# Community health education as a strategy for the prevention of maternal mortality in health centers in the city of Nampula

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## ABSTRACT
The study focuses on community health education as a strategy for preventing maternal mortality. Its general objective is to understand the course of community health education as a strategy for the prevention of maternal mortality in health centers in the city of Nampula. Specifically, the demographic characteristics of the pregnant women were described; the strategies and contents of education for the prevention of maternal mortality in health centers were identified; The attitudes and behaviors manifested by the women during the prenatal period were characterized, following community health education on the prevention of maternal mortality in the health centers of the city of Nampula; Factors that influence community education for the prevention of maternal mortality in health centers in the city of Nampula were also identified. The research question that guided the study sought to understand how community health education activities on the prevention of maternal mortality in the city centers of Nampula take place. This was a qualitative-quantitative, descriptive, exploratory study carried out in the city of Nampula, at Health Centers Y, Z and General Hospital X. A total of 391 people participated in the study, 18 nurses and 373 pregnant women. To collect the data, a questionnaire, semi-structured interviews and observation were used. The results show that community health education on the prevention of maternal mortality in the Health Units of the city of Nampula takes place through three methods: Individual Counseling/Person-Centered Education, disease-centered clinical method/clinical consultation and collective lectures. The strategy that nurses use most often in antenatal consultations is Person-Centered Education/person-centered clinical method.

**Keywords:** Education, Health, Maternal Death, Strategy.

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## INTRODUCTION

The prevention of maternal mortality in the context of community education is directly linked to the strategy designed and organized to guide this process. Thus, this work has as its theme "Community health education as a strategy for the prevention of maternal mortality in health centers in the city of Nampula".

All education is a policy of values that configure a certain vision of a certain area of knowledge, in order to support the various aspects, whether economic, social, scientific or technological, imposed by a globalized world.

Within the scope of the 2025 Agenda, the strategic vision, with regard to the development of human capital, is oriented towards an integral formation of the Mozambican man based on four pillars: Knowing how to Be, Knowing how to know, Knowing how to do, Knowing how to live together and with others (Agenda, 2025).

The strategic options, in relation to education, highlight the massification of basic education, the strengthening of secondary education, the expansion of adult literacy and education, technical-professional training, education focused on science and technology and the introduction of patriotic, moral, ethical and civic education, scientific research, and innovation, at all levels of the education system.

For Andrade (2016), health is a basic and major objective of education and is fundamental for the present and future of the nation. And nothing is more important and nothing should interfere with the time that the teacher should dedicate to health. The same author also states that developing countries depend on the educational performance of schools and colleges, in this field, to have a healthy way of life and survive with economic prosperity, political stability and a higher standard of living.

It is clear that health education should be considered as one of the aspects of the global educational process – of which it is part – and although it has specific objectives, it is in no way detached from it, nor is it a watertight department.

In this perspective, the study aims to understand the course of community health education as a strategy for the prevention of maternal mortality, carried out by health centers in the city of Nampula, taking into account education and health as fields of greater human, social and economic value.

The relationship between education and health has many affinities in the field of public policies and favors greater proximity to the habits and customs of the community, with regard to the acceptance of public health programs (Alves, 2017).

In this order of ideas, the main focus of Health Education (EpS) is the attitudes, behaviors, patterns or habits observable in the community related to health (Alves, 2017).

Health prevention strategy is the name given to health promotion and prevention of risks and diseases. Nogueira et al. (2015) They say that health promotion and protection actions are fundamental for the reorientation of care models, being a strategy of transversal articulation that aims to improve the quality of life and reduce health risks, through the construction of healthy public policies, which provide improvements in the community's way of life.

Health promotion and risk and disease prevention supplement access to community empowerment to act to improve their quality of life and health, including greater participation in disease control, to achieve a state of complete physical, mental, social and spiritual well-being.

Prevention is oriented towards actions to detect, control and weaken disease risk factors, focusing on disturbance and mechanisms to attack it (Nogueira et al., 2015).

Conformable Moreira (2013), prenatal care is the process of monitoring the pregnant woman from conception to the beginning of labor. The main objective of prenatal care is the monitoring of pregnancy, in order to reduce the risks that contribute to maternal and perinatal morbidity and mortality.

The gestation process is complex, dynamic and multidimensional for the woman and her family, due to clinical, social and cultural characteristics. The transformations that occur during pregnancy can expose women more frequently to serious consequences, which are the specific causes of maternal morbidity and mortality.

## OBJECTIVES OF THE STUDY

The general objective: "To understand the course of community health education as a strategy for the prevention of maternal mortality in the health centers of the city of Nampula", and for its implementation the following specific objectives were outlined:

- To describe the demographic characteristics of pregnant women in health centers in the city of Nampula.
- Identify the strategies and contents of education for the prevention of maternal mortality in the health centers of the city of Nampula.
- To characterize the attitudes and behaviors manifested by women during the prenatal period, following community health education on the prevention of maternal mortality in health centers in the city of Nampula.
- To verify whether Community Health Education is a strategy for the prevention of maternal mortality in HCs in the city of Nampula.

In order to better understand the reality, a series of questions that operationalize this problem are listed as follows, for which we seek to build knowledge about the problem under study:

- What are the counseling strategies developed by maternal and child health nurses in the community health education procedure on the prevention of maternal mortality in the Health Units of the city of Nampula?
- What content is developed by ESMI in the community health education procedure on the prevention of maternal mortality in the Health Units of the city of Nampula?
- What Attitudes/Behavior do women manifest during prenatal care following community health education on the prevention of maternal mortality in Health Units in the city of Nampula?
- How is Community Health Education a strategy for the prevention of maternal mortality in HCs in the city of Nampula?

