), e30899. https://doi.org/10.2196/30899

[11] FAO, FIDA, OPS, PMA, and UNICEF., 2023. América Latina y el Caribe: Panorama regional de la seguridad alimentaria y la nutrición 2023. https://doi.org/10.4060/cc8514es

[12] Francke, P., and Acosta, G., 2021. Impacto del programa de alimentación escolar Qali Warma sobre la anemia y la desnutrición crónica infantil. Apuntes, 48(88), 151–190. https://doi.org/10.21678/apuntes.88.1228

[13] Goldsmith Weil, J., and Olivares G., F., 2023. Programa de Alimentación Escolar en pandemia: Chile 2020, aprendizajes para un proceso constituyente. RIVAR, 10(28), 142–159. https://doi.org/10.35588/rivar.v10i28.5404

[14] Grigsby-Duffy, L., Brooks, R., Boelsen-Robinson, T., Blake, M. R., Backholer, K., Palermo, C., and Peeters, A., 2022. The impact of primary school nutrition policy on the school food environment: A systematic review. Health Promotion International, 37(5), daac084. https://doi.org/10.1093/heapro/daac084

[15] Hugues, Y., Díaz-Zavala, R. G., Quizán-Plata, T., Corvalán, C., and Haby, M. M., 2021. Poor compliance with school food environment guidelines in elementary schools in Northwest Mexico: A cross-sectional study. PLOS ONE, 16(11), e0259720. https://doi.org/10.1371/journal.pone.0259720

[16] Irizarry, L. M., Tamagnan, M. E., Mejía, C., Kessler, H., Kohnstamm, S. G., and Baldi, G., 2025. Integrated health and nutrition approaches to school feeding: Maximising future human capital in Latin America and the Caribbean. Frontiers in Public Health, 12, Article 1415172. https://doi.org/10.3389/fpubh.2024.1415172

[17] Kendel Jovanović, G., Janković, S., and Pavičić Žeželj, S., 2023. The effect of nutritional and lifestyle education intervention program on nutrition knowledge, diet quality, lifestyle, and nutritional status of Croatian school children. Frontiers in Sustainable Food Systems, 7, Article 1019849. https://doi.org/10.3389/fsufs.2023.1019849

[18] Kostecka, M., 2022. The effect of the "Colorful Eating Is Healthy Eating" long-term nutrition education program for 3- to 6-year-olds on eating habits in the family and parental nutrition knowledge. International Journal of Environmental Research and Public Health, 19(4), 1981. https://doi.org/10.3390/ijerph19041981

[19] Laitinen, A. L., Antikainen, A., Mikkonen, S., Kähkönen, K., Talvia, S., Varjonen, S., Paavola, S., Karhunen, L., and Tilles-Tirkkonen, T., 2022. Implementation of food education in school environments improves pupils' eating patterns and social participation in school dining. Public Health Nutrition, 25(12), 3548–3558. https://doi.org/10.1017/S1368980022002154

[20] Liao, S.-F., Tseng, H.-M., Chen, J.-D., Chen, C.-M., and Li, S.-C., 2025. A pilot evaluation of a school-based nutrition education program with provision of fruits and vegetables to improve consumption among school-age children in Palau. Nutrients, 17(6), 994. https://doi.org/10.3390/nu17060994

[21] Liguori, J., Amevinya, G. S., Holdsworth, M., Savy, M., and Laar, A., 2024. Nutritional quality and diversity in Ghana's school feeding programme: A mixed-methods exploration through caterer interviews in the Greater Accra Region. BMC Nutrition, 10, Article 127. https://doi.org/10.1186/s40795-024-00936-9

[22] Liguori, J., Osei-Kwasi, H. A., Savy, M., Nanema, S., Laar, A., and Holdsworth, M., 2024. How do publicly procured school meals programmes in sub-Saharan Africa improve nutritional outcomes for children and adolescents: A mixed-methods systematic review. Public Health Nutrition, 27(1), e213. https://doi.org/10.1017/S1368980024001939

