Determinants of non-recourse to medical treatment in cases of diarrheal morbidity in children under five years of age in Burkina Faso

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Summary:

Background: Diarrheal diseases in children remain a public health problem in developing countries. In Burkina Faso, despite government efforts to improve child health, diarrhea, with a prevalence of 15%, remains the second leading cause of death in children after malaria. Unfortunately, very few mothers respond promptly to their child's illness. **Objective:** This research aimed to analyze the determinants of mothers' failure to seek medically prescribed treatment for diarrhea in children under five years of age in Burkina Faso. **Data:** The data used come from the fifth Burkina Faso Demographic and Health Survey conducted in 2021. Our sample size is 1,818 children. **Methods:** The analysis method used is bivariate descriptive analysis and explanatory analysis. **Results:** Binomial logistic regression analysis reveals that maternal reproductive experience, household standard of living, maternal occupation, attendance at a health facility and child age are significantly associated with non-recourse to medical treatment for diarrhea in children under five years of age. Increased awareness is necessary to elicit early response from mothers and the adoption of appropriate measures to reduce the severity and lethality of the disease.

Keywords: Determinants; Diarrhea infantile; non-medical treatment; Burkina Faso

Introduction:

Diarrhea is defined as the excessively frequent, excessively abundant daily passage of loose or liquid stools (weight greater than 300g/day) (Coulibaly D, 2024). Globally, there are approximately 1.7 billion cases of childhood diarrhea each year (WHO, 2017). Furthermore, the WHO reported that in 2015, nearly 5.9 million children under the age of 5 died. More than half of these deaths were due to preventable or treatable diseases such as diarrhea. Developing countries, particularly Africa, bear the greatest burden of diarrheal morbidity and mortality. In sub-Saharan Africa, the under-five mortality rate is 78 deaths per 1000 live births compared to 39 deaths per 1000 live births globally (UNICEF, 2023). This alarming situation does not spare Burkina Faso, which is among the 21 countries with the highest child mortality rates in the world. Of every thousand children born alive in this country, 83 die before their fifth birthday (UNICEF, 2023). In 2021, 5 million children died before reaching the age of 5 in Burkina Faso (FAO, 2023). Most of these deaths are attributable to preventable diseases. Reducing these deaths relies largely on the use of appropriate treatment, including medical consultation in the event of persistent or severe symptoms (WHO, 2004). Although the prevalence of diarrhea in children has been halved, from 31.4% in 1996 to 15% in 2021 (INSD, 2021), these levels remain high.

In Burkina Faso, each year, 15,400 children under five years of age die from diarrheal diseases (World Bank, 2016). Despite these deaths, diarrhea does not seem to be perceived by mothers as a serious illness: one (01) child in four (04) is brought for consultation after the first week of diarrhea (SANOU, I et al, 1999). The first recourse of mothers, even before the consultation, is the use of plants and decoctions contrary to the principles and recommendations of the WHO on the management of diarrheal diseases, which recommends consulting a health worker in particular for the management of persistent diarrhea, and avoiding antidiarrheal drugs especially in young children. Unfortunately, in Burkina Faso, 42.2%, or nearly one in two children who suffered from diarrhea, did not benefit from treatment by medical prescription (INSD, 2021). This behavior affects the early management of diarrhea and worsens its possible complications.

The scientific literature on non-use of care is abundant. However, very few studies have focused on the non-use of medical treatment for diarrhea. Existing studies mainly focus

on non-use of care (Antoine. R, 2010; Warin. P, 2011; Céline. D, 2019; Ntotolo. R 2014) or low attendance at health facilities (Nanitelamio M Basime, 2021; Lompo. B, 2013; Bakambamba. BJ et al. 2024). Others have focused on non-use of Oral Rehydration Salts (ORS) Woumbe. H, 2012)**.** Although some research has been conducted on the non-use of modern care for diarrhea in children, the focus on modern care introduces a bias because it does not distinguish between the professional status of those responsible for administering treatment. It is essential to consult a health professional for diarrhea in children, in order to receive an accurate diagnosis and appropriate treatment.

