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Analysis of Sociodemographic Factors, Dietary Patterns, ANC With Primigravida Nutritional Status in Centru Saúde Comunitaria Comoro, Municipio Dili Year 2025

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ABSTRACT

This research aim to explores factors associated with the nutritional status of primigravida. Utilizing a quantitative analytical method with a cross-sectional approach, the study sampled 94 primigravida pregnant women. Data analysis was conducted using chi-square tests with SPSS 22.0.

The main findings indicate that income and diet significantly influence the nutritional status of primigravida pregnant women (p-value 0.000), while health service (ANC) factors do not directly influence nutritional status. These statement provide evidence thriug primigravida mothers, were malnourished. Family income and diet strongly influence nutritional status, Frequency of ANC visits did not significantly affect nutritional status. As an recommendation the Ministry of Health of Timor-Leste to improve family-based nutrition interventions, integrated national nutrition education, economic-nutrition integration in ANC programs, and monitoring and evaluation of the nutritional status of pregnant women.



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INTRODUCTION

Maternal health is a crucial aspect of efforts to improve public health, particularly in developing countries like Timor-Leste. The nutritional status of pregnant women, particularly primigravida, is a major concern because it plays a significant role in the health of both the mother and her fetus. Good nutrition is crucial for everyone, especially pregnant women. One of the groups most vulnerable to nutritional problems is pregnant women, whose fetal growth is significantly influenced by the mother's nutritional status before and during pregnancy (Nita & Sagabulang, 2025). This situation emphasizes the importance of optimally meeting the nutritional needs of pregnant women, as certain nutrient deficiencies during pregnancy can negatively impact the unborn baby (Ummah, 2019).

Globally, maternal nutrition remains a significant challenge. The World Health Organization (WHO) reports that maternal mortality remains high worldwide, particularly in low- and middle-income countries. Each year, an estimated 303,000 women die during pregnancy and childbirth, 2.7 million babies die within the first 28 days of life, and 2.6 million babies are stillborn. In 2022, the prevalence of anemia among pregnant women worldwide reached 41.8%, with approximately 32 million pregnant women. Africa had

the highest prevalence, at 57.1%, followed by Southeast Asia at 48.2%, the Western Pacific at 30.7%, and Europe at 25.1% (Wati et al., 2023). This data indicates that maternal nutrition, including anemia, remains a pressing public health issue that requires addressing.

In Timor-Leste, the nutritional status of pregnant women is also a serious concern. According to the National Health Sector Nutrition Strategic Plan (2022-2026), 61.9% of women reported having a normal body mass index (BMI), 18.8% were underweight or wasted, and 19.3% were overweight/obese. The proportion of underweight women (<18.5 kg/m²) decreased from 26.6% in 2016 to 18.8% in 2020, while the proportion of overweight/obese women (BMI ≥25 kg/m²) increased from 9.8% in 2016 to 19.3% in 2020. In addition, the proportion of women with mid-upper arm circumference (MUAC) below 21 cm was 9.4%, and 21.9% had a MUAC between 21 and 22.9 cm. For pregnant and lactating women, 8.9% were underweight (MUAC <21 cm) and 23.2% had a MUAC between 21 and 22.9 cm. Low BMI in women is a risk factor for low birth weight (LBW), which has been documented as a determinant of stunting (Ministry of Health, Democratic Republic of Timor-Leste, 2022). The 2020 Timor-Leste Food and Nutrition Survey also stated that maternal nutritional status,

through measurements of the MUAC/SLKL, showed that 8.9% of pregnant and lactating women had a low MUAC (<21 cm), meaning nearly 1 in 10 mothers experience Chronic Energy Deficiency (CED). A MUAC of <21 cm is an indicator of malnutrition or the risk of giving birth to a LBW baby (Mds, 2020).

Factors influencing the nutritional status of pregnant women, particularly primigravidas, are complex and interrelated. Primigravida is the term for women who are pregnant for the first time, and is divided into two categories: young primigravida (under 20 years old) and older primigravida (over 35 years old) (Hasibuan et al., 2019). The status of primigravida mothers is currently a critical issue due to rising maternal mortality rates (MMR) and infant mortality rates (IMR). The 2016 Demographic and Health Survey (SDK) reported a maternal mortality ratio in Timor-Leste of 195 deaths per 100,000 live births (195/100,000). The main causes of maternal deaths were postpartum hemorrhage, eclampsia, and sepsis. The report also indicated a perinatal mortality rate of 20 per 1,000 pregnancies with gestational age of 7 months or more (Politica, 2022).