[23] Mainje, M., Matumba, L., Harvey, J. J. W., Phiri, H., Gama, A. P., Phiri, A., Phangaphanga, I., Chizimba, R., Wamey, B., Gallagher, P., Rutto, E., and Leslie, J. F., 2024. Long-term sustainability of African school feeding programs, a review. Frontiers in Sustainable Food Systems, 8, Article 1424354. https://doi.org/10.3389/fsufs.2024.1424354

[24] Marconi, S., Vezzoli, M., Locatelli, M., Bertolotti, P., Zanini, B., and Valerio, A., 2022. The role of primary school teachers' nutrition training in healthy eating promotion. Health Education Journal, 81(5), 554–572. https://doi.org/10.1177/00178969221093714

[25] Matela, H., Yadav, S. S., and Menon, K., 2024. Robust implementation of school food policy is needed to improve nutritional outcomes of children in European and Western Pacific countries: A systematic review. Nutrition, 122, Article 112373. https://doi.org/10.1016/j.nut.2024.112373

[26] Montecinos, C., Cortez, M., Zoro, B., and Zett, I., 2024. Senior leaders' theories of action for managing subject departments as a school improvement strategy. Educational Management Administration & Leadership, 52(3), 520–540. https://doi.org/10.1177/17411432221089200

[27] Oliveira, G. A. L., Buccini, G., Gonçalves, V. S. S., Gubert, M. B., and Toral, N., 2024. Regular family meals associated with nutritional status, food consumption, and sedentary and eating behaviors of Brazilian schoolchildren and their caregivers. Foods, 13(23), 3975. https://doi.org/10.3390/foods13233975

[28] Palmer, S., Burton-Obanla, A., Goon, S., Allison, T., Mitchell, A., Bogdonas, K., Fombelle, M., Hoffman, A., Smith, J., McCaffrey, J., and Prescott, M. P., 2024. Policy, systems, and environmental changes in child nutrition programs: A systematic literature review. Advances in Nutrition, 15(1), 100116. https://doi.org/10.1016/j.advnut.2023.09.004

[29] Randby, J. S., Ogden, T., and Lien, N., 2024. Implementation and effectiveness of a school-based intervention to increase adherence to national school meal guidelines: A non-randomised controlled trial. Public Health Nutrition, 27(1), e25. https://doi.org/10.1017/S1368980023002938

[30] Raut, S., KC, D., Singh, D. R., Dhungana, R. R., Pradhan, P. M. S., and Sunuwar, D. R., 2024. Effect of nutrition education intervention on nutrition knowledge, attitude, and diet quality among school-going adolescents: A quasi-experimental study. BMC Nutrition, 10, Article 35. https://doi.org/10.1186/s40795-024-00850-0

[31] Raveenthiranathan, L., Ramanarayanan, V., and Thankappan, K. R., 2024. Impact of free school lunch program on nutritional status and academic outcomes among school children in India: A systematic review. BMJ Open, 14(7), e080100. https://doi.org/10.1136/bmjopen-2023-080100

[32] Song, S., Tabares, E., Ishdorj, A., Crews, M., and Dave, J., 2024. The quality of lunches brought from home to school: A systematic review and meta-analysis. Advances in Nutrition, 15(8), 100255. https://doi.org/10.1016/j.advnut.2024.100255

[33] Spill, M. K., Trivedi, R., Thoerig, R. C., Balalian, A. A., Schwartz, M. B., Gundersen, C., Odoms-Young, A., Racine, E. F., Foster, M. J., Davis, J. S., and MacFarlane, A. J., 2024. Universal free school meals and school and student outcomes: A systematic review. JAMA Network Open, 7(8), e2424082. https://doi.org/10.1001/jamanetworkopen.2024.24082

[34] Téllez Navarro, R. F., Jiménez Rodríguez, N. P., and Amaya Navas, C. H., 2023. El Programa de Alimentación Escolar y los derechos fundamentales de los niños. Via Inveniendi Et Iudicandi, 18(2), 9–23. https://doi.org/10.15332/19090528.9727

[35] Xu, X., Cai, H., Zhang, J., and Xia, T., 2024. The effects of parental food education on children's food literacy: The mediating role of parent–child relationship and learning motivation. Nutrients, 16(15), 2564. https://doi.org/10.3390/nu16152564