



Determinants of Delay in Healthcare Seeking for Common Childhood Illnesses among Caregivers with Under-Five Children in Touboro Health District, Near Cameroon's Northeastern Border with Chad

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Authors' contributions

This work was carried out in collaboration among all authors. Author HN conceived and designed the study, coordinated in the data collection and performed statistical analyses. Author EN conceived and designed the study, participated in the data collection, performed statistical analyses and managed the literature searches. Author BT conceived and designed the study, provided assistance in the statistical analyses and drafted the first manuscript. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/IJTDH/2021/v42i530453

Editor(s):

(1) Dr. Shankar Srinivasan, Rutgers School of Health Professions, USA.

Reviewers:

(1) Tahziba Hussain, ICMR-Regional Medical Research Centre, India.

(2) Pilar Lozano San Juan, University of Cádiz, Spain.

(3) Angela Dell, University of Cape Town, South Africa.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/66145>

Received 05 January 2021

Accepted 12 March 2021

Published 14 April 2021

Original Research Article

ABSTRACT

Aims: The study sought to determine the determinants of delay in health-seeking among caregivers with under-five children.

Study Design: This was a mixed-method, cross-sectional study.

Place and Duration of Study: The study took place in Touboro Health District involving 386 caregivers of under-five children from May to July 30, 2020.

Methodology: A structured questionnaire and two focused group discussions were used to gather information on caregiver knowledge of healthcare-seeking behavior. Data were analyzed using

SPSS version 25.0. Bivariable logistic regression was employed to identify factors associated with healthcare seeking behavior.

Results: Results of the 386 sick children, fever 39.9% (154/386), diarrhea 30.3% (117/386) and cough 24.9% (96/386) were the common symptoms. The majority of the caregivers of the under-five children had poor knowledge of 63% (243/386) about common infant illnesses. Caregivers of female children under-five (OR= 2.26, 95% CI: 1.29-3.96, P = 0.004), caregivers aged between 21 and 30 years (OR=5.53, 95% CI: 1.32-23.11, P = 0.019), caregivers whose occupation is housewife (OR=2.64 95% CI 1.23-5.68, P =10.013), caregivers who host > 6 children in a household (OR= 3.56 95% CI 1.42-8.92, P =0.007) were key determinants of delay in health-seeking.

Conclusion: Caregivers of female children under-five, caregivers aged between 21 and 30 years, caregivers whose occupation is housewife, caregivers under-five children residing in a rural area, caregivers who host more than 6 children in a household, households with an average monthly income of <10,000 FRS Cfa were predictors of delay appropriate health-seeking. There is a need to intensify health education focusing on childhood illnesses, and timely care-seeking to effectively respond to caregiver's expectations among others.

Keywords: Health-seeking behavior; delay; caregivers; under-five children; appropriate care; childhood illnesses; Touboro Health District.

1. INTRODUCTION

A childhood illness is any illness, impairment, or abnormal condition that affects primarily infants and children that is those in the age span that begins with the fetus and extends through adolescence [1]. Recent, worldwide estimates showed that 5.3 million under-five children died yearly, and approximately half of these deaths occurring in sub-Saharan Africa [2]. More than one billion children are severely deprived of at least one of the essential goods and services they require to survive, grow and develop including nutrition, water, sanitation facilities, and access to basic health-care services, adequate shelter, education, and information [3].

The top leading cause of morbidity worldwide for children under five years that contributes substantially to these deaths are pneumonia, malaria, and diarrhea that have been linked to about 29% of global deaths in 2018 [4]. Estimates are also provided of the distribution of causes of death among children under 5 years old. These include diarrhea (480,000 deaths), and malaria (266,000 deaths) [4] chiefly because caregivers do observe a delay in seeking treatment in health care facilities. Caregiver's knowledge on danger signs of infant illnesses is the initial necessary step for the recognition of complications that could occur and ipso facto reduce childhood mortality. A low level of health-seeking behavior increases the likelihood of morbidity and mortality of infants [5].

The under-five mortality rate (U5MR) is the probability of a child dying before reaching the age of five years. The U5MR is a widely used demographic measure and an important indicator of a country's socio-economic situation and quality of life [6]. The level U5MR is disproportionately high in South Asia and parts of sub-Saharan Africa. Aggressive implementation of child survival strategies in developing countries is the prerequisite to improve the wellbeing of children. WHO and UNICEF have recommended the need to strengthen the family's ability to identify danger signs and prompt care-seeking to curb the childhood illnesses [7].

Health seeking behavior is preceded by a decision-making process that is governed by community values and customs, contextual factors as well as household intrinsic characteristics and behavior [8]. Therefore, the nature of care-seeking is not homogenous and depending on various factors that call for its situation analysis. The context may be a factor of societal norms, awareness, socio-cultural values as well as financial strength [9].

Of the 136 million babies born in 2011, the African Region comprises about 24 percent. It is estimated that approximately 50% of yearly under-five deaths occurred in the region. In contrast, in Europe less than 1 percent of under-five deaths take place. Comparatively, one in ninth under-five children dies every year in Sub-Saharan Africa [10]. Children in sub-Saharan Africa are more than 15 times more likely to die

before age 5 than their counterparts in developed countries [3].

Sustainable Development Goal (SDG) 3 aimed at ending preventable death of under-five child mortality and reducing U5MR to as low as 25 per 1000 live births by 2030 [11]. In a country like Cameroon, which has a diverse culture and socioeconomic status, achieving the SDG Goal 3 is challenging. Thus, determining factors that influence the health behavior of this diverse and cosmopolitan population is fundamental. Moreover, Azizur [12] has predicted that the health of today's children affects not only him, but also compromised the educational achievement and productivity of tomorrow's workers. Economic development is also directly linked with the child mortality and morbidity pattern of a country. As such, the caregivers' healthcare-seeking behavior for childhood illnesses should be prioritized in the public health policy of African countries [12].