It is imperative to combat this childhood disease because of its harmful consequences, its multiple and varied potential impacts, ranging from malnutrition to severe dehydration and possibly death. This study is in line with Sustainable Development Goals (SDG) 3, target 2.2.2, which states: "By 2030, reduce under-five (05) mortality to at least 25 per 1,000 live births in all countries." The study aims to research the determinants of non-recourse to medical treatment in cases of diarrhea in children under five. It aims to better understand the underlying reasons for this practice, with a view to proposing appropriate strategies to improve access to care and reduce child mortality linked to diarrhea in Burkina Faso.

Materials and Methods

Data

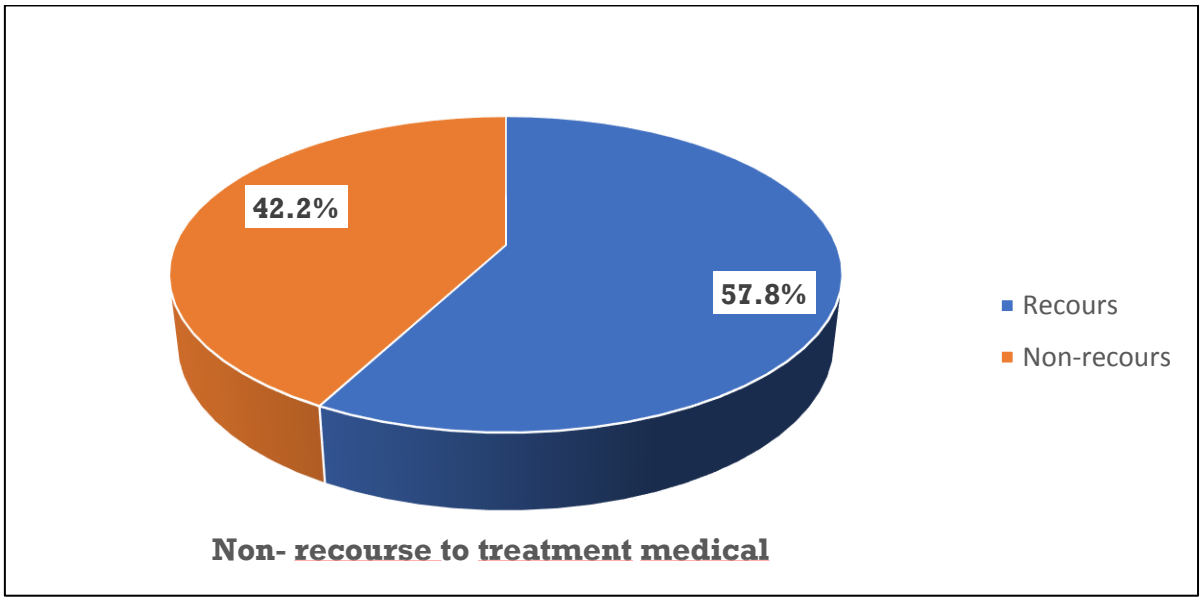
The data used for this study come from the latest Demographic and Health Survey (EDS-BF-V) conducted in Burkina Faso in 2021 by the National Institute of Statistics and Demography with the support of ICF International. It relied on a two-stage sampling stratified by region and residential area (195 clusters in urban areas and 405 clusters in rural areas). A total of 13,251 households were successfully surveyed, with a response rate of 99.6%. The target population consists of 1,818 children under five who had diarrhea in the two weeks preceding the survey. The reason for using this data source is multiple. Indeed, the 2021 DHS database is the most recent, containing a large majority of the variables used for this study. In addition, the DHS sample is representative at the national, regional, and urban and rural levels (national scope).

