***GNOSI:* An Interdisciplinary Journal of Human Theory and Praxis**
Volume 6, Issue 2, July - December, 2023
ISSN (Online): 2714-2485

Women's Autonomy and Child Health: A Focus on Health Status, Use of Malaria Prevention and Treatment Services

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(**Received**: February -2022; **Accepted**: July-2023; Available **Online**: July -2023)

ABSTRACT

This research analysed the potential role of women's level of autonomy in the health status and use of malaria prevention and treatment services for children under five in northern Mozambique. To achieve this goal, we use quantitative methodologies. The data are from IMASIDA (2015). Of that data, this study used two analytical subsamples: the first with 1972 children under the age of five of married or divorced mothers. This constitutes the subsample for the analysis of the children's health status. The second subsample consisted of 662 children who had become ill. This was the subsample for analysis of whether a certain mother sought advice or treatment for her child with fever. Descriptive statistics were used for analyses in this study. It was found that children of mothers with medium or high autonomy were less likely to get sick (30.4%), followed by children of mothers with low autonomy (31.3%), and finally children of mothers without autonomy (34.0%). The results also show that mothers with medium or high autonomy were more likely to take their sick children to seek advice or health care (69.7%), followed by mothers without autonomy (62.1%), and lastly, mothers with low autonomy (54.9%). Furthermore, differences were found between the dimensions of autonomy in their influence both on a child's risk of illness and on her mother's propensity to seek advice or treatment. According to the findings, children of mothers who make important household decisions alone are more likely to take their sick children to the doctor (69.0%), followed by children of mothers who make decisions alone about visiting family or other close relatives, and finally children of mothers who make decisions about their own health care (49.1%). In the northern region of Mozambique, it was discovered that factors like the mother's educational level, the socioeconomic standing of her household, and the location of her home—rural or urban—had an impact on both the likelihood that children would become ill as well as their mothers' propensity to seek medical advice or treatment.

Keywords: Women autonomy; Children under 5 years old; health; Malaria.

INTRODUCTION

According to WHO (2013), malaria is a major public health problem in the world, with about 198 million cases and 584,000 deaths per year, most of which are cases (80%) and deaths (90%). in Africa. According to the African Leaders Alliance Against Malaria 2030 (ALMA) Africa Malaria Eliminatbuiion Scorecard, Mozambique should have reported seven million cases of malaria in 2012, which corresponds to at least three and a half million cases in a semester (Arroz, 2016). Therefore, in Mozambique, malaria is endemic and represents 45% of all cases observed in outpatient consultations and approximately 56% of hospitalisations in paediatric wards; almost 30% of all deaths recorded in Mozambique are due to this disease (INE and MISAU, 2011). It is the main cause of death in hospitals (Arroz, 2016), with pregnant women and children under five years of age being its main victims (INE & MISAU, 2013).

Despite the variation in the prevalence of malaria in children, it remains high in Mozambique. According to MISAU (2009), the estimated prevalence of malaria in children in the age group from 2 to 9 years old varies from 40 to 80%, with 90% of children under 5 years old infected by malaria parasites in some areas. The Demographic and Health Survey in Mozambique (IDS-2011) shows that there was a reduction in the prevalence of malaria in children Under 5 years of age in Mozambique from 35% to 26.7% (MISAU & INE, 2003, p. 151; MISAU & INE, 2013, p. 188). Despite this decline, the most recent results indicate an increase to 40% in 2015 and 43% in 2018 (INE & MISAU, 2016, p. 37; INE & INS, 2018, p. 59). This fact suggests the possibility of underreporting or underestimating the prevalence of real cases of malaria in the country.

According to Casanova (2012) and Powell (2005), fever is the most frequent sign of malaria in children as a result of an immature immune system. Therefore, if parents understand health as a process centred on promoting quality of life, it will imply the construction of a surveillance logic, which consists of health care for children. This will avoid complications and provide security in your development process. Surveillance of the child's state of health is generally the responsibility of the woman because of the child's natural dependence on her, especially in the first years of life. Hence, it becomes important that the woman has the prerogative to decide or make decisions about the child's health. Knowing about the existence of malaria prevention services is not enough. In some cases, at the community or household level, there may be easy access to malaria prevention services, and limited decision-making power may be an obstacle to adherence to such services. Women's decision-making power is a fundamental element for children's health, which is why studies by Hoque and Mostofa (2014) and Mistry and Galal (2009) reveal that women's autonomy plays a preponderant role in the use of malaria prevention and treatment services due to the fact that women with more autonomy do not wait for someone to allow them to send their children to health units when they are sick.

According to INE and INS (2018), in Mozambique, the main malaria prevention services consist of the use of insecticide-treated mosquito nets, indoor spraying (PIDOM), and management of anti-malarials obtained through the Service National Health. Among these services, long-lasting insecticide-treated mosquito nets are the main means of protection against malaria in Mozambique (INE & INS, 2018, p. 70; Arroz *et al*., 2016, p. 2). Therefore, *"the use of mosquito nets impregnated with long-lasting insecticide (hereinafter referred to as "nets with insecticide") can reduce morbidity and mortality from malaria, mainly in children and pregnant women"* (Arroz *et al*., 2016, p. 2).

According to INE & MISAU (2016) and INE & INS (2018), the provinces in the northern region of Mozambique are the ones with the highest coverage of malaria

prevention services. Despite encouraging coverage, fever and malaria in children remain alarming in this region. IMASIDA-2015 reveals that the prevalence of fever in children aged 6–59 months is higher in the northern region of Mozambique: Niassa has a population of 30%; Cabo-Delgado has 21%; and Nampula has 39% (INE & MISAU, 2016). However, Nampula, with 39%, and Zambézia, with 51%, are the provinces with the highest prevalence of fever in the country (INE & MISAU, 2016). In addition to the prevalence of fever, the northern region has a higher percentage of malaria prevalence in children aged 6–59 months compared to other regions of the country, as illustrated by INS & INE (2018, p. 70): North region: Niassa, 49%; Cabo Delgado, 57%; Nampula, 47%; Centre region: Zambézia, 44.3%; Tete, 29.4%; Manica, 47.6%; Sofala, 29.4%; Southern region: Inhambane, 35.1%; Gaza, 16.8%; Maputo Province, 1.3%; Maputo City, 0.9%. As can be seen, the provinces of Cabo-Delgado and Nampula have a high prevalence of malaria in the northern region. In general terms, the northern region of Mozambique has a higher prevalence of fever and malaria in children Under 5 years of age. The facts described above, in addition to conjecturing that the main interventions for malaria control are not sufficient to eradicate the disease in this region, also suggest the possibility that the main malaria prevention and treatment services are being little used.