Healthcare-seeking behavior has emerged as a tool to tackle perceived ill health by taking corrective actions. Currently, a lot of efforts are being directed toward encouraging people to learn and use health-promoting behaviors [13]. Seeking appropriate medical care for sick children is a matter of human rights. These rights are included in various international and regional human rights treaties [14]. In this regard, despite the significant progress that has been made in reducing mortality in children less than five years of age, millions of children are dying from easily preventable disease yearly.

The biggest challenges facing the health sector are the high rates of maternal, newborn, and child mortality in Cameroon. Furthermore, the country has a high rate of mortality in children under five (79 per 1,000 live births), while the neonatal mortality rate is 28 in 1,000 live births) [15]. Considering U5MR, between 2011 and 2018 Cameroon achieved only a 40% reduction [15] which is far away from the target of the SDGs goal 3.

The health situation in Touboro Health District is a call for concern, due to the prevailing chaotic security conditions in CAR which resulted in the increase influx of migrants. To our knowledge, there are no quantitative and qualitative data available on the health-seeking behavior of caregivers during common childhood illnesses in Touboro Health District. The study, therefore, sought to determine the determinants of delay in

health-seeking among caregivers with under-five children in Touboro Health District.

2. MATERIALS AND METHODS

2.1 Study Area

The Health District is located in the Touboro sub-division, situated at 512 km from Garoua, the Regional capital of the North Region, and approximately 606 km from the country's political capital, Yaoundé in Mayo-Rey Division. The Touboro sub-division has a surface area of approximately 85 000 km², with a total population of 377 637 inhabitants. The distribution of the population by age group gives 111,528 children between 0 and 05 years old, 121,226 between 6 and 14 years old, 96,981 people between 15 and 35 years old, and 58,189 are over 50 years old. The local economy is based on the traditional activities of animal husbandry and agriculture, petit trade. These occupy nearly 70% of the local population [16]. The Touboro Health District comprises 15 health facilities and 11 health areas. The 11 health areas are namely: Djom, Dompta, Mafare, Mbaimboum, Mbaka, Mbang-Rey, Mbeing, Ngai-Lara, Touboro, Vogzom, and Yanli [17]. The indigenes of Touboro are the Mboums, Gbaya, Douro all originated from Sudan. Immigrants are the Peul, Kanori, Haoussa, Toupouri, Mafa, Giziga.

2.2 Study Design

The study was a community-based cross-sectional that combined mixed-method approaches for data collection, using a questionnaire-based survey and two focus group discussions (FGDs). The first phase consists of a face-to-face interview with the caregivers of the under-five children and the second phase a FGD. The study was conducted in Touboro Health District, North Region, Cameroon, from May to July 30, 2020, to determine caregivers' healthcare-seeking behavior towards under-five childhood's illnesses.

2.3 Study Populations

The target population sampled was caregivers who have at least one under-five year child with illness and residents in Touboro Health District for at least six months before the first day of the study. However, caregivers were excluded, if they were below 21 years and seriously sick. A multistage cluster sampling method was used to

obtain the required number of Health Centres and participants.

2.3.1 Sample size determination and sampling techniques

The sample size was determined by using single proportion formula by Fisher [18].

$$n = \frac{z^2 p(1-p)}{e^2}$$

where, n= Sample size, 95% confidence level (z=1.96), the prevalence of healthcare-seeking behavior of caregivers for under-five year children's illnesses in Cameroon was unknown and for the study, p=50% prevalence was used with the intention of getting the maximum sample size, and 5% margin of error (e=0.05). The minimum sample of 385 caregivers with at least one child aged less than five years.

A multistage cluster sampling method was used to obtain the required health centres and participants. In the first stage, all 11 Health Areas in the Health district were divided into 2 clusters, namely (1) rural health area and (2) urban health (Touboro) area. From the rural health area, five health centres namely: Djom, Dompta, Mafare, Ngai-Lara, and Yanli were randomly selected, while one urban centre was randomly selected out of two. In the second stage, probability proportionate to size (PPS) was used to select the number of households from each health centre. The community health workers numbered and counted all the households. Systematic random sampling was used for the selection of the households.

2.4 Data Collection

2.4.1 Household survey

The data was collected through face-to-face interviews using a structured questionnaire for quantitative data. The questionnaire was prepared in English and translated from English to French and re-translated back to English to check for consistency and accuracy. The pre-test was conducted in Ngaoundere (Adamaoua Region) in a quarter called Dang. This location was chosen because they have similar demographic backgrounds. The questionnaire was divided into three parts: I collected data on socio-economic status, II collected data on caregivers' awareness and severity of common childhood illnesses, and III collected data on the health-seeking behavior of caregivers towards childhood illnesses. Nine nurses were involved

in the data collection. To assure data quality, two-day training was given to the selected nurses on the study objectives and data collection techniques. The overall data collection activity was supervised by study investigators.

2.4.2 Focus group discussions and field notes

Two focus group discussions (FGDs) involving ten participants each were conducted out of the four initially planned. This was because of the advent of Covid-19 that instilled a lot of fear in the community especially when it came to gathering. The FGDs took place in rural areas. To this effect, a FGD guide was used. A physical distance of 1.5meters was maintained, face masks were provided to all the participants. FGD guide was prepared in English and translated into the French language. A week prior to the FGDs, health areas extension worker and health center head recruited the participants for FGD based on the laid down criteria. Purposive sampling was used to select key informants and included caregivers with at least one child under-five years, community leaders, religious leaders, traditional healers, volunteer health service providers, and health professionals.