## REASONS THAT JUSTIFY THE STUDY

The reason for carrying out this research is related to the fact that Education and Health are fields of great human, social and economic value, areas that most need investment and in which technological innovation can bring significant and still unexpected benefits.

The interest in the theme, Community health education as a strategy for the prevention of maternal mortality in the HCs of the city of Nampula, arises from the fact that the researcher is an Obstetrician Gynecologist, following the concerns about the behaviors of the female population, specifically pregnant women, parturients and mothers, as a result of the poor monitoring of the prenatal process.

The relevance of the study lies in the fact that pregnant women need to have knowledge and access to better information about the prenatal period, in order to better face the various difficulties, obstacles, limitations and frustrations that arise during pregnancy.

Concerns regarding maternal mortality arise as a result of the follow-up and beginning of the prenatal process and the observation of difficulties faced by health professionals in attending to and resolving complications, culminating in the death of pregnant and parturient women.

It is a relevant research because it is expected to collect valuable information about the experiences and perceptions of pregnant women and maternal and child health nurses, about the importance of complying with prenatal care.

## METHODOLOGY TYPE OF STUDY

The present study (Interpretative) was developed in a dual perspective – using qualitative and quantitative techniques.

## UNIVERSE OF THE STUDY

In this research, the study population is pregnant women and maternal and child health nurses.

The universe of the quantitative research was obtained by the sum of women who had prenatal consultations (ANCs) and consultations for healthy children (CCS) in the last three months in the health centers under study.

According to the analysis of data from the CPN and CCS (December 2021, January and February 2022) carried out by the Provincial Directorate of Health of Nampula (DPS, 2022), 2,145 women made an antenatal appointment at Health Center Y, 2,578 at Health Center Z, 810 at General Hospital X, and 18 maternal and child health nurses. The sum corresponds to 5,551 participants, constituting the universe of this research.

## SAMPLE

Second Santos (2003), the sample is a representative subset of the study population, which must have the same general characteristics as the population from which it was extracted. When this sample is rigorously selected, the results obtained tend to be very close to those obtained if all the elements of the universe were surveyed (Oliveira, 2001). However, the representativeness of the sample depends on its size and the way it is collected, aiming to obtain a significant sample that actually represents the entire population (Gil, 1999).    Quantitative sampling of this study will be applied to pregnant women in the universe.

Second Estanislau and Sanches (2017), in the research in which the universe is very large, as is the case of this study with 5,533 pregnant women, It is necessary to calculate the first approximation of the sample first. The researcher decided to use a sample confidence interval of 95% so that the margin of error Estimate high (E0) or 0.05%.

Equation1 – first approximation of the sample:

$$n_0 = \frac{1}{E_0}$$

Source: Estanislau e Sanches (2017, p. 41).

Where:

$n_0$ - First approach to the show

$E_0$ -Error Maximum Estimation

Therefore, the first approximation of the sample was calculated as follows:

$n_0 = \frac{1}{E^2} \frac{1}{0{,}05^2} = \frac{1}{0{,}0025}$ = 400 pregnant women

Equation 2 - Sample calculation:

$$n = \frac{N.n_0}{N + n_0}$$

Source: Estanislau e Sanches (2017, p. 41).

Where:

N - Universe

n – Sample size

n0– First approximation of the sample

$n = \frac{N.n_0}{N+n_0} = \frac{5533x400}{5533+400} = \frac{2213200}{5933}$ = 373 Pregnant woman (sample)

In this study, probabilistic sampling was chosen because it confers greater reliability to the results obtained, as each element of the population has the same probability, previously known and different from zero, of being included in the sample.

Stratified sampling consists of specifying how many elements of the sample will be taken in each extract. In this case, the extracts of this research are Health Centers Z with 2,578 pregnant women who scheduled a prenatal appointment in the last three months, health center Y with 2,145 pregnant women and General Hospital X with 810 pregnant women.

The proportional determination of the pregnant women to be interviewed in each Health Centre (extract) was calculated using the following expression:

Equation 3 - Total number of pregnant women to be interviewed in each health centre (extract)

$$\frac{nh}{Nh} = \frac{n}{N}$$

Source: Estanislau e Sanches (2017, p.41).

Where:

nh: Total number of pregnant women to be interviewed in each health center.

Nh: Stratum population (Health Center: Y (2,145), Z (2,578) and General Hospital X (810)

n: Sample size = 373

N: Total population = 5,533

Therefore, the number of pregnant women to be interviewed in each Health Center is:

- Health Center Z $\frac{nh}{Nh} = \frac{n}{N}$ $\frac{nh}{2578} = \frac{373}{5533}$ = 173 pregnant women
- Health Center and $\frac{nh}{Nh} = \frac{n}{N}$ $\frac{nh}{2145} = \frac{373}{5533}$ =145 pregnant women
- Hospital Geral X $\frac{nh}{Nh} = \frac{n}{N} \rightarrow \frac{nh}{810} = \frac{373}{5533}$ =55 pregnant women

The selection of the elements in each extract was simple random. To carry out a simple random selection, it is recommended to make a list of the elements of the sample, randomly assigning a number to each of these elements, not knowing to whom this number in the sample belongs.

However, the researcher randomly drew numbers from the pregnant women, through the distribution of duly numbered informed consent forms (ICTs), not knowing to whom these numbers belong, that is, to which name of the pregnant woman this number is associated. In this process, the pregnant women were told to memorize their numbers, which gave them the possibility to be selected to participate in the study. Remembering that the calculated sample corresponds to 373 pregnant women, each pregnant woman was selected according to the position of her drawn number.

