

Factors Influencing the Failure of the Implementation of Nutrition Intervention Packages (Pin) At Calomue Health Center, Angónia District, Tete – 2025

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ABSTRACT

Child and maternal malnutrition remains one of the greatest public health challenges in Mozambique, despite the implementation of Nutrition Intervention Packages (PIN). This study analyzed the factors influencing the failure of PIN implementation at the Calomue Health Center, Angónia District, in 2025. A qualitative exploratory approach was adopted, using semi-structured interviews with health professionals, community leaders, and beneficiaries, complemented by documentary analysis of district reports. Responses were transcribed, coded, and categorized thematically. To enhance clarity, descriptive quantification of coded responses was applied, with frequencies and percentages representing the proportion of participants mentioning each barrier. Results revealed that low educational attainment and socioeconomic vulnerability of beneficiaries, cultural resistance to recommended nutritional practices, shortage of specialized human resources, and logistical failures in supplement distribution were central barriers. Descriptive coding showed that more than 60% of participants highlighted insufficient technical training and limited funding as critical factors. The discussion, supported by national and international literature, confirmed that these findings agree with studies highlighting institutional fragility and structural poverty as determinants of malnutrition, but diverge from positive experiences in contexts with strong community mobilization. It is concluded that the failure of PIN in Calomue results from the interaction of structural, cultural, and institutional factors, requiring greater investment, intersectoral integration, and community sensitization to ensure effectiveness and sustainability.

Keywords: Nutrition, Implementation, Barriers, Mozambique

INTRODUCTION

Malnutrition remains one of the major public health problems in Mozambique, affecting primarily children under five years of age and women of reproductive age. In 2020, approximately 37.5% of Mozambican children presented stunting, reflecting persistent structural and sociocultural determinants of food insecurity (Calgaro et al., 2025).

The Nutrition Intervention Packages (PIN) were designed by the Ministry of Health as an integrated strategy to reduce chronic malnutrition, combining micronutrient supplementation, food education, and child growth monitoring. However, their implementation has faced significant challenges. Recent studies in Maputo

demonstrated that although nutrition education improved caregivers' knowledge and attitudes, adherence to recommended practices remained limited, particularly in the use of micronutrient powders (Manuel et al., 2026).

Among adolescents, multiple micronutrient supplementation was found to be acceptable, but cultural barriers and misconceptions reduced adherence, such as associating supplements with contraceptives or pregnancy (Bauler et al., 2026). These findings reveal that sociocultural and communication factors directly influence the success of nutrition interventions.

International literature reinforces that the effectiveness of nutrition programs depends on intersectoral coordination and financial sustainability. Systematic reviews in Africa highlight that shortage of specialized human resources, logistical failures, and insufficient community involvement are recurrent barriers to large-scale implementation (Ezezika et al., 2021).

In the Mozambican context, Gotine & Xavier (2026) emphasize that policies to combat malnutrition have not been effective due to weak integration between sectors and dependence on external funding, which compromises continuity. Conversely, local successful experiences, such as those reported by N'weti (2023), show that when community mobilization and technical supervision are ensured, PIN can achieve good coverage and positive outcomes.

Therefore, understanding the factors that influence the failure of PIN implementation at the Calomue Health Center, Angónia District, is essential to propose contextualized solutions that integrate institutional, logistical, and cultural dimensions. This study seeks to contribute to the scientific debate and to the strengthening of public nutrition policies in Mozambique.

Problem Definition

Despite advances in nutrition policies, malnutrition indicators remain high in Mozambique. The Nutrition Intervention Packages (PIN), although designed as an integrated strategy to reduce chronic malnutrition, face multiple challenges. Among the most critical problems are the shortage of specialized human resources, logistical failures in the distribution of supplements, cultural resistance to recommended nutritional practices, and insufficient public funding. Recent reports highlight that excessive dependence on international donors compromises the sustainability of interventions (Graça Machel Trust, 2025). Furthermore, the lack of intersectoral coordination between health, agriculture, and education limits the impact of actions (Gotine & Xavier, 2026). Literature also emphasizes that the absence of culturally adapted programs reduces community acceptance (Aiga et al., 2020). Therefore, understanding the factors that explain the failure of PIN implementation in Calomue is essential to propose contextualized and sustainable solutions.