Two rural health centres were purposely selected from a list of 11 health areas to host the FGD. The exchange took place in the afternoon when most people must have returned from their normal daily activities. A direct discussion was conducted in the French language and, in some cases, with the help of a trained interpreter.

The focus group discussion was recorded on audiocassette tapes. The purpose of taping the discussion was explained to the participants and their consent was obtained before the exercise. The notes and replayed cassette were transcribed after the discussion. The transcription was done in French and later translated into English. Each discussion session lasted for 45 minutes.

2.5 Statistical Analysis

The data were entered, cleaned edited, and coded, using Epi-Info version 7.2.2.6, and then exported to SPSS 25.0 for analysis. In the study, the dependant variable is the healthcare-seeking behavior of caregivers for childhood illnesses. The independent variables are the age of the caregiver, gender of the child, marital status, family size, educational status, economic status (income), and occupation. Descriptive statistics

were used to assess the socio-demographic characteristics of caregivers and were summarized into proportions and frequency tables. Chi-square test was used to determine relationships between various variables. Bivariate logistic regression analysis was performed to identify factors independently associated with the delay in health-seeking behavior among caregivers. Significance was set at 95% CI with $p < 0.05$ considered statistically significant.

3. RESULTS

3.1 Socio-demographic Characteristics of The Caregivers of Infants

Out of the 400 questionnaires administered, only 386 were valid (properly completed), thus making the response rate of 96.5%. Most of the respondents were females 53.9% (208/386), 60.9% (235/386) aged 21-30 years, 90.2% (348/386) married and Christians 68.5%

(265/386). As regards the level of education, the majority of participants had no formal education 47.7% (184/386) while only 1.0% (4/386) had reached university or tertiary institutions. Regarding the occupation, farming 42.5% (164/386) and housewife 38.9% (150/386) predominated. Participants with household size between 1-5 children 58.8% (227/386) dominated the study population whereas household size with > 10 children was only 5.7% (22/386). Concerning the number of children < 5 years in the household, the majority of participants 46.1% (178/386) had one child in the household while 4.9% (19/386) had more than three children. As per the average household monthly income of the participants, 43.0% (166/386) reported having no monthly income, while 27.7% (107/386) earned $\leq 10,000$ FrsCfa. The vast majority 96.6% (373/386) indicated that they were not covered by any health insurance policy. The majority of participants were nonsmokers 90.4% (349/386) and non-alcoholics 56.0% (216/386).

Table 1. Socio-economic characteristics of caregivers of infants

Characteristics	Rural n (%)	Urban n (%)	Total n (%)	Chi square	p-value
Gender					
Female	123(54.2)	60(37.7)	183(47.4)	10.147	0.001
Male	104(45.8)	99(62.3)	203(52.6)		
Caregiver' age group					
21-30years	137(60.4)	98(61.6)	235(60.9)	0.757	0.860
31-40years	70(30.8)	44(27.7)	114(29.5)		
41-50years	16(7.0)	13(8.2)	29(7.5)		
>50 years	4(1.8)	4(2.5)	8(2.1)		
Child 's age group					
0-12months	66(29.1)	80(50.3)	146(37.8)	22.142	0.001
13-24months	107(47.1)	42(26.4)	149(38.6)		
25-36months	38(16.7)	26(16.4)	64(16.6)		
37-49months	11(4.8)	9(5.7)	20(5.2)		
50-59months	5(2.2)	2(1.3)	7(1.8)		
Gender of the child					
Female	107(47.1)	101(63.5)	208(53.9)	10.103	0.001
Male	120(52.9)	58(36.5)	178(46.1)		
Caregivers 's marital status					
Single	3(1.3)	3(1.9)	6(1.6)	16.458	0.001
Married	211(93.0)	137(86.2)	348(90.2)		
Divorced	13(5.7)	8(5.0)	21(5.4)		
Widowed	0(0.0)	11(6.9)	11(2.8)		
Caregivers 's religion					
Christian	159(70.0)	106(66.7)	265(68.5)	20.621	0.000
Muslim	47(20)	53(33.3)	100(25.9)		
Atheist	8(3.5)	0(0.0)	8(2.1)		
Others	13(5.7)	0(0.0)	13(3.4)		
Caregivers 's educational level					
No formal	118(52.00)	66(41.5)	184(47.7)	28.642	0.000
Primary	77(33.9)	34(21.4)	111(28.8)		