## DATA COLLECTION TECHNIQUES

For this study, questionnaires, interviews and observation were used as data collection techniques.

Questionnaire surveys are often used in large-scale studies, as they allow data to be obtained from a significant number of subjects in relation to a given social phenomenon. The quantification of the data obtained allows inferences and generalizations.

On the other hand, the interview survey is commonly associated with interpretative studies and qualitative research, due to its descriptive and detailed character. This technique provides a more in-depth analysis of the data and information collected.

Data collection techniques are defined as rigorous and well-defined procedures, adapted to the type of problem and the phenomena under study. They aim to make the investigation viable, enabling the empirical verification of the methodological options adopted.

## FORMS OF PRESENTATION AND ANALYSIS OF DATA AND DISCUSSION OF RESULTS

The data were analyzed based on descriptive statistical analysis, which is a set of techniques aimed at summarizing data that help to describe characteristics of interest in a given study

According to Piana (2009), descriptive statistics is a set of techniques that allows, in a systematic way, to organize, describe, analyze and interpret data from studies or experiences, carried out in any area of knowledge.

Descriptive statistics are the set of techniques and rules that summarize the information collected about a sample or a population without distortion or loss of information.

Therefore, in this study, through the SPSS Software, a database was created with the variables of interest, in order to obtain descriptive statistical data (frequencies).

The data were presented in a summary of texts and tables processed in Microsoft Word. Finally, all data were compared with the literature, that is, with other studies with a similar theme carried out in other regions of the world or within the country.

Inclusion Criteria:

- Pregnant women treated at Health Centers Y and Z, and at General Hospital X in the city of Nampula;
- Pregnant women who agreed to participate in the study;
- Lucid pregnant women;
- Maternal and child health nurse questioned during activities at health centres Y and Z, and General Hospital X.

Exclusion Criteria:

Pregnant women who did not agree to participate in the study;

- Pregnant women who had some inability to establish a conversation (Deaf, Dumb or Drunk);
- Nurses who were unavailable to participate in the research.

## ETHICAL CONSIDERATIONS

The work took all due considerations and formalities regarding ethical issues, as stipulated in the Declaration of Helsinki (2013) of the World Medical Association. It began with the request for permission to carry out the study through a credential and the presentation of the respective protocol to the directors of the institutions in which the study took place. With regard to the protection of the participants, their identity was safeguarded by keeping it confidential and the information that was provided by them was used only for academic purposes.

It should be noted that this is an academic work, in such a way that the preservation of fidelity and confidentiality in relation to the results was strictly observed. He respected all the principles of bioethics, namely: the principle of autonomy, beneficence, non-maleficence and the principle of justice. Participation was voluntary by signing the ICF with the possibility of the participant leaving at any time without any consequence on the part of any participant in the study (Silva & Menezes, 2005). Anonymity and confidentiality were guaranteed in the context of data collection, omitting information on the personal identification data of the participants. The questionnaires were kept in a closed place and will be destroyed after five years, because in addition to ensuring that any doubt about the study data that arises in this period can be used to respond to the interviews, it also guarantees the participant knowledge about how long the data will be kept.

The participants' data were coded using the letter G to designate pregnant women. To differentiate one participant from another, an Arabic numerical index per participant was added to

each letter , such as (G1, G2, G3, ... Gn). However, the numerical order of the index will not mean the order of the interview, but rather differences between participants.

The risks of this research were minimal since there were no invasive procedures during the study. Participants, for example, answered sensitive questions such as pregnancy management issues.

In addition, aspects related to the interviews may take some time, in which you could be resting or practicing another more important activity in your life, or remind you of some past event that may cause you some fear, threat or shame during pregnancy. This may cause you some psychological tension to participate in this study or to remember some past episode that may cause you to cry.

## PRESENTATION OF DATA

Table 1: Main Categories studied

| Category | Subcategory |
|---|---|
| Demographic characteristics of the population | Age |
| | Marital status |
| | Education level |
| | Number of children |
| Counseling strategies used by ESMI in the community health education procedure on the prevention of maternal mortality in the Health Units of the city of Nampula | Disease-centered clinical method/clinical consultation |
| | Individual Counseling/ Person-Centered Education |
| | Collective lectures |
| Contents developed by the ESMI in the procedure of community health education on the prevention of maternal mortality in the Health Units of the city of Nampula | Always Do Family Planning and Start the ANC before 1 month |
| | Vaccinating with the baby and preventing STIs |
| | Deliver and have abortions in the hospital, do not consume drugs and alcohol |
| Attitudes/Behavior manifested by the population during prenatal care following community health education on the prevention of maternal mortality in the Health Units of the city of Nampula | Using the Family Planning Method |
| | Start of ABC |
| | Number of consultations made in this pregnancy |
| | Vaccinate with the baby |
| | Consumption of alcohol, cigarettes, or other drugs in the previous day |
| To verify whether Community Health Education is a strategy applied for the prevention of maternal mortality in HCs in the city of Nampula. | Form of tendency, advice and lecture of ESMI at the BC |

Cast Iron: Biombe, 2023

## Woman's age versus No children

Table 1: Woman's age versus Number of children

| | | How many children do they have | | | | Total |
|---|---|---|---|---|---|---|
| | | **Primigesta** | **1 child** | **2-3 children** | **4-8 children** | |
| Woman's age | < 18 years old | 12 | 10 | 42 | 0 | 64 |
| | | 3,2% | 2,7% | 11,3% | 0,% | 17,2% |
| | 19- 35 years old | 9 | 59 | 109 | 51 | 228 |
| | | 2,4% | 15,8% | 29,2% | 13,7% | 61,1% |
| | 36 years or older | 2 | 27 | 47 | 5 | 81 |
| | | 0,5% | 7,2% | 12,6% | 1,3% | 21,7% |
| Total | | 23 | 93 | 198 | 56 | 373 |
| | | 6,2% | 25,7% | 53,1% | 15% | 100,0% |

Cast Iron: Biombe, 2023

Table 2 shows primiparous pregnant women 23 (6.2%), pregnant women with 1 child 93 (24.9%), pregnant women with 2-3 children 198 (53.1%) and pregnant women with 4-8 children 59 (15.8%).