Study variables

The dependent variable of the study is "non-recourse to medical treatment in case of diarrhea in children under five years of age in Burkina Faso". Non-recourse refers to any

person who does not benefit from a public offer, rights and services, to which they could claim (Warin P, 2010) . In terms of health, we will mention non-treatment of diarrhea by medical prescription whenever we mention non-recourse. It is a dichotomous variable which takes the code "1" for children who did not receive medical treatment and "0" for those who did. As indicated above, 42.2% of children did not receive medical treatment during the episode of diarrhea that occurred during the last two weeks preceding the survey.

Figure 1: Distribution of the prevalence of non-recourse to medical treatment for diarrhea in children under five years of age in Burkina Faso



Exploitation des données EDS- Burkina Faso 2021

The independent variables: Several key variables likely to influence the non-recourse to treatment in case of diarrhea in children were mobilized. The independent variables were selected based on studies that highlighted their relevance and availability in the database. Twelve (12) independent variables were mobilized in the framework of this study. These are: the agroecological zone; the residential environment; the household standard of living; the woman's occupation; media exposure; religion; maternal age; reproductive experience; maternal education level; attendance at a health center; child's sex and child's age. We constructed and recoded certain variables: standard of living; media exposure, attendance at a health facility; and the mother's maternal experience.

The standard of living variable taken from a non-monetary perspective is understood through the goods owned by the household, and the characteristics of the habitat and the various amenities associated with it (the source of water and lighting). Given the absence of information on household income or expenditure the standard of living indicator is obtained after recoding the wealth index combined variable and grouping into three categories, namely: “Poor”; “Average” and “Rich” ".

Media exposure: To construct this variable, we used the cumulative score method. It is created from the variables: frequency of listening to the radio, internet use, frequency of watching television, and frequency of reading a newspaper or magazine. It has three categories: "Low exposure" when the score is 0 or 1; "Medium exposure" when the score is 2 or 3; and "High exposure" when the score is 4 or higher.

The mother's reproductive experience: To construct this variable, we crossed the variables "Mother's age at childbirth" and "Parity achieved". This is done under the assumption that the mother's experience in health care increases with her age and that the more children she has, the more experience she acquires. This variable is split into three categories, namely, "Low Experience" i.e., children with diarrhea of mothers under 20 years of age who are primiparous; "Medium Experience" refers to children of women under 20 years of age with two to four children and on the other hand, children with diarrhea of mothers whose age is between 20 and 34 years of age with four children or less. “High Experience” meaning children of women over 35 with a parity of 2-4 children and children of women over 20 who have more than 5 children.

Health center attendance: Health center attendance or health facility attendance is the fact that a person usually goes to a health facility to receive care. In the event of a health problem, the person concerned may consult a modern health center (including pharmacies) or a traditional healer, or they may decide not to consult any caregiver, whether modern or traditional. In the following analysis, mothers who consulted a modern health center (including pharmacies) will be considered as attending a health facility. Those who consulted a traditional healer or who did not consult any healer (modern or traditional) will be considered as not having attended a health facility.

Method of analysis

A bivariate descriptive analysis using cross-tabulations allowed each independent variable to be cross-referenced with the study variable. Subsequently, Chi-square tests at the 5% significance level were performed to assess the relationships between the variables. The Chi-square test analysis was performed using STATA.16 software.

To take into account the simultaneous influence of several variables on non-recourse to care, we used the binomial logistic regression model. In such a model, the dependent variable, non-recourse to medical treatment, is dichotomous and takes the value 1 if the event occurs and 0 otherwise. The explanatory analysis using logistic regression was carried out using STATA version 16 software. In this study, if we designate by ***(P)*** the probability for a child not to benefit from recourse to medical treatment, then ***(1-P)*** designates the probability for a child to benefit from recourse to medical treatment. The logistic regression model allows us to write: Let Y be the dependent variable, non-recourse to medical treatment and Xj the independent variables. It takes the value 1 if the event occurs and 0 otherwise.