According to MISAU (2009), access to health care to obtain malaria prevention and treatment services in Mozambique is very low, a situation that, in fact, derives from the lack of health centres and the distance to a health unit that is higher for a large part of the population. However, as indicated above, there are cases where usage is low where these same services are available. For Mutsigiri-Murewanhema *et al.* (2017), the carer's health care-seeking behaviours, patient-related factors, and health system-related factors are important determinants in the fight against malaria in children. In these terms, the woman's autonomy is a factor linked to the patient (the mother of the child) and appears to be a potentially essential component for the use of malaria prevention and treatment services. Therefore, women's autonomy has the possibility of influencing the use of services and treatment of malaria in favour of their children under five years of age.

Based on this understanding, our research intended to investigate the role of the woman's level of autonomy in the child's health status and in the use of malaria prevention and treatment services by their children under five years of age in northern Mozambique. Thus, it was decided to explore a possible role of women's autonomy, on the one hand, due to the fact that, in this region, women have a social weight, that is, they play an important social role, above all, in the care of the house and of children (Negro, 2000), and, on the other hand, due to the fact that there is a lack of knowledge regarding the study of the relationship between women's autonomy and the use of services for the prevention and treatment of malaria in children under five years in Mozambique, specifically in the region under study. Therefore, in the first place, this study intended to investigate whether a woman's level of autonomy may or may not be associated with the health status of her children under five years of age in the northern region of Mozambique. Second, to examine whether there is a relationship between women's autonomy and the search for and use of health services for the prevention and treatment of malaria in their children under five years of age in this region.

METHODOLOGY

This study is essentially based on quantitative methodology. The quantitative method constitutes a deductive process through which numerical data provide objective information regarding the variables under study. It allows the testing of hypotheses, and the basis for generalising the results is universal and independent of context (Godoy,

1995; Lima, 2005). Although there are some studies on women's autonomy that have applied qualitative methodology, most studies on this topic have applied quantitative methods, as evidenced in the literature review of the present study. Furthermore, we opted for the quantitative method because of its concern with measuring (quantity, frequency, and intensity) and because it is an appropriate method to measure opinions, attitudes, and preferences as well as behaviour (Terence & Filhos, 2006; Schensul, 2008). According to Lima (2005), quantitative research can be carried out using two sources of data: primary and secondary. Primary data is considered to be data that the researcher (or research team) designed for collection based on their own research questions. Secondary sources are considered to be statistical records, personal documentary sources, and mass communication documents collected for the most diverse purposes and which can be used as a source of quantitative research.

However, the use of primary data in quantitative research, which involves a larger population, as is our case, requires a high investment in terms of time and financial resources, as it will be necessary to develop and apply a survey (Lima, 2005). That is, it is essential to design a representative sample of the population to be investigated, develop standardised questionnaires, form and train the team of interviewers, carry out pre-tests, tabulate questionnaires, verify and test the consistency of the data, and assemble and finalise the database of data. For these reasons and because there is already adequate data on Mozambique to explore the problem of interest, this research analyses secondary data. In this case, the data for this study were taken from the Immunisation, Malaria, and HIV/AIDS Indicators Survey, or simply IMASIDA 2015 (INE & MISAU, 2018). Despite the availability of more recent data from the National Survey on Malaria Indicators, IIM [1]-2018 (INS & INE, 2018), we opted for IMASIDA 2015, given that the IIM-2018 did not ask specific questions related to women's autonomy.

IMASIDA-2015 was designed in such a way that its sample is representative at national, regional, urban, and rural levels for women aged between 15 and 49 years (INE, MISAU, & 2016, p. 2). IMASIDA was implemented by the National Institute of Statistics in collaboration with the Ministry of Health and had technical assistance from the ICF (International *Coach Federation)*, which provided technical assistance through the Demographic and Health Survey Programme (IDS Programme). According to the main survey report (INE & MISAU, 2016), the IMASIDA sample consisted of 7,368 households selected from 307 enumeration areas (AE). The mother sample was constituted based on the results of the 3rd General Population and Housing Census (RGPH) of Mozambique, carried out in 2007. Of the selected households, 7,169 agreed to participate in the household interview, which resulted in a response rate of 98% for women interviewed (INE & MISAU, 2018).

In the interviewed households, 8,204 eligible women aged 15–59 were identified for the individual interview, of whom 7,749 were interviewed. Data collection took place between June 8 and December 31, 2015 (INE, MISAU, 2018). It should be noted that we limited our sample to the north of Mozambique and relied on information regarding women's autonomy and children's health, which was collected through interviews with women aged 15–49 years and children aged 6–59 months, for a total of 2,442 women (weighted number), of which 362 were in Niassa province, 639 in Cabo-Delgado, and 1,441 in Nampula (INE & MISAU, 2016, p. 40). Of this number, data from children with complete information on all variables of interest were effectively used in the analyses. Of the women interviewed, those who did not have children or who had children older than 5 years old (the study considered children up to exactly 5 years old) were excluded from the analysis. Women who are not officially married, that is, married, were also considered in the analysis since they live with a man, which can influence their autonomy. In IMASIDA, four questionnaires were used: one to interview households, an individual one

for women aged 15–59 years, an individual one for men aged 15–59 years, and another biometrics questionnaire for men and women aged 15–59 years (INE & MISAU, 2016). With the questionnaire of eligible women (15–59 years old) and household information collected on various topics, with emphasis on sociodemographic characteristics, women's health, child health, immunisation of children aged between 6 and 59 months, occupation of women, domestic violence, and use of mosquito nets (INE & MISAU, 2018).

STUDY MEASURES

Dependent Variables

This study has two dependent variables: for the first variable, women with children under five years old were asked about the child's health to find out if the child had a fever in the last two weeks. This variable has two possibilities: 0 representing that the child has not had a fever in the last 2 weeks; 1 showing that the child has had a fever in the last two weeks (in this case, 0 = No, 1 = Yes).