Observations of 64 pregnant women under 18 years of age are highlighted, corresponding to 17.2%: primiparous pregnant women 12 (3.2%), pregnant women with 1 child 10 (2.7%); and Pregnant women with 2-3 children 42 (11.3%).

Among the participants over 18 years of age, those in the age group of 19-25 years stand out, pregnant women in a total of 228 (61.1%), of which: 9 (2.4%) are primiparous, 59 (15.8%) have a 1 child, 109 (29.2%) have 2-3 children and 51 (13.7%) have 4-8 children.

## Marital status and level of education

Table 2: Marital status and level of education

| Marital status | | Total | Education level | | | Total |
|---|---|---|---|---|---|---|
| Married woman | Single | | Primary level | Secondary level | Higher level | |
| 304(81%) | 69(19%) | 373(100%) | 241(64,6%) | 121 (32,4%) | 11 (2,9%) | 373(100%) |

Cast Iron: Biombe, 2023

In general, the world literature has considered adolescent pregnancy a public health problem and social challenge, however, the discussion about its repercussions on the Education and Health System has still been occurring in an incipient way and disconnected from institutionalized actions (Molina & Romero, 1985; Duarte, 1998).

In Mozambique, girls married early face a wide variety of social and health consequences, including high maternal mortality rates, complications during pregnancy and childbirth, and an increased risk of HIV infection and obstetric fistula.

Of the 373 women who participated in the study, corresponding to 100% of the study, 304, corresponding to 81%, are married and 69, corresponding to 19%, are single.

As can be seen in Table 3, about 19% of the women who participated in the study are single, which can influence adherence to the ABC.

Contents and counseling strategies used by ESMI in the procedure of community health education on the prevention of maternal mortality in the Health Units of the city of Nampula.

## ANSWERS TO THE QUESTIONNAIRE ON EDUCATION CONTENT AND STRATEGIES

Table 3 Contents and counseling strategies used by the ESMI in the community health education procedure on the prevention of maternal mortality in the Health Units of the city of Nampula

| | | Which of the following ways do ESMI use to provide counselling to pregnant women and mothers? | | | Total |
|---|---|---|---|---|---|
| | | Disease-centered clinical method/clinical consultation | Individual Counselling/Person-Centred Education | Collective lectures | |
| What advice do ESMI give to prevent your health and that of your baby? | Always Do Family Planning and Start the ANC before 3 months | 78 | 107 | 21 | 206 |
| | | 20,9% | 28,7% | 5,6% | 55,2% |
| | Vaccinating with the baby and preventing STIs | 26 | 32 | 11 | 69 |
| | | 7,0% | 8,6% | 2,9% | 18,5% |
| | Have childbirth and abortion in the hospital, do not consume drugs and alcohol. | 22 | 58 | 18 | 98 |
| | | 5,9% | 15,5% | 4,8% | 26,3% |
| Total | | 126 | 197 | 50 | 373 |
| | | 33,8% | 52,8% | 13,4% | 100,0% |

Cast Iron: Biombe, 2023

Table 3 shows that the strategies used for counseling/educating pregnant women are, namely: Collective lectures, 50 (13.4%), Person-Centered Education, 197 (52.8%) and Clinical method centered on the disease, 126 (33.8%).

Based on the data from the questionnaire carried out with the pregnant women on the contents and educational strategies used by the Maternal and Child Health Nurses in the Health Units of the city of Nampula, the following could be observed:

Regarding counseling/education strategies, three approaches were mentioned by the participants. The most mentioned strategy was Person-Centered Education, chosen by 197 participants (52.8%). This approach emphasizes the importance of understanding the individual needs of pregnant women, tailoring counseling according to their specific circumstances. The second strategy mentioned was the disease-centered clinical method, with 126 participants (33.8%). This approach focuses primarily on identifying and treating diseases and health conditions. Finally, the Collective Lectures were mentioned by 50 participants (13.4%), suggesting the holding of information sessions for groups of pregnant women.

Regarding the contents addressed in the counseling/education sessions, a diversity of responses was observed among the participants. The most mentioned content was family planning and the importance of starting Prenatal Care (ANC) before one month, with 206 participants

(52.2%). This highlights the relevance of educating pregnant women about the importance of seeking early care during pregnancy and planning the family according to their needs and desires. Other content mentioned includes the importance of vaccinating the baby and preventing Sexually Transmitted Infections (STIs), mentioned by 69 participants (18.5%). In addition, the guidance on childbirth and abortion in a hospital environment was highlighted, as well as the importance of not consuming drugs and alcohol during pregnancy, mentioned by 98 participants (26.3%).

These results indicate that ESMI are adopting education strategies focused on the individual needs of pregnant women, focusing on aspects such as family planning, early initiation of ANC, prevention of STIs, safety of childbirth and the importance of avoiding the consumption of substances that are harmful to health. These approaches are fundamental for the prevention of maternal mortality and contribute to the promotion of maternal and child health in the city of Nampula.