Results

3.1 Dynamics of non-recourse to medical treatment in cases of diarrhea in children under five years of age in Burkina.

A univariate frequency distribution is first made on all the independent variables of the study and summarized in Table 1. At the bivariate level, the variables that are significantly associated with non-recourse to medical treatment are: the agroecological zone; the household's standard of living; exposure to the media; the mother's reproductive experience; attendance at a health center, the mother's occupation and the child's age.

The results of the cross-referencing between these variables and the study variable (Table 1) reveal that the proportion of children with diarrhea who have not received medical treatment is higher among children aged 24-59 months (49.5%) from multiparous mothers (47.1%); inactive (47.6%), living in poor households (46.2%), in the Sahel zone (46.1%). In addition, the mothers of these children have little exposure to the media (45.0%), and are not used to attending a health center (54.5%).

On the other hand, low proportions of non-recourse are observed among children with diarrhea aged 0-23 years (39.8%), from first-time mothers (37.8%), traders (37.1%), living in households with an average standard of living (37.0%), in the central area

(37.2%). Furthermore, the mothers of these children are used to attending a health center (16.4%); and are moderately exposed to the media (38.3%).

Table 1: Distribution of variables according to non-recourse to medical treatment

Independent variable	Appeal		No recourse		Significance Chi2 and P-Value
	%	CI	%	CI	
Agro-ecological zone					
West (n=486)	54.4	[49,39,59,30]	45.6	[40,70,50,61]	
Center (n=808)	62.8	[58,71,66,65]	37.2	[33,35,41,29]	
Northwest (n=284)	53.3	[46,40,60,17]	46.7	[39,83,53,60]	0.009 ***
Sahel (n=86)	46.9	[30,25,64,34]	53.1	[35,66,69,75]	
East (n=154)	53.0	[41,48,64,12]	47.0	[35,88,58,52]	
Place of residence					
Urban (n=530)	58.5	[53,76,63,12]	41.5	[36,88,46,24]	0.9010 (ns)
Rural (n=1,288)	57.6	[54,13,61,03]	42.4	[38,97,45,87]	
Household standard of living					
Poor (n=727)	53.8	[49,11,58,47]	46.2	[41,53,50,89]	
Average (n=390)	63.0	[57,59,68,19]	37.0	[31,81,42,41]	0.0585 *
Rich (n=701)	59.7	[55,87,63,37]	40.3	[36,63,44,13]	
Mother's occupation					
Inactive (n=652)	52.4	[47,50,57,18]	47.6	[42,82,52,50]	
Manager/Employee (n=217)	56.1	[49,01,62,85]	43.9	[37,15,50,99]	0.0097 **
Shopkeeper (n=353)	62.9	[57,11,68,35]	37.1	[31,65,42,89]	
Female farmer (n=596)	61.9	[57,14,66,36]	38.1	[33,64,42,86]	
Degree of exposure (media)					
Low (n=809)	55.0	[50,58,59,24]	45.0	[40,76,49,42]	
Average (n=634)	61.7	[57,01,66,26]	38.3	[33,74,42,99]	0.0365 **
High (n=375)	57.9	[52,21,63,43]	42.1	[36,57,47,79]	
Mother's religion					
Muslim women (n=1,166)	59.0	[55,55,62,43]	41.0	[37,57,44,45]	
Christian women (n=558)	56.4	[51,01,61,58]	43.6	[38,42,48,99]	0.0758 *
Other religions (n=94)	49.8	[36,67,63,01]	50.2	[36,99,63,33]	
Mother's age					
15-24 years (n=562)	59.8	[54,84,64,53]	40.2	[35,47,45,16]	
25-34 years (n=847)	58.4	[54,35,62,28]	41.6	[37,72,45,65]	0.2220 (ns)
35-49 years (n=409)	54.1	[48,89,59,15]	45.9	[40,85,51,11]	
Genetic experience (mother)					
Low (n=104)	62.2	[50,53,72,67]	37.8	[27,33,49,47]	
Average (n=1,083)	60.2	[56,72,63,55]	39.8	[36,45,43,28]	0.0044 ***
High (n=630)	52.9	[48,23,57,53]	47.1	[42,47,51,77]	
Education level (mother)					
No level (n=1,203)	56.2	[52,60,59,71]	43.8	[40,29,47,40]	
Primary (n=273)	61.0	[54,47,67,12]	39.0	[32,88,45,53]	0.0667 *
Secondary and above (n=342)	61.6	[55,46,67,48]	38.4	[32,52,44,54]	