Regarding the second variable, a woman with a child under five years of age who had a fever between June 8 and September 20, 2015, was asked whether she had sought advice or treatment for that child's fever. This variable also has two possibilities: 0 representing that no advice or treatment was sought for a given sick child; 1 representing that advice or treatment was sought for the child; in this case, 0 = advice or treatment was not sought; 1 = Advice or treatment sought. It should be noted that the study did not precisely detect whether the child's fever was linked to malaria or not. However, it is presumed that this link existed, as previous studies point to fever as the main cause of malaria in children under five years of age in Mozambique (Ex.: INE & MISAU, 2013, p. 181; INE & MISAU, 2018, p. 121; INS & INE, 2019, p. 54).

Independent Variables

The main independent variable for this study is the woman's autonomy (mother of a given child). Most studies include the following common components for building women's autonomy: decision-making about household matters or health care, control over some finances, and freedom of movement (e.g., Sano *et al., 2018a;* Amayawon *et al.,* 2015; Saleem, Bobak, & Martin, 2005; Sen, 2000; Acharya, 2010; Essien et al., 2021). The IMASIDA 2015 questionnaire brings questions about these aspects, so the measure of women's autonomy for this study was created based on the following questions: 1. Who decides on visits to the woman's family or relatives? 2. Who decides on women's health care? 3. Who decides on major purchases for the household? Each question had four possible answers: (1) the respondent alone; (2) together; (3) husband or partner; (4) other people Women who had a final say in one of the above items were considered to have low autonomy in the family, and those who did not have a final say in any of the three items were classified as having no autonomy in the family. A woman was considered to have medium or high autonomy in the family if she alone had the final say in two or three of the items presented above. A similar approach was employed by Cau (2017) and Acharya (2010).

To find out if there are differences in the dimensions of autonomy presented above and their relationship with the use of health services, non-aggregated measures of women's autonomy were also used. In this case, each of the dimensions was used as an independent variable (autonomy measure), which was used to assess its relationship with dependent variables. Thus, we had the following main independent variables disaggregated:

1. Decision on visits to family members or relatives of the woman;
2. Decision on women's health care;
3. Decision about making major purchases for the household

These variables had the following codes: (1) the respondent alone; (2) together; (3) husband or partner; (4) another person. For each of the three dimensions, a woman was considered to enjoy autonomy if she alone made the corresponding decision. The secondary independent variables consisted of demographic and socioeconomic factors that may affect the relationship between (i) women's autonomy and the health status of their children and (ii) women's autonomy and the use of malaria prevention services in children. These variables include: Female education level: 0 = no education, 1 = primary education, 2 = secondary or higher education; household wealth quintiles: 0 = poor, 1 = middle, 2 = richest; number of children; woman's occupation: 0 = not employed, 1 = employed outside the home; Religion: 0 = Catholic; 1 = Evangelical or Pentecostal; 2 = No religious affiliation (Religion: 0 = Christianity; 1 = Islam; 2 = No religious affiliation); women's age: 15–24, 25–34, 35 years old or older; If the child is a twin, area of residence: 0 = urban, 1 = rural; type of water: 0 = tap water; 1 = Protected well; 2 = Unprotected well; 3 = river or lake water; Toilet type: 0 = no latrine, 1 = unimproved latrine, 2 = improved latrine, 3 = flush toilet. A similar approach was employed by other authors, such as Saleem and Bobak (2005), Sano (2018), and Nigatu *et al.* (2014).

DATA ANALYSIS

Data from IMASIDA-2015, used for our analysis, are weighted to remove possible sampling errors due to unequal selection probabilities. For data analysis, descriptive statistics were used. According to Mulenga (2018), descriptive statistics is the branch or part of statistics whose objective is the observation of phenomena of the same nature, collection, organisation, classification, analysis, and interpretation of data without failing to calculate some measures (statistics), which allow a brief description of the studied phenomenon. In the present study, we applied descriptive analysis in order to analyse the sociodemographic profile of respondents. In this case, demographic and socioeconomic variables were analysed based on "frequency" and "percentage" to condense a collection of data according to the repetitions of their values. However, associations between women's autonomy and demographic and socioeconomic characteristics were explored using cross-tabulations, and significance was assessed by "Pearson's chi-square test". Variables with a probability value (p) <0.05 were interpreted as being statistically significant (Saleem & Bobak, 2005; Situ, 2013; Acharya *et al.*, 2010).

RESULTS

Demographic and Socioeconomic Characteristics of the Child and the Mother

As for the characteristics of the mother and the household, it is noted that there are many women without autonomy (82.8%). This is because only 11.0% of women decide on their own about visiting family members or relatives; 7.7% of women decide on their own about women's health care; and 7.1% of women in the northern region decide on their own about making important purchases for the household. In this region, more than half of women profess the Christian religion (52.7%), followed by the Islamic religion with 45.6%. Around 38% were in the 20–24 age group, and another 37.5% were in the 24-29 age group. Only 24.7% of women were in the most advanced age group (35 years or older). More than half of women had primary education (55.2%), only 12.4% had secondary or higher education, and another 32.4% had no education (Table 1).

More than half of women were employed (63.4%), and there were more women in the low wealth index quintile (60%), followed by women in the high middle quintile (21%), and 19% of women in the middle wealth index quintile. More than half of the women were married (56.4%), and the rest are women living with a partner (43.6%). Most women lived in rural areas (78.9%). Of these, 64% slept with their children under a mosquito net; about 33% of children had a fever in the past two weeks; and 79.7% of children who had a fever had their mother seek advice or treatment for the fever. Furthermore, of the interviewed households, about 33.3% have piped water, 25.5% have a protected well, 26.2% have an unprotected well, and few consume water from the river or lake (15.0%). As for the type of bathroom used in the household, it was found that, in the north region, there are a greater number of households that have an unimproved latrine (53.9%) and a few households that have a bathroom with a flush toilet (3.8%) (Table 6).