Regarding the contents, as can be seen, the participants' answers were diverse, among which the following stand out: family planning and starting the ABC before three months 206 (52.2%), vaccinating the baby and preventing STIs, 69 (18.5%), giving birth and abortion in the hospital, not consuming drugs and alcohol, 98 (26.3%), as shown in table 4.

## ANSWERS TO THE INTERVIEWS ABOUT CONTENT AND EDUCATION STRATEGIES CARRIED OUT WITH THE NURSES

The nurses mentioned the contents and strategies they use to counsel pregnant women.

*[...] We advise mothers to* start prenatal consultation before 1 month *[...]*Always Do Family Planning *[...]*Prevent Sexually Transmitted Infections *[...]; [...] This advice has been by way of* Collective lectures*[...]*;*[...]*Individual counseling*[...]; [...]*counseling according to the patient's illness*[...]*. ***And 1***

*[...] Through* collective and individual lectures *[...] we advise pregnant women to* start the consultation very early to avoid various situations that may happen during pregnancy *[...]; [...] Also during prenatal care, we give a lecture on the main symptoms of childbirth to avoid giving birth at home. [...];**E2***

*[...] In the prenatal consultation, we give lectures on the importance of vaccinating the baby [...], the importance of* giving birth or having an abortion in the hospital *[...]*; *[...] effects of alcohol on pregnancy and several other aspects [...]. There are also aspects that we advise ourselves individually and according to the disease [...]**E3***

*[...]*Heee.....during the prenatal consultation, through lectures, we explained several aspects to pregnant women, as well as mothers of babies, such as the importance of breast milk*[...]*; *[....]* period

necessary to breastfeed the baby*[...],[...] explain to mothers the importance of* Family Planning *[...]; [...] Importance of vaccinating the baby and delivering the baby in the hospital[...]**E4***

*[...]* To prevent maternal mortality, we advise pregnant women and mothers to give birth and have an abortion in the hospital *[...]; [...]*make the prenatal consultation as soon as possible *[...] not to consume alcoholic beverages during pregnancy and breastfeeding [...]; we give lectures on the importance of family planning [...];. [...]; In some situations we advise you individually [...]**E5***

*[...]*We often advise mothers to adhere to family planning *[...]; [...] prevent* sexually transmitted diseases *[...]; [...]*vaccinate the baby together*[...]**E6***

*[...]*The main strategies we develop to advise patients are: Collective lectures*[...]*;*[...]*Individual counselling ...; *[...]*counseling according to the patient's illness*[...]* **E1**

By judging the testimonies presented by the nurses, it is observed that in prenatal consultations, women, in fact, are educated to prevent various diseases that may endanger their health.

Based on the interviews conducted with the nurses, we can observe that they mentioned the contents and strategies they use to advise pregnant women.

Attitudes/Behavior manifested by pregnant women during prenatal care following community health education on the prevention of maternal mortality in the Health Units of the city of Nampula

## QUESTIONIOMARIO ANSWERS WITH PREGNANT WOMEN ABOUT ATTITUDES/BEHAVIOR

Table 4: Behavior/Attitudes of the Participants during prenatal care

| Content | Answers | Frequency | Percentage |
|---|---|---|---|
| Start of ABC | Before 3 months | 67 | 18,0 |
| | At 3 months | 93 | 24,9 |
| | After 3 months | 213 | 57,1 |
| No appointments have already been done in this pregnancy | 1-3 Consultations | 278 | 74,5 |
| | 4 or more queries | 95 | 25,5 |
| Vaccinated | Yes | 254 | 68,1 |
| | No | 119 | 31,9 |
| Do family planning | Yes | 268 | 71,8 |
| | No | 105 | 28,2 |
| Experience of having a birth or abortion at home | Yes | 105 | 28,2 |
| | No | 268 | 71,8 |
| Has consumed alcohol or another drug in the current month | Yes, alcohol | 82 | 22,0 |
| | Yes, cigarette | 13 | 3,5 |
| | No | 278 | 74,5 |

Cast Iron: Biombe, 2023

Regarding the BC, 67 (18%) said that they started before 3 months, 93 (24.9%) stated that they started after 3 months, and 213 (57.1%), who constitute the majority, started after 3 months.

Table 5 shows the data of pregnant women on different attitudes and behaviors in relation to prenatal care (ANC).

Initiation of the ABC before 3 months: About 18% of the participants reported having started the BC before completing three months of pregnancy. These women demonstrated a positive behavior when seeking prenatal care early, which is important for the proper monitoring of maternal and child health from the early stages of pregnancy.

Onset of the ABC at 3 months: Approximately 24.9% of the pregnant women stated that they started the BC exactly at three months of gestation. Although they have met the minimum recommended deadline, it is important to note that the sooner the ANC is started, the better the opportunities for early detection of problems and implementation of preventive measures.

Beginning of the ABC after 3 months: Most of the participants, corresponding to 57.1% of the group, reported having started the BC after completing three months of pregnancy. This delay in the start of prenatal care can have several reasons, such as lack of access to health services, lack of knowledge about the importance of the ANC or other socioeconomic barriers.

Regarding the number of consultations made during the current pregnancy, 278 (74.5%), which constitute the majority, made 1-3 consultations and 95 (25.5%) made 4 or more consultations.

Consultations from 1 to 3: The majority of participants, representing 74.5%, had 1 to 3 consultations during the current pregnancy. This number of visits is below that recommended by health guidelines, which generally indicate a minimum of 4 prenatal visits for a healthy pregnancy. This proportion suggests a possible lack of adherence to adequate prenatal care, which can negatively impact maternal and child health.