Attendance at the Center Health					
No (n=1,221)	45.5	[42,11,49,00]	54.5	[51,00,57,89]	0.0000 ***
Yes (n=597)	83.6	[79,80,86,88]	16.4	[13,12,20,20]	
Child's age					
6-23 months (n=1,387)	60.2	[57,09,63,25]	39.8	[36,75,42,91]	0.0093 ***
24-59 months (n=431)	50.5	[44,77,56,14]	49.5	[43,86,55,23]	
Gender of the child					
Male (n=964)	58.3	[54,52,61,93]	41.7	[38,07,45,48]	0.516(ns)
Female (n=854)	57.4	[53,53,61,08]	42.6	[38,92,46,47]	
National (n=1,818)	57.8	[54,96,60,67]	42.2	[39,33,45,04]	

*** p<.01, ** p<.05, * p<.1
Source: Exploitation of EDS-V-BF 2021 data; 95% CI

3.2 Determinants of non-recourse to medical treatment in cases of childhood diarrhea

In the developed model (see Table 2), five variables have a significant net effect and can be considered as determinants of non-recourse to medical treatment in case of diarrhea in children under five years of age. These are the household's standard of living, reproductive experience, the mother's occupation, attendance at health centers and the child's age.

Standard of living: This variable has a significant net effect at the 5% threshold on non-recourse to medical treatment in case of diarrhea in children under five years of age. The results of the model (Table 2) indicate that, compared to children living in households with a poor standard of living; those living in households with an average standard of living have a 27.7% lower risk of not benefiting from recourse to medical treatment in case of diarrhea. However, there is no significant difference between children living in rich households and those living in poor households. It is concluded that the standard of living of the household on non-recourse to medical treatment is not linear.

Reproductive experience: Maternal reproductive experience has a significant net effect at the 1% level on the non-use of medical treatment for childhood diarrhea (Table 2). Compared to children whose mothers have average reproductive experience (at most 3 children), those whose mothers have high reproductive experience have 1.66 times more risk of not benefiting from medical treatment for diarrhea. However, there is no significant difference between children whose mothers have low reproductive experience and those whose mothers have average reproductive experience.

Maternal occupation: Maternal occupation has a significant net effect at the 5% level on non-recourse to medical treatment for diarrhea in children under five (Table 2). Compared to children of inactive mothers, those of mothers who are farmers have a 26.2% lower risk of not receiving medical treatment for diarrhea. When the mother is a trader, the child has a 28.5% lower risk of not receiving medical treatment.

Health center attendance: Health center attendance is associated with non-recourse to medical treatment for diarrhea in children under five years of age, at the 1% threshold. Compared to children whose mothers do not regularly attend a health center, children whose mothers regularly attend them are 83.5% less likely to not benefit from medical treatment for diarrhea.

Child's age: Child's age had a significant net effect at the 1% level on non-recourse to medical treatment for diarrhea in children under five years of age. Compared with children aged 0 to 23 months, those aged 24 to 59 months were 1.4 times more likely to not benefit from prescription treatment.