Furthermore, data from the Timor-Leste Health Statistics Report shows that the number of pregnant women who attended antenatal visits (K1) in the first trimester in 2022 was 15,751 (34.8%), in 2023 it was 19,477 (48%), and in 2024 it was 18,050 (48.7%). Maternal complications occurred in 2022 at 1,325 (3.26%), in 2023 at 218 (0.54%), and in 2024 at 262 (0.65%). The maternal mortality rate was 18 (0.4%) in 2022, 20 (0.5%) in 2023, and 14 (0.35%) in 2024. The abortion rate was 2,371 (5.84%) in 2022, 553 (1.36%) in 2023, and 437 (1.17%) in 2024 (Politica, 2022). These data indicate that despite an increase in antenatal care coverage, maternal complications, maternal mortality, and abortion remain challenges that must be addressed.

Specifically at the Comoro Health Center in Dili, secondary data accessed by the author shows that since 2021, anemia in pregnant women has been recorded at 530 out of a total of 2,536 pregnant women (20.9%), in 2022 it decreased to 458 from 2,338 pregnant women (19.6%), in 2023 it increased to 496 from 2,296 pregnant women (21.6%), and in 2024 it decreased to 181 from 896 pregnant women who attended ANC (20.3%). The percentage of anemia among pregnant women from 2021-2024 ranged from 19.6% to 21.6%, with the highest percentage in 2023. Furthermore, 1,792 pregnant women in their first trimester who had just visited ANC between January and August 2025 were recorded, with 89 of them being high-risk. This data confirms that anemia and nutritional status among pregnant women, particularly primigravidas, remain important issues in this region.

The nutritional status of pregnant women, especially primigravidas, is significantly influenced by various factors, one of which is sociodemographic factors. Previous research has shown that the nutritional status of primigravida mothers can be influenced by sociodemographic factors such as education level, employment status, and age (Durratun Nafisah, Herry Susanto, Sri Wahyuni, 2025). Furthermore, dietary patterns during pregnancy are also an important factor influencing maternal nutritional status. Poor dietary intake during pregnancy is a significant factor contributing to maternal

malnutrition globally, particularly in developing countries (Black et al., 2008). This is due to differences in macro- and micronutrient intakes among pregnant women in developing countries compared to developed countries, where average energy, fat, protein, and carbohydrate intakes are relatively higher in women in the Caribbean and Central/South America compared to those in Africa and Asia (Lee et al., 2013).

Scientific research in public health plays a crucial role in improving the quality of healthcare services, particularly in developing countries like Timor-Leste. One key focus is maternal health, given the high rates of maternal morbidity and mortality that remain a challenge in various regions, including Dili Municipality. In this context, research using appropriate methodology is essential to generate valid data that can be used as a basis for decision-making to improve healthcare services, particularly at the primary healthcare facility level, such as the Comoro Community Health Center.

In the context of this research, the focus on primigravida pregnant women is justified, given that this group is vulnerable to various pregnancy complications. Primigravida, or first-time pregnant women, often face greater physical and psychological challenges than multigravida. Therefore, research focused on this group is crucial for identifying risk factors that can impact maternal and fetal health, as well as for designing appropriate interventions to improve the quality of antenatal care services at the Comoro Community Health Center.

Rationale, this research is expected to provide solutions to the problems faced by primigravida pregnant women at the Comoro Community Health Center, particularly in terms of improving the quality of antenatal care services. By using appropriate research methodology and valid statistical analysis, the results of this study are expected to provide applicable recommendations for health workers and policymakers at the local level. Furthermore, this research is also expected to serve as a reference for future research focused on improving maternal health in Timor-Leste.

Thus, the background of this study emphasizes the importance of using appropriate research methodology in efforts to improve the health of primigravida pregnant women at the Comoro Community Health Center, Dili Municipality, Timor-Leste. This research not only contributes to the development of public health knowledge but also provides practical benefits in improving maternal health services at the primary health care level. Therefore, this research is highly relevant and is expected to have a positive impact on improving the quality of life of mothers and babies in Timor-Leste.