Characteristics	Rural n (%)	Urban n (%)	Total n (%)	Chi square	p-value
Secondary	30(13.2)	57(35.8)	87(22.5)		
Tertiary	2(0.9)	2(1.3)	4(1.0)		
Caregiver's occupation					
Farmer	108(47.6)	56(35.2)	164(42.5)	89.085	0.000
House wife	110(48.5)	40(25.2)	150(38.9)		
Petit trader	3(1.3)	2(1.3)	5(1.3)		
Labourer (unskilled)	3(1.3)	38(23.9)	41(10.6)		
Civil servant	0(0.0)	10(6.3)	10(2.6)		
Private sector	2(0.9)	13(8.2)	18(3.9)		
Student	1(0.4)	0(0.0)	1(0.3)		
Household family's size					
1-5persons	134(59.0)	93(58.5)	227(58.8)	0.175	0.916
6-10persons	81(35.7)	56(35.2)	137(35.5)		
>10persons	12(5.3)	10(6.3)	22(5.7)		
Number of children < 5 years in the household					
One child	113(49.8)	65(40.9)	178(46.1)	6.971	0.073
Two children	89(39.2)	63(39.6)	152(39.4)		
Three children	18(7.9)	19(11.9)	37(9.6)		
>three children	7(3.1)	12(7.5)	19(4.9)		
Average monthly income (Frs.Cfa*)					
≤10000	96(42.3)	11(6.9)	107(27.7)	123.985	0.0001
10001-20000	39(17.2)	7(4.4)	46(11.9)		
20001-30000	14(6.2)	1(0.6)	15(3.9)		
30001-40000	9(4.0)	2(1.3)	11(2.8)		
>50000	6(2.6)	27(17.0)	33(8.5)		
No monthly income	60(26.4)	106(66.7)	166(43.0)		
Household covered by any health insurance					
No	226(99.6)	147(92.5)	373(96.6)	12.409	0.000
Yes	1(0.4)	12(7.5)	13(3.4)		
Does the caregiver smoke?					
No	218(96.0)	131(82.4)	349(90.4)	20.089	0.000
Yes	9(4.0)	28(17.6)	37(9.6)		
Does the caregiver drink alcohol?					
No	131(57.7)	85(53.5)	216(56.0)	0.685	0.408
Yes	96(42.3)	74(46.5)	170(44.0)		

* 1 Frs.Cfa = \$ 545

3.2 Healthcare Seeking Behavior of Caregivers for their Sick Child

A small proportion of the caregivers 11.9% (46/386) sought health care for their sick child within 24 hours of onset of the symptoms (Fig. 1). However, 52.3% (202/386) of caregivers took their child to health facility after 3-4 days after the recognition of symptoms. The main reasons for those who delay in care seeking (Fig. 2) for common childhood diseases among caregivers with under-five children in the study area were lack of money 73.6% (284/386) and the belief that the illness will be improved by traditional treatment 62.4% (241/386). Furthermore, from the 340 respondents who didn't take their child to the health facility within 24 hours, 52.9% (180/340) of them had attempted home treatment with drugs or herbs

and 21.2% (72/340) took the child to a traditional doctor (Fig. 3). Regarding the methods of identification of the severity of the child's illness, majority of the caregivers in both rural and urban areas reported that a change in the child's behavior 53.4% (206/386) and the refusal of the child to eat or breastfeed 43.3% (167/386) were the major indicators. Majority 88.1% (340/386) of the participants demonstrated inappropriate healthcare seeking behavior. The health seeking route taken by most of the caregivers commence with a visit to the traditional healer, through the drug store in the market, a later the health facility.

"Many illnesses cannot be treated in the hospital except in the traditional way"(the traditional healer, age 39 years).

"Stomach problem in children below five years is

not treated in the hospital in our culture" (Another caregiver).

"Sometimes when the child falls sick, we ask the soothsayer to first look for the cause of the illness, before we can take to the hospital late." (Secretary to the chief, age 43 years).

"Many parents go to soothsayer or marabou first before ever going to the hospital "(Another caregiver).

"We prefer to go to the drug store in the market to get few drugs from there at a cheaper price "(Caregiver, age 43 years)

The decision making powers, among the caregivers on when and where to go for treatment dwelled mostly on fathers representing (56%) of decisions.

3.3 Caregivers' Reported Symptoms of Illnesses among Infants

Of the 386 sick children, 39.9% (154/386) had fever, 24.9% (96/386) had cough, 30.3% (117/386) had diarrhea and 4.9% (19/386) had vomiting within three months preceding the survey. Fever (the body of the child is hot) was the predominant symptoms cited by the caregivers. The main causes of these symptoms mentioned by the respondents were contaminated water and food 47.7% (184/386) and evil eyes (sickness of spiritual origin) 21% (81/386). Sometimes, respondents' inability to recognize danger signs of childhood illnesses was link to their ancestral and cultural practices as mentioned by key informants.

"it was suggested that some families may not provide any care if caregivers identified some signs of illness as normal and expected infant conditions"

3.4 Relationship between Caregivers' Level of Knowledge, Severity of under-five Illnesses Andhealthcare Seeking Behavior in Touboro Health District

Majority of the caregivers of the under-five children had a poor knowledge 63% (243/386) about common infant illnesses. Low level of knowledge about infant illnesses was higher 84.1% (313/386) among caregivers in the rural setting than in urban 32.4% (125/386). In the urban setting, caregivers reported a higher level

of knowledge 67.3% (260/386) about under five illnesses. More than half 55.2% (213/386) of the caregivers with good knowledge on childhood illnesses reported with an appropriate health seeking behavior. However, nearly all the caregivers 98.7% (381/386) with low level of knowledge had inappropriate health seeking behaviors. Level of knowledge about childhood illnesses was significantly associated with health seeking behavior ($P=0.001$) (Table 2).

3.5 Factors Associated with Inappropriate Health Seeking Behavior

The bivariate logistic regression analysis were done to identified socio-economic factors associated with delay in appropriate health seeking behavior among caregivers of under-five children with common infant illnesses.

The results presented in Table 3 shows that gender, caregivers aged between 21 and 30 years, residence, household size, and average monthly income were significantly associated with delay in care seeking among caregivers of under-five children with common infant illness.