Table 2 : Results of binomial logistic regression of non-recourse to medical care for childhood diarrhea

Independent variables	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]	sign
Agroecological zone							
Center	Ref						
West	.968	.132	-0.24	0.814	.7406479	1.266011	
Northwest	1.001	.154	0.01	0.993	.7401016	1.354576	
Sahel	1,169	.350	0.52	0.601	.6500502	2.104059	
East	.962	.184	-0.20	0.838	.660943	1.398967	
Residential Environment							
Rural	Ref						
Urban	.994	.157	-0.04	0.971	.7297268	1.354601	
Household standard of living							
Poor	Ref						
AVERAGE	.723	.106	-2.21	0.027	.542478	.9637809	***
Rich	.912	.146	-0.58	0.565	.6659977	1.248543	
Mother's occupation							
Inactive	Ref						
Manager/Employee	1,019	.185	0.10	0.918	.7134978	1.455349	
Shopkeeper	.715	.112	-2.13	0.033	.5249659	.9729538	**
Farmer	.738	.097	-2.30	0.021	.5703704	.9561369	**
Degree of exposure to the media							
Weak	Ref						

AVERAGE	.987	.122	-0.11	0.916	.7747292	1.257374	
Pupil	1,156	.191	0.88	0.378	.8368801	1.59825	
Religion							
Muslim	Ref						
Christians	1,095	.129	0.77	0.439	.8698125	1.37896	
Other religions	1.5 6	.436	1.59	0.113	.9005902	2.69798	
Mother's age							
25-34 years old	Ref						
15-24 years old	1. 20	.165	1.30	0.194	.9127308	1.567692	
35-49 years old	.783	.144	-1.33	0.185	.5458148	1.124005	
Genetic experience							
AVERAGE	Ref						
Weak	1.02	.249	0.09	0.926	.6351898	1.64734	
Pupil	1.6 6	.288	2.90	0.004	1.177414	2.327658	***
Educational level							
None	Ref						
Primary	.870	.140	-0.87	0.385	.6346259	1.191516	
Secondary and above	.777	.126	-1.56	0.119	.5655778	1.067048	
Health Center Attendance							
No	Ref						
Yes	.165	.021	-1 396	0.000	.1277397	.2120104	***
Child's age							
0-23 months	Ref						
24-59 months	1.42	.173	2.89	0.004	1.120281	1.804303	***
Child sex							
Male	Ref						
Female	1.06	.110	0.56	0.572	.8648629	1.300348	
_cons	1.1 5	.203	0.78	0.432	.8121366	1.626015	

Discussion

The mother's occupation and non-recourse to medical treatment. The results of the explanatory analysis show that children of economically employed mothers are less likely to not benefit from recourse to medical treatment compared to their counterparts of unemployed or inactive mothers. Similar results were obtained by DAMIEN in 2024 in Benin which show that the mother's profession is associated with non-complete vaccination in children under 5 years of age.

However, these results are different from those of Rakotondrabe (1996) who shows that the mother's occupation increases the risk of non-recourse to treatment by medical prescription. Indeed, in a study carried out in Madagascar, she found that the woman's occupation is unfavorable to the child's health, to the extent that working women are often confronted with the challenges of interest between working time and time spent with the child. In the context of Burkina Faso, the result we reached could be explained by the fact

that the woman's economic activity gives her greater financial autonomy, which allows her to provide medical care for the child.

Household standard of living and non-use of medical care in case of childhood diarrhea. The results of the multivariate explanatory analysis show that the household standard of living determines the non-use of medical prescription treatment. In light of this study, it appears that children living in relatively high-income households are less likely to not benefit from the use of medical prescription treatment than those living in low-income or poor households. This result corroborates that found by some authors such as Woumbe (2012), Prao (2022) and Adam (2002), who stipulate that non-use of modern care is more frequent among children from poor households than among children from rich households, despite the high incidence of diarrhea among the poor.

However, this result contradicts that found by Baxerres and Le Heran in 2004, which states that the economic situation of each family does not necessarily determine its use of health care. According to them, families, regardless of their level of wealth, tend to spend the minimum amount of money and manage their children's health at home. In the Burkinabe context, the results of this study could be explained by the fact that the low income of the poor leads to reducing the use of modern health centers to a strict minimum and favoring alternative solutions such as traditional medicine. Despite the policy of free health care, indirect costs related to transportation and other expenses can discourage parents from poor households from seeking medical treatment.