Table 1. Distribution of demographic and socioeconomic characteristics of children and their mothers

VARIABLE	%	No
characteristics of children		
Child's Gender		
Masculine	49.4	974
Female	50.6	998
Total	100	1972
child's age		
<1	22.9	412
2	22.5	443
3	17.6	346
4	21	414
5	18.1	375
Total	100	1972
Twin child		
Yes	2.2	44
No	97.8	1928
Total	100	1972
Characteristics of the mother and household		
Mother's level of autonomy		
Medium or high autonomy	5.7	112
Low autonomy	11.5	227
without autonomy	82.8	1633
Total	100	1972
Mother's autonomy dimensions	%	No
The woman decides alone about visits to the woman's family and relatives		
Yes	11	217
No	89	1755
Total	100	1972
The woman decides on her own about women's health care		
Yes	7.7	152

No	90.7	1820
Total	100	1972
The woman decides on her own about making important purchases for the household.		
Yes	7.1	140
No	92.9	1832
Total	100	1972
Mother's age		
15-24.	37.9	747
25-34.	37.4	738
35 years or older	24.7	487
Total	100	1972
Mother's religion		
Christian		
Yes	52.2	1030
No	47.8	942
Total	100	1972
Islam		
Yes	46	907
No	54	1064
Total	100	1972
Without religion		
Yes	1.5	30
No	98.5	1941
Total	100	1972
Mother's education		
No manners	32.4	638
Primary school	55.2	1089
Secondary or Higher	12.4	244
Total	100	1972
Mother's Marital Status		
Married	56.4	1112
living with partner	43.6	860
Total	100	1972
mother's occupation		
not employed	62.1	1225
Employee	37.5	740
Total	100	1972

Table 1. Continuation

VARIABLE	%	No
Type of Water Consumed in the Household		
Piped water		
Yes	33.3	656
No	66.7	1316
Total	100	1972
Protected Well		

Yes	25.5	503
No	74.5	1469
Total	100	1972
unprotected well		
Yes	26.2	517
No	73.8	1455
Total	100	1972
River or pond water		
Yes	15	296
No	85	1676
Total	100	1972
Type of bathroom used in the Household		
no latrine		
Yes	21.9	433
No	78.1	1539
Total	100	1972
unimproved latrine		
Yes	53.9	1064
No	46.1	908
Total	100	1972
improved latrine		
Yes	20.3	400
No	79.7	1571
Total	100	1972
Bathroom with flush toilet		
Yes	3.8	75
No	96.2	1897
Total	100	1972
household wealth quintile	%	No
Low	60	1183
Medium	19	375
High	21	413
Total	100	1972
Mother's Marital Status		
Total		
Area of residence		
urban		
Yes	23.1	456
No	76.9	1515
Total	100	1972
Rural		
Yes	76.9	1515
No	23.1	456
Total	100	1972
The mother slept under a mosquito net		
Yes	63.3	1248
No	36.7	724

Total	100	1972
Has the child had a fever in the last two weeks		
Yes	33.6	662
No	66.4	1309
Total	100	1972
Mother Seeks Fever treatment advice		
Yes	61.8	409
No	38.2	253
Total	100	662

Table 2 shows the results of the bivariate analysis of the relationship between the woman's autonomy and the child's health status (whether or not the child had a fever in the last two weeks).

The same Table shows that about 34.1% of children of mothers without autonomy had a fever in the last two weeks, followed by about 31.3% of children of mothers with low autonomy and 30.4% of children of mothers with medium or high autonomy. These results suggest that a woman's autonomy is important in terms of the risk of a child becoming ill, as it is noted that the highest percentage of children who had a fever were those of mothers without autonomy. However, these results are not statistically significant. Taking into account the dimensions of women's autonomy, about 33.6% of children of women who decide on their own about visiting family members or relatives of the woman had a fever.

A similar percentage (33.6%) was observed among those who do not enjoy this type of autonomy. These results are not statistically significant (p = 0.981) and suggest that this dimension of autonomy is not relevant in relation to the child's risk of illness. About 36.2% of children Under five years of age whose mothers decide on their own health care had a fever in the last two weeks, compared to 33.4% among children of mothers who do not enjoy this type of autonomy. The results are not statistically significant (p = 0.480). These results also suggest that this dimension of autonomy does not have a protective role in relation to the child's risk of illness. Of the women who decide on their own about making important purchases for the household, about 20.7% of their children had a fever in the last two weeks, *versus* 34.6% among women who do not enjoy this type of autonomy. The results are statistically significant (p = 0.001); moreover, the results show an important influence of this dimension of women's autonomy in protecting the health of their children.

FACTORS INFLUENCING THE CHILD'S HEALTH STATUS (WHETHER OR NOT THE CHILD HAS HAD A FEVER IN THE LAST TWO WEEKS)

Table 7 also shows that approximately 33.7% of male children had a fever in the last two weeks and 33.5% of female children. There are fewer children of the first (up to one year old) and last age (5 years old) who had a fever in the last two weeks, and a greater number are concentrated in the ages of two, three, and four years. And about 33.9% of unmarried children had a fever in the last two weeks, and another 18.2% among twins. About 36% of children under five who had a fever in the last two weeks had mothers who professed the Christian religion; 30.5% had mothers who professed the Islamic religion; and 43.3% had non-religious mothers. Taking into account the mother's employment situation, about 35.1% of children who had a fever in the last two weeks were from non-employed mothers, and 31.4% were from employed mothers. As for household wealth level, about 39.7% of children and their mothers were from the middle household wealth quintile,

35.7% from the low quintile, and 22% from the high household wealth quintile. About 33% of children under five years of age, of mothers in the 15-19 and 20-24 age groups, have had a fever in the last two weeks; a percentage of 33.6% were mothers in the age groups 25-29 and 30-34, and 34.5% of children under five years of age, with fever in the last two weeks, were mothers in the age groups of 35 or more. About 35.4% of children under five who had a fever in the last two weeks had mothers who did not have any level of schooling; 35% were mothers with primary education, and 22.9% were mothers with secondary education or higher. About 31.9% of children of married mothers had a fever in the last two weeks, and another 38.9% of children of mothers living with a partner had a fever. And finally, 21.5% of children under five who had a fever in the last two weeks lived with their mothers in urban areas, compared to 37.2% of children whose mothers lived in rural areas.