Caregivers of female children under-five years were 2.26 times (OR= 2.26, 95% CI: 1.29-3.96, $P = 0.004$) more likely to delay than caregivers of male children under-five. The caregivers aged between 21 and 30 years were 5.53 times (OR= 5.53, 95% CI: 1.32-23.11, $P = 0.019$) more likely to delay than older caregivers (> 30 years). Caregivers whose occupation is housewife were 2.64 times (OR= 2.64 95% CI: 1.23-5.68, $P =10.013$) more likely to delay than those caregivers of other profession. Caregivers of under-five children residing in rural area were 10.68 times (OR= 10.68 95% CI: 5.37-21.24, $p =0.001$) more likely to delay than those residing in urban setting. The caregivers who host > 6children in a household were 3.56 times (OR= 3.56 95% CI: 1.42-8.92 , $p =0.007$) more likely to delay than household with < 5 children. Households with average monthly income of <10.000 frs and varying between 10.000-20.000 frs were 25.89 times (OR= 25.89 95% CI: 8.49-76.24 , $p =0.0001$) and 33.85 times (OR= 33.85 95% CI: 6.97-164.28 , $p =0.0001$) more likely to practice inappropriate health seeking behavior when compared with household with higher revenues. These findings were corroborated by the qualitative data from the focus group discussions. The care sought by caregivers for their sick child is tributary of the type and perceived severity of the illness as reported in the following excerpts:

"When the condition is severe, I do not wait the morning time. I take the child directly to the resident of the nurses and since the health center is not far, we then move together to the health center for diagnosis and treatment" (Caregiver, age 26 years).

"Yet on the other hand, they will have visited the traditional doctor who gives all sorts of reasons, they could have visited him three or four times before they decide to come to the hospital...or say until that child is almost unconscious and then they... say the hospital did not help us. But that's because we are the last stop (A health worker).

Lack of money was the main barrier seeking medical care in modern health facility as mentioned in the following quotes by participants during focus group discussions.

"The only thing that hinders us from taking our children to the hospital is lack of financial "(Secretary to the chief, age 43years).

"Our people do not have the means to take their sick children to the hospital, so they usually buy drugs from the market or streets vendors, others meet traditional healer because their cost will definitely be cheaper compare to when taken to the hospital"(Wife to the chief).

"We prefer to go to the drug store in the market to get few drugs from there at a cheaper price"(Caregiver, age 24 years).

"Roadside treatment is expensive because sometimes you spend for nothing because at the end you will still take the child to the hospital because she did not respond to the treatment"(Caregiver, age 38 years).

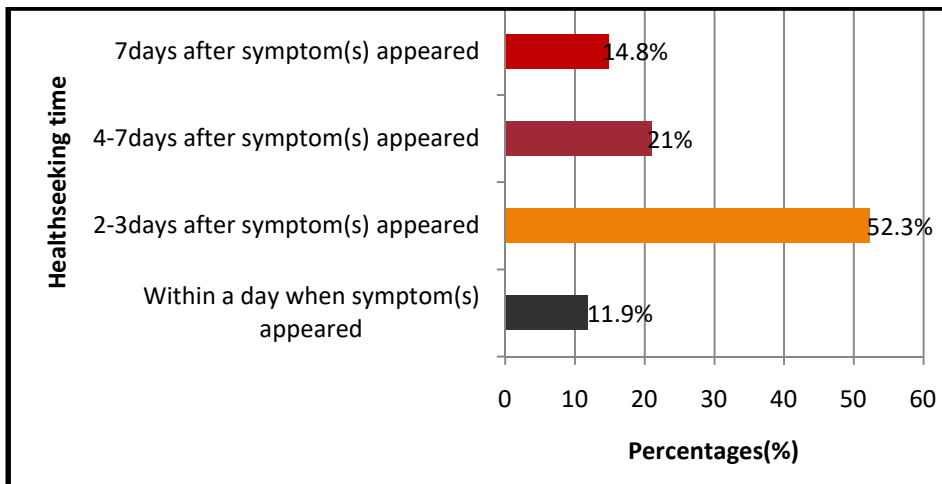


Fig. 1. Healthcare seeking behavior regarding time frame among caregivers

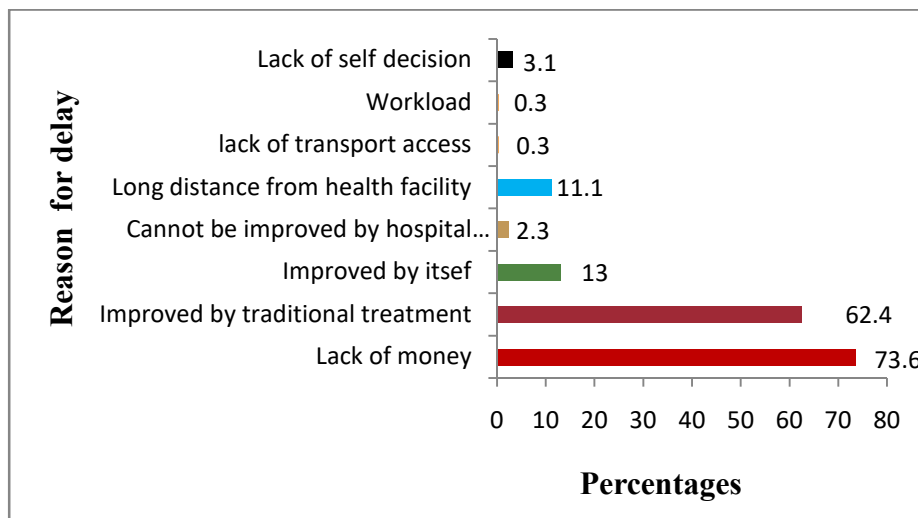


Fig. 2. Reasons for delay in seeking healthcare in health facility within 24 hours