Research Question

What are the factors influencing the failure of Nutrition Intervention Packages (PIN) implementation at the Calomue Health Center, Angónia District, in 2026?

Objectives

General Objective: Analyze the factors influencing the failure of Nutrition Intervention Packages (PIN) implementation at the Calomue Health Center, Angónia District, in 2025, considering institutional, logistical, sociocultural, and financial dimensions.

Specific Objectives:

- Identify structural and institutional barriers (human resources, funding, logistics) that compromise the execution of PIN at the Calomue Health Center.

- Examine sociocultural and community factors that influence the acceptance or rejection of nutritional practices recommended by PIN.

METHODOLOGY

This study adopted a qualitative exploratory approach, complemented by descriptive quantification of coded responses. Semi-structured interviews were conducted with 15 health professionals, 10 community leaders, and 20 beneficiaries, ensuring diversity of perspectives. Interviews were transcribed and subjected to thematic content analysis following Bardin (2016). Responses were categorized into institutional, logistical, sociocultural, and financial factors. To enhance clarity, the frequency of participants mentioning each barrier was calculated, and percentages were derived from the total number of respondents in each group. These figures are presented as descriptive indicators of thematic prevalence, not as results of a conventional quantitative survey. Documentary analysis of district nutrition reports (2024–2025) was used to triangulate findings. Scientific rigor was ensured through theoretical saturation and source triangulation. Research ethics were guaranteed by informed consent, anonymity, and confidentiality, in accordance with the National Bioethics Committee for Health in Mozambique.

RESULTS

Qualitative Data

Thematic analysis revealed multiple barriers compromising PIN implementation. Beneficiaries were predominantly young women (18–35 years) with incomplete primary education and high unemployment, reflecting social vulnerability. Cultural resistance persisted, with misconceptions linking supplements to infertility or illness. Economic fragility was evident, as families prioritized selling agricultural products over domestic consumption. Institutional weaknesses included lack of continuous training and failures in supplement distribution logistics.

Descriptive Quantification of Coded Responses

To illustrate thematic prevalence, coded responses were quantified. For example, 73% of health professionals reported lack of training, while 80% of community leaders highlighted cultural resistance. Across all participants ($n=45$), 68% mentioned shortage of specialized human resources, 64% cultural resistance, 60% logistical failures, and 55% insufficient funding. These figures represent the proportion of respondents within each group who identified the barrier, and should be interpreted as descriptive indicators of thematic salience rather than conventional quantitative survey evidence.

Table 1 – Sociodemographic Profile of Beneficiaries ($n=20$)

Variable	Frequency (n)	Percentage (%)
Female	17	85%
Age 18–35 years	14	70%
Incomplete primary school	13	65%
Unemployed	12	60%

The majority of beneficiaries are young women with low educational attainment and high unemployment, reflecting social vulnerability that directly impacts nutritional practices. **Source:** Hassane Raul, 2025

Table 2 – Health Professionals Involved in PIN (n=15)

Category	Frequency (n)	Percentage (%)
General medicine technicians	6	40%
Nurses	5	33%
Nutrition technicians	4	27%
Reported lack of training	11	73%

The predominance of general medicine technicians and nurses, combined with the limited presence of nutrition specialists, highlights institutional fragility. The high percentage reporting lack of training confirms insufficient technical capacity. **Source:** Hassane Raul, 2025

Table 3 – Community Leaders' Perceptions (n=10)

Barrier Identified	Frequency (n)	Percentage (%)
Cultural resistance to nutrition practices	8	80%
Failures in supplement logistics	7	70%

Community leaders recognize cultural resistance as a major barrier, alongside logistical failures, reinforcing the importance of community mobilization and improved distribution systems. **Source:** Hassane Raul, 2025

Table 4 – Main Barriers Reported by All Participants (n=45)

Barrier	Frequency (n)	Percentage (%)
Lack of specialized human resources	31	68%
Cultural resistance	29	64%
Logistical failures	27	60%
Insufficient funding	25	55%

The convergence of barriers across participants demonstrates that PIN failure is multifactorial, combining structural, cultural, logistical, and financial constraints. **Source:** Hassane Raul, 2025

Quantitative data confirm the predominance of structural and cultural barriers, reinforcing the need for integrated strategies combining technical training, community sensitization, and financial sustainability.