Table 2: Results of the bivariate analysis of the relationship between women's autonomy, other factors, and the child's health status (whether or not the child had a fever in the last two weeks) in the northern region of Mozambique, data from IMASIDA 2015

Variable	The child had a fever in the last two weeks (N = 1972)						
	Child has had a fever in the last two weeks		The Child has not had a fever in the last two weeks		Total		P-value (Chi-Square test)
Women's autonomy (aggregate)	%	No	%	No	%	No	
without autonomy	34.1	557	65.9	1076	100	1633	0.531
Low Autonomy	31.3	71	68.7	156	100	227	
Medium or high autonomy	30.4	34	6	78	100	112	
Mother's autonomy dimensions							
The woman decides alone about visiting family members or relatives of the woman	33.6	73	66.4	144	100	217	0.981
The woman does not decide on her own about visiting family members or relatives of the woman	33.6	589	66.4	1166	100	1755	
The woman decides on her own about women's health care	36.2	55	63.8	97	100	152	0.480
Women do not decide alone about women's health care	33.4	607	66.6	1212	100	1819	
The woman decides on her own about making	20.7	29	79.3	111	100	140	0.001

important purchases for the household.							
The woman does not decide alone about making important purchases for the household	34.6	633	65.4	1199	100	1832	

Table 2. **Continuation**

Variable	**The child had a fever in the last two weeks (N = 1972)**						
	Child has had a fever in the last two weeks		**The Child has not had a fever in the last two weeks**		**Total**		**P-value (Chi-Square test)**
Child's Gender							
Female	33.5	334	66.45	664	100	998	0.909
Masculine	33.7	328	66.3	645	100	973	
child's age							
Up to 1	29.7	122	70.3	289	100	411	
2	37.6	166	62.4	276	100	442	0.007
3	37.6	130	62.4	216	100	346	
4	34.8	144	65.2	270	100	414	
exactly 5	27.7	99	72.3	258	100	375	
The child is not a twin	33.9	654	66.1	1274	100	1928	0.029
The child is a twin	18.2	8	81.8	36	100	44	
mother's age							
19-24	33	246	67	500	100	746	0.858
25-34	33.6	246	66.4	490	100	738	
35 years or older	34.5	168	65.5	319	100	487	
mother's marital status							0.004
Married	31.9	476	68.1	1018	100	1494	
living with partner	38.9	186	61.1	292	100	478	
household wealth quintile							
Low	35.7	422	64.3	761	100	1183	0
Middle	39.7	149	60.3	226	100	375	
High	22	91	78	322	100	413	
mother's occupation							
Not employed	35.1	430	64.9	796	100	1226	0.103
Employee	31.4	232	68.6	508	100	740	
mother's education							
No Education	35.4	226	64.6	413	100	639	0.001
Primary education	35	381	65	708	100	1089	
Secondary or higher education	22.9	56	77.1	189	100	245	

mother's religion							
Christian	36	372	64	662	100	1034	0.021
Islam	30.5	277	69.5	630	100	907	
Without religion	43.3	13	56.7	17	100	30	
area of residence							
Urban	21.5	98	78.5	358	100	454	0,000
Rural	37.2	564	62.8	951	100	1515	

Table 3 shows the results of the bivariate analysis of the relationship between women's autonomy and seeking health care for children who had a fever (i.e., seeking advice or treatment). Of the children of mothers with medium or high autonomy, 69.7% of those whose mothers became ill sought treatment, followed by about 62% of children of mothers without autonomy and, lastly, 54.9% of children of mothers with low autonomy. These results suggest that women's autonomy is important in seeking care and fever treatment for children under five years of age, given that the percentage of mothers who sought advice or treatment for their sick children is higher among mothers with medium or high autonomy. However, the results do not reach statistical significance (p = 0.315). On the other hand, Table 3 shows that around 68.5% of children of women who decide alone about visiting family members and relatives sought advice for the treatment of fever, compared to 60.8% among those who do not enjoy this type of autonomy. These results suggest that autonomy in the decision to visit family members and relatives is important for the child's health, although the results are not statistically significant (p = 0.205). About 49.1% of children who became ill, among women who decide alone about women's health care, sought advice for the treatment of fever, compared to 62.9% of children among those whose mothers do not enjoy this type of autonomy. And these results are not statistically significant. Contrary to expectations, these results suggest that this type of autonomy is not favourable to the search for health care (p = 0.043). About 69% of children who get sick and of women who decide alone about making important purchases for the household sought advice for the treatment of contracting fever; 61.5% of mothers who do not enjoy this type of autonomy did so. The results are not statistically significant (p = 0.416).

Table 3: **Results of the bivariate analysis of the relationship between women's autonomy, other factors, and seeking health care for children who had fever in the northern region of Mozambique, data from IMASIDA 2015**

Variable	**Whether or not the mother sought advice or treatment for the child sick (N = 662)**						
	The mother sought advice or treatment		**Mother did not seek advice or treatment**		**Total**		**P-value (Chi-Square test)**
Levels of women's autonomy	%	No	%	No	%		
without autonomy	62.1	346	37.9	211	100	557	0.315
low autonomy	54.9	39	45.1	32	100	71	
Medium or high autonomy	69.7	23	30.3	10	100	33	

Mother's autonomy dimensions							
The woman decides alone about visiting family members or relatives of the woman	68.5	50	31.5	23	100	73	0.205
The woman does not decide on her own about visiting family members or relatives of the woman	60.8	359	39.2	231	100	590	
The woman decides on her own about women's health care	49.1	27	50.9	28	100	55	0.043
Women do not decide alone about women's health care	62.9	382	37.1	225	100	607	
The woman decides on her own about making important purchases for the household.	69	20	31	9	100	29	0.416
The woman does not decide alone about making important purchases for the household	61.5	389	38.5	244	100	633	

Table 3. **Continuation**

Variable	**The child had a fever in the last two weeks (N=662)**						
	Child has had a fever in the last two weeks		**The Child has not had a fever in the last two weeks**		**Total**		**P-value (Chi-Square test)**
Child's Gender							0.089
Feminine	35	217	65	117	100	334	
Masculine	41.5	192	58.5	136	100	328	
child's age							0.235
Up to 1	68	83	32	39	100	122	
two	64.5	107	35.5	59	100	166	
3	54.6	59	45.4	71	100	130	
4	60.4	87	39.6	71	100	144	
exactly 5	60.2	59	39.8	39	100	98	
The child is not a twin	61.3	401	38.7	253	100	654	0.025
The child is a twin	100	8	0	0	100	8	
mother's age							0.002