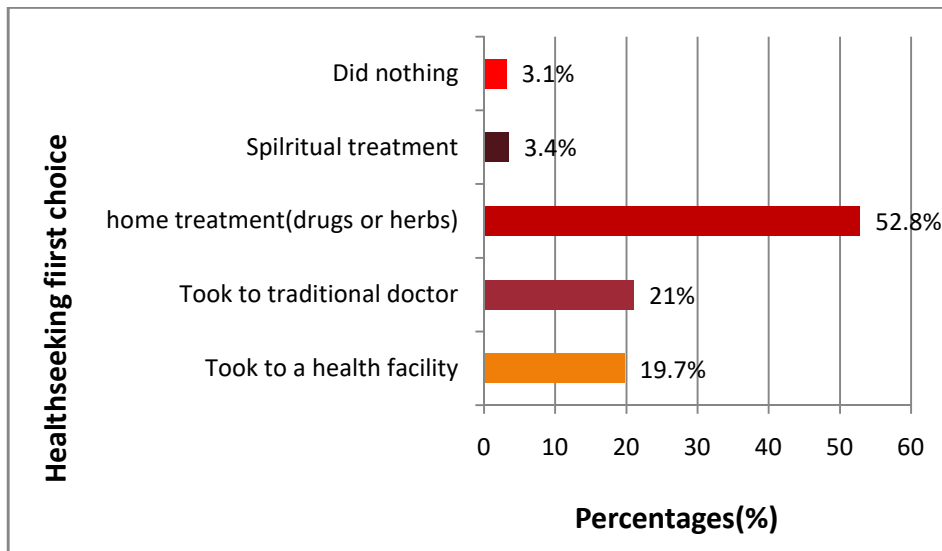


Fig. 3. First choice in terms of healthcare seeking behavior among caregivers

Table 2. Relationship between caregivers' level of knowledge for under-five illnesses and healthcare seeking behavior

Characteristics	Healthcare seeking behavior			Chi square	p-value
	Appropriate No (%)	Inappropriate No (%)	Total No (%)		
Poor knowledge	3(1.2)	240(98.8)	243(100.0)	118.865	0.001
Good knowledge	79(55.2)	64(44.8)	143(100.0)		

Table 3. Association between socio-economic factors and healthcare seeking behavior

Variables	Healthcare seeking behavior			OR	95% CI	p-value
	Appropriate n (%)	Inappropriate n (%)	Total n (%)			
Gender						
Female	21(11.5)	162(88.5)	183(100.0)	2.26	1.29-3.96	0.004
Male	46(22.7)	157(77.3)	203(100.0)	1.00		
Caregivers' s age						
22-31 years	36(15.3)	199(84.7)	235(100.0)	5.53	1.32-23.11	0.019
32-41 years	21(18.4)	93(81.6)	114(100.0)	4.43	1.02-19.16	0.046
42-51 years	6(20.7)	23(79.3)	29(100.0)	3.83	0.74-19.99	0.111
>51 years	4(50.0)	4(50.0)	8(100.0)	1.00		
Child's age group						
0-12months	23(15.8)	123(84.2)	146(100.0)	1.00		
13-24months	25(16.8)	124(83.2)	149(100.0)	0.93	0.50-1.72	0.812
25-36months	14(21.9)	50(78.1)	64(100.0)	0.67	0.32-1.40	0.286
37-49months	4(20.0)	16(80.0)	20(100.0)	0.75	0.23-2.44	0.630
50-59months	1(14.3)	6(85.7)	7(100.0)	1.12	0.13-9.76	0.917
Child's gender						
Female	40(19.2)	168(80.8)	208(100.0)	0.75	0.44-1.28	0.294
Male	27(15.2)	151(84.8)	178(100.0)	1.00	-	-
Caregiver' s marital status						
Married	65(18.7)	283(81.3)	348(100.0)	0.44	0.05-3.46	0.43
Single	0(0.0)	6(100)	6(100.0)	-	-	-
Divorced	1(4.8)	20(95.2)	21(100.0)	2.00	0.11-35.41	0.636
Widow	1(9.1)	10(90.9)	11(100.0)	1.00	-	-