Attendance at health centers and non-recourse to medical treatment for diarrhea. The model (Table 2) shows that attendance at a health facility determines non-recourse to medical treatment. Children whose mothers attend a health center are less likely to not benefit from recourse to medical treatment than those whose mothers do not attend. This result corroborates that found by Berthé in 2023 and Nguendo (2020) which states that the use of a health center is associated with medical treatment for diarrhea in Cameroon. In Burkina Faso, regular attendance at a health center encourages the use of modern care by improving communication between patients and health professionals regarding the disease.

The Genetic Experience of the mother and the non-use of medical treatment. The study reveals that the mother's reproductive experience is a determinant of non-recourse to medical treatment in cases of childhood diarrhea. Indeed, the results of the multivariate explanatory analysis reveal that the higher the maternal reproductive experience, the higher the risk of non-recourse to medical treatment in case of diarrhea in the child. A similar result was obtained by Prao (2022) in Ivory Coast. However, this result is contrary to that obtained by Bayi in 2008 in Burkina Faso and Aby 2023 in Senegal. In the Burkinabe context, the result we reached could be explained by the fact that mothers with high reproductive experience are more subject to social norms and family expectations, which may limit their ability to seek medical care.

Child's age and non-recourse to medical treatment for childhood diarrhea: The results of the explanatory analysis reveal that child's age influences significantly the non-recourse to medical treatment in case of diarrhea. The higher the child's age, the higher the risk of not benefiting from recourse to medical treatment. Our results corroborate the work of Aby (2023) which shows that in Senegal, 59.09% of children under two years old, compared to only 50.85% of those aged two and over, benefited from modern treatment in case of diarrhea. In the same vein, Rodriguez J. & Wachsberger, 2016 mentioned age as a factor determining whether or not to seek care.

In the context of Burkina Faso, the results we obtained can be explained by the perception that mothers have of diarrhea in children under 2 years old (teething). This perception would give children more chance aged 0 to 23 months, to be taken to health facilities to receive treatment. Furthermore, this could be explained by the fact that the first years of a child's life are decisive for their subsequent growth (UNICEF, 2021).

Limitations of the study: The study has some limitations that deserve to be raised: the absence of detailed data on the different forms of non-use (non-request; non-proposal; non-receipt; non-knowledge) does not allow for an exhaustive analysis; moreover, it is a cross-sectional study which does not allow for the identification of causal links. In addition, other variables, which could have allowed for better discrimination between children under five years of age suffering from diarrhea, were not taken into account during data collection. However, these limitations do not call into question the quality of this work.

Conclusion

The aim of this study was to investigate the determinants of mothers' failure to seek medical treatment for diarrhea in children under five years of age in Burkina Faso. The results obtained show that the determinants of failure to seek medical treatment are: the mother's occupation; the household's standard of living; attendance at a health facility; the mother's reproductive experience; and the child's age. These findings are important for guiding health strategies to combat diarrheal diseases.

In light of our findings, we suggest that the Ministry of Health strengthen public awareness campaigns on the critical importance of accessing healthcare services. Particular emphasis should be placed on the imperative need to consult a healthcare professional before administering any medication, particularly to young children. We recommend that the Burkinabe government create employment opportunities for women through microcredit to ensure the employability of inactive women whose children do not benefit from medical treatment. We recommend that the government significantly strengthen the technical capabilities of healthcare facilities to maximize the impact of the policy of free healthcare for children under five, with a view to encouraging mothers from disadvantaged backgrounds to access healthcare services in cases of diarrhea. The National Institute of Statistics and Demography should implement a data collection system (DHS-Continu). This system will need to integrate crucial variables, such as maternal perception of health service use, in order to provide a comprehensive and nuanced view of child health. Given the lethality of diarrhea and its impact on life expectancy, conduct a specific survey on diarrheal diseases.

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