Parameters used to assess the nutritional status of pregnant women include body mass index (BMI) measured by mid-upper arm circumference (MUAC), with a normal value of 23.5 cm, and laboratory tests such as hemoglobin levels. Poor nutritional status in pregnant women can increase the risk of common pregnancy complications, such as anemia (Ardiansyah et al., 2022). Anemia in pregnant women can cause various complications for both the mother and the fetus, such as the risk of bleeding, infection, premature birth, and low birth weight.

In addition to sociodemographic factors and dietary patterns, antenatal care (ANC) services also play a crucial role in determining the nutritional status of pregnant women. ANC is a planned program consisting of observation, education, and medical treatment for pregnant women to achieve a safe and satisfactory pregnancy and delivery (Yulianingsih et al., 2020). Optimal ANC services can reduce maternal and perinatal morbidity and mortality by detecting and managing pregnancy-related complications, as well as identifying mothers and adolescent girls at high risk of complications during delivery, allowing referral to appropriate health facilities (Widiatmika, 2015). However, based on data from the 2020 Timor-Leste Food and Nutrition Survey, the majority of mothers only attend 4-7 ANC visits (approximately 64-65%), and approximately 35% of pregnant women do not receive complete antenatal care according to recommendations (e.g., 4 visits, or the current standard of 6 visits according to the WHO 2016) (Mds, 2020).

Based on the above description, it can be concluded that the nutritional status of pregnant women, particularly primigravida, is influenced by various factors, including sociodemographics, dietary patterns, and antenatal care services. In the Centru Saúde Comunitaria Comoro area of Dili Municipality, maternal nutritional issues, particularly anemia and chronic energy deficiency, remain high and require special attention. Therefore, an analysis of sociodemographic factors, dietary patterns, and antenatal care on the nutritional status of primigravida in the Centru Saúde Comunitaria Comoro, Dili Municipality, in 2025 is crucial. The results of this study are expected to provide a comprehensive picture of the factors that influence the nutritional status of primigravida, as well as become the basis for formulating appropriate policies and interventions to improve the health of pregnant women and reduce maternal and infant mortality rates in Timor-Leste, especially in the research area.

The ideal situation for public health research is the availability of accurate and representative data on factors influencing maternal health, particularly among primigravida. This data is crucial for designing effective interventions to reduce pregnancy complications and improve the quality of life for mothers and babies. Furthermore, research conducted using appropriate methodology is also expected to make a significant contribution to the development of public health science and practice at the local and national levels. Therefore, research focused on robust and tested methodology is essential to support efforts to improve maternal health in Timor-Leste.

However, actual conditions on the ground indicate that various obstacles remain in the implementation of public health research, particularly related to limited resources, access to valid data, and limitations in the use of appropriate research methods. At the Comoro Community Health Center, for example, the number of primigravida pregnant women targeted for the study was relatively limited, with 94 women in their first, second, and third trimesters. This situation requires researchers to use research methods that can accommodate the limited sample size while still producing valid data that can be statistically analyzed. Therefore, the use of a quantitative method with a cross-sectional approach was the appropriate choice for this study.

THE METHOD

Using the quantitative methods with a cross-sectional approach is a common choice to identify relationships between various variables over a specific period of time. This method allows researchers to obtain a comprehensive picture of the health conditions of the community at the time of the study and to analyze the factors influencing the health status of the target group. Therefore, selecting an appropriate research methodology is crucial for generating findings that can be implemented in health policies and programs.

In this study, researchers employed a quantitative analytical method with a cross-sectional approach to identify the relationship between independent and dependent variables in primigravida pregnant women attending antenatal care (ANC) visits at the Comoro Community Health Center. This method was chosen based on the consideration that a cross-sectional approach allows researchers to collect data from the entire target population at a specific point in time, thus providing a realistic picture of the health conditions of pregnant women. Furthermore, this method also allows for analysis of the relationship between variables using appropriate statistical tests, such as the Chi-square test, to test the significance of the relationship between the independent (X) and dependent (Y) variables.