Healthcare seeking behavior						
Variables	Appropriate n (%)	Inappropriate n (%)	Total n (%)	OR	95% CI	p-value
Caregiver's religion						
Christian	51(19.2)	214(80.8)	265(100.0)	1.00	-	-
Muslim	16(16.0)	84(84.0)	100(100.0)	1.25	0.68-2.32	0.476
Atheist	0(0.0)	8(100.0)	8(100.0)	-	-	-
African traditional belief	0(0.0)	13(100.0)	13(100.0)	-	-	-
Caregiver's educational level						
No formal education	9(4.9)	175(95.1)	184(100.0)	6.48	0.61-68.66	0.121
Primary	13(11.7)	98(88.3)	111(100.0)	2.51	0.24-25.98	0.439
Secondary	44(50.6)	43(49.4)	87(100.0)	0.33	0.33-3.26	0.340
Tertiary	1(25.0)	3(75.0)	4(100.0)	1.00	-	-
Caregiver's occupation						
Farmer	26(15.9)	138(84.1)	164(100.0)	1.00	-	-
House wife	10(6.7)	140(93.3)	150(100.0)	2.64	1.23-5.68	0.013
Merchant	0(0.0)	5(100.0)	5(100.0)	-	-	-
Labourer	13(31.7)	28(68.3)	41(100.0)	0.41	0.19-0.89	0.023
Civil servant	8(80.0)	2(20.0)	10(100.0)	0.05	0.01-0.23	0.000
Private sector	10(66.7)	5(33.3)	15(100.0)	0.09	0.30-0.29	0.000
Student	0(0.0)	1(100.0)	1(100.0)	-	-	-
Rural	11(4.80)	216(95.2)	227(100.0)	10.68	5.37-21.24	0.000
Urban	56(35.2)	103(64.8)	159(100.0)	1.00	-	-
Household size						
1-5persons	37(16.3)	190(83.7)	227(100.0)	1.00	-	-
6-10persons	21(15.3)	116(84.7)	137(100.0)	3.56	1.42-8.92	0.007
>10persons	9(40.9)	13(59.1)	22(100.0)	3.82	1.45-10.08	0.007
Number of children < 5 years in the household						
One child	31(17.4)	147(82.6)	178(100.0)	1.00	-	-
Two children	24(15.8)	128(84.2)	152(100.0)	1.13	0.63-2.01	0.693
Three children	6(16.2)	31(83.8)	37(100.0)	1.09	0.42-2.84	0.860
Four and more children	6(31.6)	13(68.4)	19(100.0)	0.46	0.16-1.29	0.141
Caregiver's average monthly income(1\$USS=550 FrsCfa)						
None	30(18.1)	136(81.9)	166(100.0)	6.97	3.13-15.56	0.000
≤10000	6(5.6)	101(94.4)	107(100.0)	25.89	8.79-76.24	0.000
10001-20000	2(4.3)	44(95.7)	46(100.0)	33.85	6.97-164.28	0.000
20001-30000	1(6.7)	14(93.3)	15(100.0)	21.54	2.52-184.09	0.005
30001-40000	2(18.2)	9(81.8)	11(100.0)	6.92	1.29-37.29	0.024
40001-50000	6(75.0)	2(25.0)	8(100.0)	0.51	0.09-2.94	0.453
>50000	20(60.6)	13(39.4)	33(100.0)	1.00	-	-
Household covered by any health insurance						
No	58(15.5)	315(84.5)	373(100.0)	12.22	3.64-41.01	0.000
Yes	9(69.2)	4(30.8)	13(100.0)	1.00	-	-
Does the caregiver smokes?						
No	55(15.8)	294(84.2)	349(100.0)	1.00	-	-
Yes	12(32.4)	25(67.6)	37(100.0)	0.39	0.19-0.82	0.013
Does the caregiver drinks alcohol?						
No	33(15.3)	183(84.7)	216(100.0)	1.00	-	-
Yes	34(20.0)	136(80.0)	170(100.0)	0.72	0.43-1.22	0.225

4. DISCUSSION

Improving the healthcare-seeking behavior of caregivers of children under-five can help to

reduce child mortality and morbidity. The present community-based cross-sectional study sought to determine determinants of delay health-seeking behavior among caregivers of less than

five years children in Touboro Health District, Touboro Subdivision, Cameroon.

Caregiver's health-seeking behavior for children under age five was abysmally poor in this resource-limited area in the northern part of Cameroon, with only 11.9% demonstrated appropriate treatment-seeking behavior which is in line with other studies conducted in Nigeria [19,20] where a high prevalence of inappropriate healthcare-seeking behavior was recorded. However, the findings contrast with higher healthcare-seeking behavior (76.2%) among mothers having under 5-years old children in Ethiopia [21] and 61% among caregivers of under-five children in urban slums in Malawi [22]. The difference could be attributed to the fact that residents of urban slums have more access to information through television and sensitization campaigns than residents of the rural area such as Touboro.

In the present study, the main reasons for those who came to health facility later than 24 hours of recognition of illnesses were; the perceived childhood illness to be of minor severity (59.8%) caregivers, lack of money (73.6%), and the belief that the illness will be improved by traditional treatment (62.4%). This is in keeping with other similar studies conducted in Ethiopia [21] where caregivers cited financial constraints as one of their reasons for delayed seeking health care. However, caregivers from rural clinics at the Kenyan Coast pointed out that money was not the main limiting factor for accessing health care facility, rather the etiology of the child sickness was the determinant factor. [23] Furthermore, from the 340 respondents who didn't take their child to the health facility within 24 hours, more than half of the participant's initial action on noticing children's illness was self-treatment at home with drugs or herbs and treatment with traditional medicine. This is in line with other studies in Ethiopia [24] and Nigeria [19].

The degree of perception of child illness may equally affect healthcare-seeking behavior. This is highlighted in the present study as the majority of the participants indicated that the degree of severity of their child's illness was mild, so they found no reason of taking the child to the health facility. The perceived severity of the child disease may represent additional barriers to seek appropriate health care by caregivers in Touboro Health District. This finding was triangulated with FGDs which revealed that the health-seeking route taken by most of the caregivers commence

with a visit to the traditional healer for illnesses dimmed mystical or spiritual by the caregiver.

The low level of knowledge about childhood illnesses (78.6%) among caregivers in the rural setting was dramatic. However, participants in the urban areas demonstrate a higher level of knowledge about childhood illness (74.8%) of Touboro Health District. Caregivers residing in a rural setting were more likely to practice inappropriate health-seeking behavior as compared with those of the urban area. This is consistent with a study conducted in Ethiopia [25] and India [26] which revealed that mothers who live in the urban area and who had good knowledge about childhood illnesses were more likely to seek care from the health facilities. The difference could have been ascribed to the fact that participants who reside in the urban have better access to health facilities, communication tools, and improved levels of health education, are more exposed to current trends in health.

The study indicates that caregivers with good knowledge of childhood illnesses reported appropriate health-seeking behavior (55.2%) whereas, parents with a low level of knowledge had inappropriate health-seeking behaviors (98.8%). The level of knowledge about childhood illnesses was significantly associated with health-seeking behavior. These findings are in agreement with reports from Ethiopia [27] where mothers who were aware of common childhood illnesses were 3.8 times more likely to seek appropriate health care. This difference might be due to the fact that caregivers who are knowledgeable about childhood illnesses are more likely to understand better and adopt practices for preventive and curative attitudes as promoted during the antenatal clinic and regular visits to the clinics.