Visits of 4 or more: Approximately 25.5% of pregnant women had 4 or more visits during the current pregnancy. These women demonstrated a positive behavior when seeking a greater number of prenatal consultations, which may indicate a greater awareness of the importance of prenatal care and better health monitoring during pregnancy.

It is important to note that regular prenatal care is crucial to monitor fetal development, identify potential complications, and receive appropriate guidance on health care during pregnancy.

Table 4 also shows that 264 (68.1%) participants were vaccinated and 119 (31.9%) were not vaccinated; 268 (71.8%) were family planners and 105 (28.2%) were not; 105 (28.2%) had experience of giving birth or abortion at home and 268 (71.8%) were not; 82 (22%) consumed alcohol, 13 (3.5%) were smokers and 278 (74.5%) were not smokers or drinkers.

The interpretation of the data presented reveals information on behaviors related to family planning, home birth or abortion practices, alcohol consumption and smoking.

## ANSWERS TO INTERVIEWS CONDUCTED WITH NURSES ABOUT ATTITUDES/BEHAVIOR

The nurses reported the attitudes of the pregnant women during prenatal care, as shown in the following statements:

*[...]*Most pregnant women start prenatal care after 3 months [...] *heee...... Some pregnant women* do not complete the number of appointments planned *[...] abandon* family planning claiming that it is bad for them *[...]* ***And 1***

*[...] we have had pregnant women even after being advised* do not complete the number of planned consultations *[...]; [...] give birth at home [...]**And 2***

*[...] Regarding the behaviors of pregnant women and mothers, I see that some do not follow our recommendations, they appear with leisure indication that the day before they consumed alcohol [...]; [...] others are irresponsible, they start prenatal consultations late [...]**E3**[...]*

*[...] in fact, we have had patients with a delay of 2 to 3 months [...]; [...] sometimes they don't know how many months it is [...]; [...] Just make an appointment, although late, she doesn't come back anymore because she's afraid of being reprimanded, which compromises the quality of our work [...]**And 4***

*[...]*We have noticed several negative aspects in pregnant women and mothers *[...]; [...]* although there are few cases *[...]; [...] there are primiparous women who have abortions at home, they only come to the hospital after everything is complicated [...]; [...] others consume alcohol during pregnancy [...]; [...] Despite everything, on the contrary, there are women who comply with all the guidelines [...]**E5***

*[...] I, as an ESMI, according to what I have witnessed on a daily basis, can say that during prenatal consultations women behave well, although some women do not comply with the recommendations, such as, for example*, they do not complete the number of planned consultations *[...]; [...] abandon* family planning*[...]**E6***

The interviews conducted with the nurses reveal information about the attitudes and behaviors of pregnant women during prenatal care, where the following was found:

Late start of prenatal consultations: According to the nurses interviewed, there is a tendency for many pregnant women to start prenatal consultations after the first three months of pregnancy. This indicates a delay in access to antenatal care, which may result in less medical supervision during this critical time.

Lack of adherence to the number of planned visits: The nurses reported that some pregnant women do not complete the number of recommended prenatal visits. This can be worrisome, as regular appointments are important for monitoring the health of the pregnant woman and the fetus, as well as providing appropriate guidance and care.

Risk behaviors: Some nurses mentioned cases in which pregnant women reported consuming alcohol during pregnancy, as well as the practice of home birth, which can pose risks to maternal and child health. These behaviors can be harmful and require appropriate intervention and guidance.

Misinformation and lack of commitment: Some nurses observed that some pregnant women demonstrate a lack of knowledge about the duration of pregnancy and do not follow the guidelines provided during prenatal consultations. In addition, they mentioned that some women are afraid of being reprimanded and, out of fear, end up not returning to subsequent appointments, thus compromising the continuity of care and the quality of care.

Variation in behaviors: Although negative behaviors were observed, the nurses also highlighted that there are women who comply with all the guidelines and demonstrate commitment to prenatal care. These positive cases show that some pregnant women are following the recommendations and actively engaging in prenatal care.

In general, the data from the interviews with the nurses indicate the existence of challenges and worrying behaviors on the part of some pregnant women and mothers during prenatal care. These challenges include late start of consultations, lack of adherence to the number of recommended consultations, and risky practices. These results highlight the importance of intensifying education and awareness efforts during prenatal consultations, aiming to promote better adherence to care and healthy behaviors, thus ensuring maternal and child health.

As can be seen, 57.1% of the participants stated that they started after 3 months. According to **E1** *[...] most pregnant women start prenatal consultations after 3 months [...].* This Attitudes/Behavior undermines the rules of organization of the CPN to avoid possible complications.

Verification of Community Health Education as a Strategy Applied for the Prevention of Maternal Mortality in HCs in the City of Nampula.

## RESPONSES TO INTERVIEWS CONDUCTED WITH PREGNANT WOMEN AND MOTHERS ABOUT COMMUNITY HEALTH EDUCATION AS A STRATEGY APPLIED TO THE PREVENTION OF MATERNAL MORTALITY IN HC IN THE CITY OF NAMPULA.