The Chi-square test in this study aims to test the hypothesis regarding the influence between the independent and dependent variables in primigravida pregnant women. This test was conducted using the criterion $\alpha = 0.05$, where a p-value <0.05 indicates a significant influence between the two variables, while a p-value >0.05 indicates no significant influence. Thus, the results of this statistical analysis will provide a clear picture of the factors influencing the health of primigravida pregnant women at the Comoro Community Health Center, thus providing a basis for formulating more effective policies and interventions.

This study also considered research ethics, particularly regarding data protection and respondent confidentiality. This study received permission from the National Institute of Public Health of Timor-Leste (INSP-TL) to conduct health research, ensuring that respondent data would be kept confidential. Approval for this study was granted by INSP-TL under reference number: 103/INSP-TL/UEPD-AF/IX/2025. This demonstrates the researcher's commitment to conducting ethical research in accordance with applicable public health standards.

RESULT, ANALYSIS, AND DISCUSSION

Family income is one of the socio-economic factors that plays an important role in determining the nutritional status of pregnant women, as seen in the results of this study, which shows that there is a significant relationship between income levels and the nutritional status of primigravida mothers. Of the total 94 respondents, 66.0% of primigravida mothers experienced poor nutritional status (LILA <23.5 cm), while 34.0% had good nutritional status (LILA >23.5 cm). In the low-income group, the majority of primigravida mothers experienced poor nutritional status, namely 88.2%, while only 11.8% had good nutritional status. This shows that low income is closely related to the high incidence of malnutrition. In the middle-income group, a more

balanced proportion was seen, where 40.0% of primigravida pregnant women experienced malnutrition and 60.0% had good nutritional status. Meanwhile, in the high-income group, 37.5% experienced malnutrition, while the majority, namely 62.5%, had good nutritional status. The Chi-Square statistical test showed a p value = 0.000 (<0.05), which means there is a significant relationship between income and nutritional status of primigravida mothers. This finding is in line with the research of Cahya Ningsih and Rifatul Masrikhiyah (2021) which stated that income has a significant effect on the nutritional status of pregnant women. The results of the Chi-square test showed a p -value of 0.004 which is smaller than the α value of 0.05. where low income increases the risk of malnutrition in pregnant women by 2,6 times (Ahmed et al., 2025). This is in line with the theory put forward by Suroto in (Sari, 2021), that income is the main source of fulfilling life's needs, including food needs which directly affect an individual's nutritional status.

Nutritional food assistance programs, subsidies for pregnant women, or the integration of nutrition education with family economic empowerment could be more holistic strategies to prevent malnutrition in pregnant women, particularly in low-income communities such as the Comoro Community Health Center's coverage area.

Diet is one of the important factors that greatly influence the nutritional status of pregnant women, as shown in the results of this study showing a significant relationship between diet and nutritional status of primigravida mothers. Of the total 94 respondents, as many as 66.0% experienced poor nutritional status (LILA <23.5 cm), while 34.0% had good nutritional status (LILA >23.5 cm). In the group of mothers with poor dietary patterns, the majority experienced poor nutritional status, namely 89.7%, while only 10.3% had good nutritional status. This shows that poor dietary patterns greatly contribute to the high incidence of malnutrition. In the adequate dietary pattern group, the proportion of poor and good nutritional status appeared balanced, each at 50.0%, while in the good dietary pattern group, the majority of mothers had good nutritional status (54.5%), while 45.5% experienced malnutrition. The Chi-Square statistical test shows a p value = 0.000 (<0.05), which means there is a significant relationship between dietary patterns and nutritional status of primigravida mothers.

This finding is in line with the results of research in the Timor Leste region, especially in rural areas, family food security is often unstable due to dry land conditions and unpredictable weather (Febriani et al., 2020; Kementerian Kesehatan RI, 2011; Nomura et al., 2023; Saripah et al., 2025; TILES 08-Timor-Leste Food and Nutrition Survey, 2020; TILES 09-UNICEF Timor Leste, 2020; TILES 13-UNICEF, 2019). This directly impacts the availability and access to nutritious food. Families that rely solely on their own harvests or have limited access to markets tend to provide the same food every day, without adequate variety, leaving their children vulnerable to stunting and also other research findings in Malawi reported that severe food insecurity contributed to a low Dietary Diversity Score, with a decrease of 0.36 points and a more than threefold risk of malnutrition (Kang et al., 2019), Pregnant women in the first trimester have high food diversity,