Age 19-24	69.5	171	30.5	75	100	246	
Age 25-34	61.7	153	38.3	95	100	248	
Age 35 years or older	50.6	85	49.4	83	100	168	
Mother's Marital Status							
Married	65.7	241	34.3	126	100	367	0.022
living with partner	50.5	94	49.5	92	100	186	
household wealth quintile							
Low	57.8	244	42.2	178	100	422	
Average	67.8	101	32.2	48	100	149	0.019
High	70.3	64	29.7	27	100	91	
Women's Occupation							
not employed	63	271	37	159	100	430	0.337
Employee	59.1	137	40.9	95	100	232	
women's education							
No manners	58.4	132	41.6	94	100	226	0,000
primary education	59.8	228	40.2	153	100	381	
Secondary or higher	87.5	49	12.7	7	100	56	
Religion							
Christianity	62.9	234	37.1	138	100	372	
Islam	61.4	170	38.6	107	100	277	0.201
Without religion	38.5	5	61.5	8	100	13	
area of residence							
urban	79.6	78	20.4	20	100	98	0,000
Rural	58.7	331	41.3	233	100	564	

FACTORS AFFECTING THE SEARCH FOR HEALTH CARE FOR CHILDREN WITH FEVER IN MOZAMBIQUE'S NORTHERN REGION

About 35% of female children's mothers sought advice or treatment for fever, *versus* 41.5% of male children. Women with young children (up to 1 year and 2 years old) were the ones who most sought advice or treatment for fever (68% and 64%, respectively). As age increases, demand decreases, with a trend of around 60%. And about 61.3% of single children whose mothers sought advice and treatment for fever and 100% of mothers with twins who became ill sought advice and treatment for fever.

Table 3 also shows that there are no major differences between children whose mothers profess Christian and Islamic religions in seeking advice and treatment for fever (62.9% and 61.4%, respectively). Consequently, there is a smaller percentage of sick children whose mothers sought advice and treatment for fever among those whose mothers did not profess any religion (they were without religion). There is a higher percentage of children of non-employed mothers who seek advice and treatment for fever (63%). Also, there is a higher percentage of children whose mothers were from the high-wealth quintile, of whom 70.3% sought advice and treatment for the fever of their children under five years old, followed by children of mothers from the middle quintile (67.8%). And the children of mothers in the lowest quintile are the ones whose mothers least sought this treatment (57.8%). Children who got sick and whose mothers are in the 15–24 age group are the ones that stand out most in the search for advice and treatment

for their fever by mothers, with about 69.5%, followed by children of mothers in the age groups of 25–34 and 35 years or older (61.7% and 50.6%, respectively).

Children who got sick from mothers with secondary or higher education are the ones whose mothers most sought advice and treatment for their fever (87.5%), followed by children of mothers with primary education with about 59.8%. Furthermore, there is a greater number of children of married mothers whose mothers sought advice and treatment for fever (65.7%) than children of mothers living with their partner (50.5%), as well as a greater number of children of mothers residing in urban areas whose mothers sought advice and treatment for fever (about 79.6%).

THE INFLUENCE OF WOMEN'S AUTONOMY ON THE USE OF MALARIA PREVENTION AND TREATMENT SERVICES AND ON THE HEALTH STATUS OF THEIR CHILDREN UNDER FIVE YEARS OF AGE IN NORTHERN MOZAMBIQUE

The aim of this study was, on the one hand, to analyse the influence of women's autonomy in the use of services for the prevention and treatment of malaria and, on the other hand, to analyse the influence of women's autonomy on the health status of their children under five years in northern Mozambique. Women's autonomy was measured by decision-making about visiting the woman's family or relatives, decision-making about women's health care, and decision-making about making major purchases for the household. The results of this study revealed important relationships between outcomes of interest and women's autonomy. In the northern region of Mozambique, there is a higher percentage of children of mothers without autonomy who had a fever in the last two weeks (34.1%), followed by children of mothers with low autonomy (31.3%), and finally, children of mothers with medium or high autonomy (30.4%). On the other hand, the study showed that, in the three dimensions of autonomy, namely: the woman's autonomy in visiting the woman's family or relatives; women's autonomy in women's health care; and women's autonomy in making important purchases for the household, there are differences in their relevance regarding the potential protective role of children's health. No statistically significant association was found in the relationship between women's autonomy and the child's health status in all measures of autonomy used in this study. The study found that only results linked to the shopping dimension were statistically significant ($p = 0.001$). As for the question of whether the woman's autonomy is favourable to the child's health status, the decision dimension about making important purchases for the household alone was favourable, and the rest were not favourable for the child's health. Furthermore, the study suggests that in the northern region of Mozambique, there are more children of mothers with high autonomy who sought advice for the treatment of fever (69.7%) than those children of mothers with and without autonomy (62.1% and 54.9%, respectively).

In this order, the study found that the three dimensions of autonomy, namely: the woman's autonomy in visiting the woman's family or relatives; women's autonomy in women's health care; and autonomy to make important purchases for the household, do not seem to be relevant by themselves to seeking advice or health care for sick children. However, the exception are women who decide alone about women's health care, who tend to seek less care for their sick children compared to their counterparts, and those who do not enjoy this autonomy (49.1% versus 62.9%; $p = 0.043$). The possible reason behind this finding is that, in African society, men play a primary role in determining the health needs of a woman and child (Shaikh and Hatcher, 2005). Even in some societies characterised by matrilineal lineage, where there are gender norms that place women as housewives, the study seems to show that women wait for their husbands to allow them

to make use of prevention services. This is because men, in most African societies, are considered decision-makers and those who control most resources in marriages, and therefore they decide when and where women should seek health care (Rani & Bonu, 2003).. In this regard, women generally do not have the opportunity to visit a health facility or health provider alone or to make the decision to spend money on health care (Navaneetham and Dharmalingam, 2002). This can certainly have serious repercussions on their health, in particular, and on the self-respect, in general, of women and their children. In addition to men, sometimes other family members, carers, and friends may also be involved in women's health decisions, and this limits women's ability to make decisions alone (Fatmi & Ivan, 2002). Contrary to this finding, a previous study from Nepal emphasised that infant mortality was lower among women who had greater autonomy in deciding about their health care, as these women were more likely to use antenatal and postnatal care services (Adhikari & Sawangdee, 2011).