Table 5: Application of community education for the prevention of maternal mortality in health centers in the city of Nampula

| Content | Answers | Frequency | Percentage |
|---|---|---|---|
| How do you consider the ESMI Service at the BC | I consider that there is a lack of reception, the service is slow, slow, lack of material for the service | 99 | 26,5% |
| | I consider it good service | 131 | 35,1% |
| | I am very afraid of ESMI because of their bad attitudes, poor sensitivity and affection towards pregnant and parturient women | 143 | 38,3% |

Cast Iron: Biombe, 2023

As can be seen in table 5, 99 participants, corresponding to 26.5%, consider that there is a lack of receptiveness, the service is slow and slow. In addition, 131 participants, corresponding to 35.1%, affirm that there is good care and 143 participants, corresponding to 38.3%, said that they are very afraid of ESMI due to bad attitudes, poor sensitivity and affection with pregnant and parturient women.

The data from the study carried out with pregnant women on community health education as a strategy for preventing maternal mortality in health centers in Nampula reveals the following:

Influence of moral, ethical, and deontological factors: Participants highlighted that these factors have a significant influence on the process of community education for the prevention of maternal mortality. This indicates the importance of addressing these aspects when developing education strategies and improving the quality of health care provided to pregnant and parturient women.

Perception of care: A significant part of the participants (26.5%) reported that there is a lack of reception in health centers, with slow and slow care. This can have a negative impact on the experience of pregnant and parturient women, affecting the effectiveness of community health education.

ESMI attitudes: A considerable proportion of participants (38.3%) expressed fear towards ESMI (Traditional Nurses and Midwives), citing poor attitudes, lack of sensitivity and affectivity. These negative perceptions can create barriers in the communication and engagement of pregnant and parturient women, hindering the effectiveness of community health education.

Perception of good care: On the other hand, 35.1% of the participants reported that they receive good care in health centers. This positive perception may indicate that some pregnant women and mothers have a satisfactory experience in the process of community health education, which can contribute to the prevention of maternal mortality.

In summary, the data reveal a variety of perceptions about community health education in Nampula health centers. The presence of moral, ethical, and deontological factors, as well as the reception and care offered by the ESMI, play an important role in the effectiveness of this strategy for preventing maternal mortality. It is essential to address the concerns raised by the participants, seeking to improve the reception, care and sensitivity of health teams to promote a positive and effective experience of community health education.

## ANSWERS TO INTERVIEWS CONDUCTED WITH NURSES ABOUT COMMUNITY HEALTH EDUCATION AS A STRATEGY APPLIED TO PREVENT MATERNAL MORTALITY IN HC IN THE CITY OF NAMPULA

Regarding the application of the Community Health Education strategy for the prevention of maternal mortality in the HCs of the city of Nampula, the nurses' answers were diverse, as can be seen in the statements presented below:

*[...] there are several factors [...]; [...] in fact the center is without sonar to auscultate the baby's BCF to hear the fetus [...] We went more than a month without brown paper, which rolls the material to be sterilized. [...] ; [...] Our work is impaired, several times we cancel a patient's procedure for another day waiting for the material [...]. [...] Often the patient is embarrassed by the lack of material [...] in addition to the lack of work material such as posters, vaccines and syphilis tests [...]; [...] There are problems of ignorance of women in the guidelines we give [...]**E1***

*[...] during the counseling of women, I face difficulties such as insufficient vaccines against tetanus, hepatitis [...]; [...] although there are women who refuse to vaccinate with the baby [...]; [...] insufficiency of medicines ...; [...] There are problems of ignorance of women in the guidelines we give [...]**E2***

*[...] Although there are women who refuse to vaccinate with the baby during my activities, I face difficulties such as insufficient vaccines against tetanus, hepatitis [...]; [...] insufficiency of medicines ...; [...] There are problems of ignorance of women in the guidelines we give [...]**E3***

*[...] I have had a lot of difficulty [...]; [...] mainly due to lack of work material, such as insufficient pre-eclampsia posters, sepsis posters and syphilis tests [...]**E4***

*[...] we have faced several problems [...]; [...] the most frequent are related to women's own culture [...]; There are pregnant women who have a lot of difficulty following our guidelines[...] due to their schooling and the habits of the community itself[...] **E5***

*[...] we have faced problems related to family matters [...]; [...] negative influences of the spouse who does not accept the woman to do family planning [...]; [...] making women disobey the instructions on planning[...] as a result we have had cases of* calving intervals shorter than 2 years *[...]**E6***

Interviews with nurses about community health education as a strategy applied to the prevention of maternal mortality in the Health Centers of Nampula reveal the following:

Limitations of resources and materials: The nurses pointed out several difficulties related to the lack of essential resources and materials for their work. This includes the absence of equipment such as sonars to auscultate fetal heartbeats, lack of materials for sterilization, and insufficient posters, vaccines, and tests to carry out proper health guidelines. These limitations negatively affect the quality of care and can hinder the effectiveness of the community health education strategy.

Difficulties in the application of the guidelines: The nurses mentioned the occurrence of problems related to the lack of adherence and understanding on the part of the women in relation to the orientations given. These include refusal to vaccinate babies, lack of knowledge about the necessary care, and difficulties in following instructions due to cultural issues, education, and spousal influence. These obstacles can compromise the results of community health education and the prevention of maternal mortality.

Need for more educational resources: Nurses reported a shortage of educational materials, such as information posters on preeclampsia and sepsis, which are essential for disseminating important information to pregnant women and mothers. The lack of these resources can make it difficult to understand and adopt healthy practices.

Challenges related to family problems and external influences: Some nurses mentioned challenges associated with family issues and negative influences, such as spouses' resistance to family planning. This can lead women to disobey medical advice, resulting in shorter than recommended delivery intervals, which can increase maternal health risks.