and this condition is correlated with better nutritional status (Rahman & Ferdowsi, 2023) This suggests that dietary quality is a crucial determinant of maternal nutritional adequacy, regardless of other sociodemographic factors. Primigravida pregnant women face a higher risk of malnutrition if their diet is limited to staple foods such as rice, corn, or noodles, without a balanced diet containing animal protein, green vegetables, and fruits. Low dietary diversity leads to inadequate intake of essential nutrients, such as iron and folic acid, which play a role in preventing anemia and pregnancy complications. Furthermore, a monotonous diet also indicates low nutritional knowledge, limited food access, or unstructured eating habits.

According to Sulistyoningsih in (Renita, 2013), Dietary patterns consist of three important components: food type, meal frequency, and quantity. These three aspects can be influenced by physiological, psychological, cultural, social, and educational and economic factors. When a diet does not meet the principles of balanced nutrition, pregnant women are at risk of deficiencies in energy, protein, iron, folic acid, and other micronutrients essential for fetal tissue development and maternal health

Antenatal care (ANC) visits are an important preventive measure in maternal health services, as they allow for regular monitoring of maternal and fetal health, early detection of complications, and the provision of nutrition and reproductive health education. However, the results of this study indicate that the frequency of ANC visits is not significantly associated with the nutritional status of primigravida mothers. Of the 74 pregnant women who had attended standard ANC visits, 49 (66.2%) still showed poor nutritional status. The analysis results ($p = 0.919$; $p > 0.05$) confirmed that there was no significant relationship between ANC visits and the nutritional status of primigravida mothers in the Comoro Community Health Center work area. This insignificant relationship can be explained by several factors. First, the appropriate number of ANC visits is not necessarily accompanied by optimal service quality, such as nutritional examinations, dietary counseling, monitoring of maternal weight gain, and maternal compliance in implementing the education provided. Second, maternal nutritional status is more influenced by non-medical factors such as family income, diet, household food security, and consumption culture, rather than simply the frequency of interaction with health facilities. This shows that the quantity of visits is not necessarily in line with the quality of nutritional intervention received.

In contrast to the results of this study, a study by (Iskandar et al., 2025) A study in Bantul, Indonesia, showed that the frequency of ANC visits was significantly associated with the quality of health care received by pregnant women (AOR = 2.57; 95% CI 1.67–3.95). This means that the more frequently a mother visits a health facility, the greater her chance of receiving comprehensive ANC services. (Toma et al., 2018) A study in Bangladesh also reported that regular ANC visits can reduce the risk of malnutrition in children (OR = 0.815; 95% CI = 0.665–0.972), because during ANC, mothers gain knowledge about nutrition, iron supplementation, and weight monitoring. This is in line with WHO guidelines (2016) which recommend a minimum of 8 ANC visits to ensure comprehensive pregnancy care.

Antenatal care is a preventive effort in the obstetric health service program to optimize abnormalities that occur in mothers and newborns through various examinations that can be carried out during pregnancy (Azhar et al., 2022).

FINDING

The findings of this study confirm that interventions to improve the nutritional status of pregnant women cannot focus solely on education and health services but must also consider household economic aspects. Family income and diet strongly influenced nutritional status are low-income mothers and malnutrition rate, while middle and high income mothers fared better; high-income mothers were about four times more likely to be well-nourished. Poor dietary patterns were linked to an malnutrition rate, whereas mothers with good diets were roughly times more likely to be well-nourished. Frequency of ANC visits did not significantly affect nutritional status, possibly due to service quality and socioeconomic factors.

CONCLUSION

The analysis concluded that income and diet significantly influence the nutritional status of primigravida mothers, while antenatal care (ANC) visits showed no significant effect. Pregnant women with high incomes were approximately four times more likely to have good nutritional status than those with low incomes. This suggests that a family's economic situation plays a significant role in meeting nutritional needs during pregnancy.

Mothers with a good diet have a chance of about 2,5 times greater of having good nutritional status compared to mothers who have a poor diet.

These findings underscore the importance of adopting a balanced and nutritious diet during pregnancy. Overall, economic factors and food consumption behavior were the primary determinants of the nutritional status of primigravida mothers in this study, while health care (ANC) had no direct impact on nutritional status.

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