Although the results of the aggregate autonomy indicator did not reach statistical significance, they revealed an expected trend in this study, given that they showed that women with medium or high autonomy had a lower percentage of their children who fell ill and a higher percentage of searches for advice and treatment for their children who fell ill. Thus, women's autonomy appears to be an important factor in the child's health status as well as in the search for health care in the northern region of Mozambique, as children of mothers with more autonomy tended to have more advantages in the two outcomes of the study. Therefore, in general, the results of this research suggest that greater autonomy for women positively influences the health of the child. This finding is in line with many studies, which indicate that women's autonomy in decision-making about health care can probably increase the use of maternal and child health services. For example, a study from Tajikistan found that increasing women's autonomy was likely to increase the use of maternal health services (Kamiya, 2011); other studies show that mothers with high autonomy had children in good health and tended to seek maternal and child services (Adhikari & Sawangdee, 2011; Situ, 2013; Paudel & Patakamanaket, 2010; Kamiya, 2011).

Children of mothers who decide alone about making important purchases for the household were less likely to have a fever in the northern region of Mozambique. Mothers who enjoy this type of autonomy (decision about making important purchases for the household) were also more likely to seek advice and health care for their children with fever. Similar results were found in a study from Ethiopia and Eritrea, which revealed that women who had autonomy in deciding about making daily household purchases and visiting friends or relatives were more likely to use antenatal care services (Woldemicael, 2007). Another study conducted in Bangladesh found that women with high autonomy were more likely to use health services frequently (Haque *et al.,* 2012). Children of mothers who decide alone about making important purchases for the household were less likely to have a fever in the northern region of Mozambique, as were those whose mothers sought more health care. Similar results were found in a study from Ethiopia and Eritrea, which revealed that women who had autonomy in deciding about making daily household purchases and visiting friends or relatives were statistically associated with the use of antenatal care services (Woldemicael, 2007). Another study conducted in Bangladesh found that women with high autonomy were more likely to use health services frequently (Haque *et al.,* 2012).

1. Demographic and socioeconomic factors, health status, and use of malaria prevention services

Studies have revealed that in low- and middle-income countries, women's ability to seek health services depends on the health of the child and some other factors that interact to

influence their health decision-making capacity and health-seeking behaviour for their children. Sick children (Abegaz, 2019; Bloom, 2001). These factors are not limited to their socioeconomic *status* but may depend on perceptions regarding the level of the woman's marital status, the woman's age, the woman's education, religion, type of residence, wealth quintile, the woman's occupation, as well as the decision on visiting family members or relatives of the woman, taking care of her own health, and making important purchases for the household. These predisposing factors influence the child's state of health and the use of preventive services and can be grouped into individual and family groups.

Decision-making power in accessing and exercising adequate control over economic resources by women with young children has a broad positive impact on health-seeking behaviour for childhood illnesses. These are financial factors that affect the use of health services (Franckel & Lalou, 2008; Richards, 2013). For example, some studies conducted in Ethiopia suggest that children of women with limited decision-making capacity in health care are at greater risk of malnutrition, infant mortality, and negative paediatric health (Alemayehu, 2017; Mullany *et al.,* 2006; Fantahun *et al.,* 2007). Therefore, the ability to make decisions about health care is crucial for children's health. In this case, financial factors contribute to the difference in the health status of children between women with high and low autonomy in the northern region of Mozambique, as we will discuss later.

In this study, we found a statistically significant relationship between some demographic and socioeconomic factors of the child's mother and the child's health status in the northern region of Mozambique, namely, the mother's marital status ($p = 0.004$), household wealth quintile ($p = 0.000$), mother's education ($p = 0.001$), and type of area of residence ($p = 0.000$). For the second outcome (i.e., seeking advice or treatment for a child with a fever), we also found a significant relationship between some demographic and socioeconomic factors and seeking advice or treatment for a sick child, such as the mother's age ($p = 0.002$), women's education ($p = 0.000$), and type of area of residence. Moreover, the results of this study show that children of the first age are the ones who had the most fever in the last two weeks, mainly children up to 1 year and 2 years old, and the demand decreases as age increases ($p = 0.007$). The same goes for seeking advice and treating a fever. These results are in line with the results of the study by INE & MISAU (2019, p. 55), which show that the demand for advice or treatment for children with fever decreases as the child's age increases, from children under 12 months old to children aged 48–59 months old. Children of mothers in the age groups of 35 years and older were the ones who had the most fever in the last two weeks (34.5%). On the other hand, children of mothers in the 15–24 age groups sought advice or treatment for fever the most (69.5%), followed by children of mothers in the 25–34 age groups. Meaning that children of mothers of younger age groups tended to seek health services more than older ones. Many studies have shown a similar result; for example, Ajibade *et al.* (2013) and Mbagaya (2005) found a significant relationship between maternal age and health-seeking behaviour; women in the younger age group were more likely to seek medical care for their sick children. Similar findings were also shown in a previous study conducted in Bangladesh, which found that the proportion of health care was comparatively higher among young women (Haque *et al.,* 2012). Another previous study, carried out by Furuta and Salway (2006), also supported the result of the present research, which found that the highest proportion of women seeking medical care services were young. This fact shows that older women make little use of health services for their children.

It is not clear why older women may have poor health care seeking behaviour for their sick children, but one possible reason may be that older women may have

inadequate support, energy, and other skills or empowerments (such as financial, educational, and relationship power dynamics) to seek health care (Situ, 2013). Younger women may also have higher levels of education and thus better understand the relevance of using health services. Another possible reason could be that older women may have gained experience in childcare with previous children, reducing the need to seek health care (Situ, 2013, p. 48). Therefore, several studies prove that children of older women are more likely to have a fever than those of younger women.

Children of uneducated mothers and those with primary education were more likely to have a fever in the last two weeks **(**35.4%) than those with secondary or higher education. On the other hand, children of mothers with secondary or higher education were more likely to seek advice or treatment for fever (87.5%) than those with no education or with primary education (58.4% and 59.8%, respectively). A similar result was found in some previous studies, showing that education was the most important factor that influenced the use of maternal care (Ahmed *et al.*, 2010; Furuta and Salway, 2006). On the other hand, a strong association was found in a previous study that showed that women who received primary or higher education were four times more likely to seek health care than those who were not educated (Woldemicael & Tenkorang, 2010).