The interviews reveal a series of challenges faced by nurses in the implementation of community health education as a strategy to prevent maternal mortality. Resource limitations, lack of buy-in and understanding on the part of women, scarcity of educational materials, and negative external influences are obstacles that need to be addressed to improve the effectiveness of this strategy and ensure quality care for pregnant women and mothers in the city of Nampula.

## DATA FROM THE RESEARCHER'S OBSERVATION

In this investigation, some materials necessary in the community education procedure for the prevention of maternal mortality were observed. However, it was found that in all health units where data collection took place, there are no Hemorrhage Flowcharts, Preeclampsia Flowcharts, and Sepsis Flowcharts. In addition, until the moment of data collection there were no syphilis tests, HIV tests, tetanus and hepatitis vaccines.

It was observed that the pregnant woman was present at the ABC, vaccination cards of the baby's mothers, and several irregularities were found, such as: late start of the ABC 2 to 3 months after conception, incomplete vaccinations with the baby, mothers without a family planning card, short birth intervals, pregnant women under 18 years of age, mothers under 18 years of age with 2 to 3 children.

There are several strategies that can help prevent bleeding or even reduce its complications. This can start in prenatal care.

It is important to properly treat anemia in pregnant women and use a flowchart.

## CONCLUSIONS

Thus, it concludes that:

1. Regarding the general objective "To understand the course of community health education as a strategy for the prevention of maternal mortality in the health centers of the city of Nampula", that the main counseling strategy developed by the ESMI in the procedure of community health education on the prevention of maternal mortality in the Health Units of the city of Nampula is the method of Person-Centered Education/person-centered clinical method, as most maternal and child health nurses use this method.

It is an efficient strategy, as it helps maternal and child health nurses to understand pregnant women and not just limit themselves to the disease. This strategy also includes the characteristics related to the contents of the consultations, including attention to the orientations provided to the mothers, in addition to the uniqueness of each patient, with the reception, satisfaction and maintenance of the professional-patient bond.

Similarly, it is concluded that there are maternal and child health nurses who resort to the clinical method centered on the disease/clinical consultation and collective lectures focusing only on biological aspects. Although they are prevention and health care actions aimed at advising, correcting behavior in a socio-sanitary, inclusive and solidary dimension to improve the quality of life, it does not achieve the desired goals.

2. Regarding the specific objective "To describe the demographic characteristics of pregnant women in the health centers (HC) of the city of Nampula.":

It is concluded that single women have a three-fold higher risk of not having prenatal consultations when compared to married women. One hypothesis for this finding may be related to the partner's support during pregnancy, which favors adherence to prenatal consultations and, conversely, the lack of contact with the baby's father contributes both to the lack of care and to the fewer consultations during pregnancy.

In order for the pregnant woman to feel more confident and secure during the gestation period, there is a need for the father figure to be accompanying the entire process.

3. Regarding the specific objective "To identify the strategies and contents of education for the prevention of maternal mortality in the health centers (HC) of the city of Nampula":

It is concluded that the purpose of Person-Centered Education/person-centered clinical method is the formation of healthy habits and attitudes/behaviors, which is the principle of value creation. Values represent basic convictions, a specific mode of conduct that contains an element of judgment, based on what the individual believes to be right, good, or desirable. Values are important in the study of community behavior because they lay the foundation for understanding attitudes and motivation, as well as influencing perceptions.

4. Regarding the specific objective "To characterize the attitudes and behaviors manifested by women during the prenatal period, following community health education on the prevention of maternal mortality in health centers in the city of Nampula":

These pregnant women show attitudes that constitute relevant prenatal problems , with greater emphasis on early and late gestational age, multiparity, and short spaces between births.

The following are problems that contribute to maternal mortality: Late start of prenatal consultation; Number of consultations less than 3; Not doing family planning; Do not vaccinate with the baby; Giving birth or having an abortion at home; and Consumption of alcohol or other drugs during pregnancy.

5. Regarding the specific objective "To verify if Community Health Education is a strategy for the prevention of maternal mortality in HCs in the city of Nampula": it is concluded that in order to correct this problem, importance should be given to educational actions during prenatal care, believing that the purpose ofof community health education on the prevention of maternal mortality, which occurs in the Health Units of the city of Nampula is the formation of habits, and attitudes/behaviors that is the principle of value creation.

## SUGGESTIONS

After concluding the study, some questions emerged, which may constitute the development of future research and the implication in interventions in the field of community health education.

Regarding health education, it is suggested that:

- There should be an effort on the part of maternal and child health nurses so that health education is a tool to promote healthy behaviors, prevent diseases and promote well-being in communities and become a constant. Pregnant women need monitoring and guidance.
- It is urgent to develop reflections among maternal and child health nurses and pregnant women on the relationship between education and behavior change. The social and family environment in which it takes place are fundamental, if we want pregnant women to become aware and internalize important aspects for a healthy existence and the benefits it brings, they will have to use the main counseling strategy in the procedure of community health education on the prevention of maternal mortality in the Health Units of the city of Nampula, which is the Person-Centered Education method /person-centered clinical method.
- It is essential that the methodology and strategies used by maternal and child health nurses be clarified and shared with pregnant women and the community because it is important and indispensable that they favor the active participation of pregnant women in

the construction of their knowledge and promote constant reflection on practices, reflection on the realities lived and witnessed and reflection on the mobilization of their knowledge. Reflective practice is essential.

It is suggested that a study be carried out that would replicate this one, more comprehensive and carried out in more health centers, that is, that could be extended to more participants and that would allow comparisons to be made. Perhaps interesting aspects would be revealed, which could be generalized, as well as future research that focuses only on the motivation in community health education and its application in the reduction of maternal mortality.

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