Concerning the signs and symptoms of childhood illnesses, the children usually present with fever, diarrhea, vomiting, and crying. Triangulating this aspect of knowledge with the qualitative findings, the FGDs revealed that, fever (body of the child is hot) was perceived to be the commonest.

In our study, caregivers who were aged between 21 and 30 years and between 31 to 40 years were more likely to practice inappropriate health-seeking behavior as compared with those older than 50 years. This is in contradiction with the previous study conducted in Ethiopia [28] which revealed that mothers age is 20-24 years and 25-29 years were more likely to practice appropriate

health-seeking behavior than caregivers aged more than 35 years. This difference could be ascribed to socio-cultural values whereby older caregivers in our study have a positive health perception and sensitivity to the health of the child compared with younger ones. Regarding household size, this study revealed that caregivers who had > 10 persons in their home were 5.12 times more likely to practice inappropriate healthcare-seeking behavior compared with those who had < 10 persons in their home. This is consistent with a previous study carried out in Ethiopia [22] which revealed that families that have less than or equal to five members were four times more likely to seek healthcare for the sick child when compared to those having greater than five members. This implies that children born from larger family sizes are also less likely to get immediate care from health facilities. Moreover, caregivers with a large workload due to large family size bring about giving lesser attention to the sick child. In the same vein, the financial implications of visiting health facilities from a large family could act as a barrier to appropriate healthcare-seeking behavior. These findings contradict that of Obi-Nwosu [19] who found out that no significant association between family function and health-seeking behavior. The difference might be due to the study setting and socio-economic status of the participants. The present study was conducted in the setting with the majority of the participants from the lower socio-economic class which seriously affected their healthcare-seeking behavior.

More importantly, our study indicated that caregivers with zero monthly income up to 20000 frs CFA were significantly associated with inappropriate health-seeking behavior. This is in accordance with the previous studies in Ethiopia [28,21,29]. Therefore, the present data indicate that poverty might be is an important hurdle on a family's decision about how to treat children's illnesses. However, studies conducted elsewhere [25,30] revealed that household income had no significant association with healthcare-seeking behavior. This idea of socio-economic factors influencing caregiver's health care-seeking behavior was supported by the qualitative findings of this study. The caregivers were unanimous that lack of financial capability was the main factor hindering them from seeking appropriate care in health facilities.

Pertaining to gender preference, our results revealed that female caregivers were significantly associated with inappropriate health-seeking

behavior as compared with males. Our data are similar to that of [30]. However, this finding is contrary to study conducted in different parts of Ethiopia [27-30] where gender was not statistically significant to prompt health-seeking behavior. This might have been due to socio-demographic and cultural differences.

In the present study, fathers (56%) were the most important deciders as to whether the child should be taken to the health facility or not. Studies conducted in Northwest Ethiopia [28] and South-Eastern Nigeria [19] contradicts the findings of this study. This could be because fathers are the breadwinners of the households and must therefore provide financial resources to cater for the sick child.

Triangulating the socio-cultural aspect with a qualitative study revealed that, from a cultural perspective, there was a general notion that many illnesses cannot be treated in the hospital except in the traditional way. The health workers in the FGDs indicated that in most cases caregivers seek child health services late, waiting up to 4 days at home. Some health workers further suggested that caregivers in such localities use traditional medicine as a first point of call. This is consistent with a previous study done in urban slums in Malawi [22] which revealed that most caregivers indicated that there are elders in their communities who know traditional medicine and are sometimes the first point of contact. Traditional healers who provide services at nominal cost are preferred over well equipped Health facilities due to economic reasons.

5. STUDY LIMITATIONS

The study has some limitations that should be considered. First, several factors were not included in the analyses. Perhaps the most important of these were; local cultural belief , the distance to health facilities, the availability of modern health facilities, the type of healthcare providers , the quality of health care services available at the health facilities. These factors have been shown to be strong predictors of delay in seeking healthcare across many resource limited countries. Secondly, the Covid-19 pandemics restraints us to only two FGDs, conducted in the rural area and none in the urban.

6. CONCLUSIONS

Poor knowledge on common infant illnesses among caregivers, distorting the magnitude of

illness, resulted in delayed health-seeking. Caregivers of female under-five children, caregivers aged between 21 and 40 years, caregivers whose occupation is housewife, caregivers under-five children residing in a rural area, caregivers who host > 6 children in a household, households with an average monthly income of <10.000 frsCfa were predictors of delay in appropriate health-seeking. The present findings suggest that traditional healing systems and modern health treatment should be complementary in providing health services to these rural and traditional communities. Public health authorities should intensify health education focusing on childhood illnesses, and the importance of timely care-seeking among others.

CONSENT AND ETHICAL APPROVAL

The ethical clearance was obtained from the Institutional Review Board of the Faculty of Health Sciences (Approval number: 1041-02). Administrative authorization was obtained from the North Regional Delegation of the Ministry of Public health (0898/ AR/20/RN/DRSP-N/SAG). Informed consent was obtained from each participant before administering questionnaires and participation in the focus group discussions. Fieldworks were conducted with strict adherence to Government instruction on Covid-19 [31]. Emphasis was laid on the voluntary nature of participation and that they could withdraw at any time without any explanation.

ACKNOWLEDGMENTS

The authors would like to thank the study participants and all individuals that supported us in conducting this work.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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