The study showed that children of non-employed mothers had more fever (35.1%) than those of employed mothers (31.4%). However, children of non-employed mothers were the ones whose mothers sought advice for fever treatment the most (63.0%) than those whose mothers were employed (59.1%). Similar results were found in a previous study conducted in Nepal, which found that employed women were less likely to receive antenatal services than non-employed women (Paudel & Pitakmanaket, 2010). The reason behind this finding is that most women in Nepal work for their families livelihood in the agricultural sector since they are from rural areas. Another possible reason that the author brings up is that women who work suffer time constraints, which reduce their opportunities to receive prenatal care (Paudel & Pitakmanaket, 2010). Furthermore, some previous studies have shown that employment in the informal sector does not necessarily raise women's positions either (Paudel & Pitakmanaket, 2010). The findings of this study also showed that women's employment had a strong association with their reproductive health care seeking behaviour. However, many studies have shown a different result; for example, in low- and middle-income countries, most women are unable to use health services. One of the reasons may be the lack of knowledge about the benefits, and other possible reasons may be feeling ashamed, workload, or distance to the health facility (Hossain, 2011; Ye *et al.*, 2010). The relationship between employment and health care use suggests that interventions should be made to ensure that employed women improve their autonomy in health care and increase the use of maternal and health services (Situ, 2013).

The study found that children of non-religious mothers or women were more likely to have the fever (43.3%) than those whose mothers professed a religion, in this case Christian or Islamic (36.0% and 30.5%, respectively). Many studies have explored women's autonomy in the use of health services and their relationship with religion, but most of them focus on the relationship between different religions (Christian *versus* Islamic or Hindu, etc.) (Situ, 2013; Jeejebhoy & Sathar, 2001; Singh *et al.,* 2012; Salam & Siddiqui, 2005). However, few studies focus on autonomy and its relationship with women with and without religion. However, this study suggests that, in the northern region of Mozambique, there is inequality in the use of maternal health services between women with and without religion. In these terms, the study finds that practising some religion was important for children's health in the northern region of Mozambique.

The study also showed that children of mothers living with a partner were more likely to have a fever (38.9%) than those of married mothers (31.9%). Furthermore, the

study showed that children of married mothers (65.7%) were more likely to be taken for fever advice or treatment than those of mothers living with their partners (50.5%). The possible reason supporting this finding is that married mothers are more likely to take care of their children and talk to their husband about their child's health than mothers living with a partner. These findings show that, in the northern region of Mozambique, the group of young women, mothers without education, mothers who are not employed, mothers without religion, and the group of women residing in the rural area were the ones with the highest number of children with fever. Showing that these elements can constitute a model of beliefs that explains individual and family behaviour in relation to health and the use of services according to their intentions and risk perceptions (Andersen & Newman, 1973).

The present study also found that children of women in the middle wealth index quintile were more likely to have a fever (39.7%). While children of women in the highest quintile (70.3%) were more likely to seek advice or treatment for fever. Similar findings were found in a study conducted in India. The study found that poor women were less likely to use birth care services at health facilities due to their inability to pay the high cost of delivery services. Delivery and medications (Salam & Siddiqui, 2006). In this case, according to Dutton's model (1986), financial factors affected women's use of health services. This study also showed that children of women from rural areas were more likely to have a fever (37.2%) and, on the other hand, children of women from urban areas whose mothers were more likely to seek advice for the treatment of fever. These results suggest that the provision of health services in the northern region of Mozambique still has an urban bias. There is a need to encourage the existence of infrastructure in rural areas, such as health and education, given that these are highly concentrated in urban areas, although more than 66.6% of the population in Mozambique resides in rural areas (INE, 2019).

In this sense, the government's initiative must reach the rural population, through health prevention programs. These need to be strengthened to fill the huge gap between rural and urban areas in access to health services. In addition, the IOF[1] (2021) finding that there is a strong association between women's perception that the distance to a health facility is currently not an issue for the use of health services. This finding suggests that access to health services is not a barrier in the provision of health services in the northern region of Mozambique, which lacks measures capable of stimulating the increased use of health services, such as those focused on raising the level of health women's added autonomy. According to Andersen and Newman Model (1973), these are factors in the provision of services in the community.

CONCLUSION

This study investigated the association between women's autonomy and the health status of children under five, as well as the use of malaria prevention and treatment services for the same children in northern Mozambique. In the analysis of the relationship between women's autonomy and health status, the study revealed that mothers without autonomy and mothers with low autonomy were the ones who had more children with fever. Although not statistically significant, this finding points to the fact that having medium or high autonomy contributed to a better health status of the child. Furthermore, in the relationship between women's autonomy and the search for advice and treatment for the fever, the study points out that a higher percentage of children whose mothers were involved in seeking advice or treatment for the sick child were mothers with medium or high autonomy. Specifically, 69.7% of children with fever of mothers with medium or high autonomy led them to seek advice or health care, followed by those of mothers without autonomy (62.1%) and, finally, those of mothers with autonomy low (54.9%).

Furthermore, of the three dimensions of autonomy considered in the study, the decision dimension about making important purchases for the household alone was statistically significant, and the rest were not.

As for the factors that influence the relationship between women's autonomy and the child's health status, a statistically significant association was found with the mother's marital status, household wealth quintile, mother's education, and type of area of residence. In the second case, the relationship between the factors that influence women's autonomy and seeking advice or treatment for fever was also statistically significant with the mother's age, the woman's education, and the type of area of residence. These findings suggest that, in the northern region of Mozambique, education opportunities and the wealth quintile should be increased to improve women's autonomy, reduce the propensity of their children to get sick, and increase the demand for advice or fever treatment. Likewise, hospital infrastructure in rural areas should be increased in this region to improve the health status of younger children residing in these geographic areas.

In general, despite the favourable sense of autonomy of the aggregated women, the study found that there are no major differences between women without autonomy, with low autonomy, and with medium or high autonomy in their influence on their health status and use of health services. Prevention and treatment of malaria in the northern region of Mozambique, since, in addition to the percentages not showing great differences, these were not statistically significant. Taking into account the literature and some of the results achieved, the study concludes that, in the northern region of Mozambique, increasing women's autonomy would result in a low prevalence of children with fever. Particularly, the dimension of decision-making about making important purchases for the household would favour a better health status for children as well as the use of maternal and child health services. The study suggests that greater autonomy for women in the household, especially that linked to decision-making about making important purchases for the household, will result in a greater number of children who will not have fever and greater use of malaria prevention services in favour of their children under the age of five.

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