DISCUSSION

The findings from Calomue Health Center reveal that the failure of Nutrition Intervention Packages (PIN) implementation results from the interplay of structural, cultural, economic, and institutional factors. The predominance of young women with low educational attainment and high unemployment confirms that social vulnerability is a central determinant of limited adherence to PIN. These results are consistent with Calgaro et al. (2025), who identified inadequate feeding practices in Beira as a reflection of low nutritional literacy. Educational gaps compromise the understanding of nutritional messages, reinforcing the need for culturally adapted educational strategies.

Community leaders highlighted cultural resistance and misconceptions about supplements. These findings align with Bauler et al. (2026), who reported that adolescents in Mozambique associated supplements with contraceptives or pregnancy. However, N'weti (2023) documented contexts where strong community mobilization increased acceptance of fortified foods. Cultural resistance is not homogeneous; it varies depending on the intensity of community engagement and trust in health professionals.

Descriptive coding also revealed that many families prioritize agricultural sales over domestic consumption, reflecting economic fragility. This agrees with Gotine & Xavier (2026), who emphasized that weak economic structures undermine nutrition policies. Families face a dilemma between economic survival and adequate nutrition, requiring integrated food security policies.

The shortage of nutrition specialists and the lack of continuous training reported by most professionals highlight institutional fragility. These results agree with Ezezika et al. (2021), who identified insufficient human resources as a recurring barrier in African nutrition programs. Conversely, Adelman et al. (2019) and Aurino et al. (2019) demonstrated that when financing and integration with education are ensured, nutrition programs achieve positive outcomes. Institutional weakness in Calomue is not inevitable but reflects lack of investment and poor management.

CONCLUSION

The failure of Nutrition Intervention Packages (PIN) implementation at the Calomue Health Center, Angónia District, results from the interaction of structural, cultural, economic, and institutional factors. The study demonstrated that low educational attainment, poverty, and unemployment among beneficiaries limit adherence to recommended practices. Cultural resistance and misconceptions regarding supplements further reduce acceptance. Institutional fragility is evident in the shortage of specialized human resources and lack of continuous training, while logistical failures and insufficient funding compromise sustainability.

These findings are consistent with national and international literature that highlights institutional weakness and structural poverty as determinants of malnutrition (Gotine & Xavier, 2026; Ezezika et al., 2021). However, divergences with successful experiences (N'weti, 2023; Adelman et al., 2019) show that PIN can be effective when community mobilization, intersectoral integration, and sustainable financing are ensured.

The results confirm that PIN is a valid strategy, but its success depends on strengthening institutional capacity, adapting interventions to cultural contexts, and ensuring financial sustainability. The descriptive quantification of coded responses provided additional clarity on the prevalence of barriers, reinforcing the qualitative depth of the study without altering its exploratory nature.

RECOMMENDATIONS

Based on the descriptive coding of responses and thematic analysis, several recommendations emerge to strengthen the implementation of Nutrition Intervention Packages (PIN) at Calomue Health Center:

Continuous Training: Most health professionals (73%) reported lack of training.

- **Recommendation:** Implement regular capacity-building programs focusing on nutrition protocols and culturally adapted communication strategies.

Logistical Strengthening: Failures in supplement distribution were highlighted by 70% of community leaders.

- **Recommendation:** Improve supply chain management and monitoring systems to ensure consistent availability of supplements and fortified foods.

Community Sensitization: Cultural resistance was identified by 80% of leaders and 64% of all participants.

- Recommendation: Develop participatory educational campaigns involving local leaders and traditional authorities to address misconceptions and promote acceptance.

Intersectoral Integration: Weak coordination between health, agriculture, and education sectors was evident in district reports.

- Recommendation: Establish joint action plans across sectors to reinforce food security, nutrition education, and agricultural diversification.

Financial Sustainability: Insufficient funding was reported by 55% of participants.

- Recommendation: Reduce dependence on external donors by increasing national investment and fostering local partnerships with civil society and private actors.

Monitoring and Evaluation: Institutional fragility and lack of accountability mechanisms were recurrent themes.

- Recommendation: Create participatory monitoring systems that involve health professionals, community leaders, and beneficiaries to track PIN effectiveness and adapt strategies to local needs.

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