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Research Article

The Magnitude and Associated Factors of Early Health-Seeking Behavior Among Caretakers of Under-Five Children Who Have Acute Diarrheal Illness at Gondar Town; Health Centers Northwest Ethiopia, 2016.

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Abstract

Background: Early health-seeking behavior (EHSB) is a sequence of helpful steps that caretakers undertake to amend perceived sick-health. In a developing country, the health of children is determining by the caretaker's health seeking behavior. Children who have acute diarrhea and caretakers do not bring at early health actions increase the morbidity and mortalities and few studies in the area. The objective of the study was to assess the magnitude and associated factors of EHSB among caretakers of under-five children who have acute diarrheal illness at Gondar town, health centers Northwest Ethiopia.

Method: Cross-sectional study design by using interviewer data was conducted among 367 caretakers at Gondar town from eight governmental health centers in between March 25 to May 8, 2016. A systematic sampling technique was employed. Data were collected using a pretested semi-structured questionnaire with interviewer. Bi-variable and multivariable logistic regression analyses were performed to identify factors associated with EHSB. Variables had P-value ≤ 0.2 in the bi-variate analysis were considered for multivariable analysis. A P-value of less than 0.05 was used to declare a statistically significant association. Odds Ratio (OR) with a 95% confidence interval (CI) was used to determine the strength and direction of the association.

Results: A total of 367 (98.9%) caretakers participated, of whom only 4 (1.1%) failed to respond. The magnitude of EHSB was 22.6% with (95% CI: 18.5-27.3). EHSB was significantly associated with caretakers brought their ill child at severe condition/ symptom (AOR=2.62; 95% CI: (1.02-6.70), previous health service waiting time less than one hour (AOR=2.15; 95% CI: (1.13- 4.10), and good breast feeding (AOR=0.38; 95% CI: (0.19-0.78).

Conclusions: The magnitude of EHSB of caretakers of under-5 children who have acute diarrheal illness in this study was low. EHSB was statistically associated with previous waiting time less than one hour, brought of the ill child at the mild condition, and giving breast milk/ Oral Rehydration Solution (ORS). Therefore, caretakers should build up constant behaves to bring their sick child early to the available health centers and promote the health services to reduce clients waiting time are proactive in the care of the child.

Key words: Magnitude; EHSB; Caretakers; Under-five children; Diarrhea; Gondar town; Ethiopia

Abbreviations: AOR: Adjusted Odds Ratio; CI: Confidence Interval; EHSB: Early Health Seeking Behavior; EDHS: Ethiopia Demographic and Health Survey; MDG: Millennium Development Goals; ORS: Oral Rehydration Solution; UNICEF: United Nations International Children Fund; WHO: World Health Organization

Background

Early health-seeking behavior (EHSB) is a sequence of helpful steps that caretakers undertake to amend perceived sick-health [1]. It is the process of perceived child illness, initiation to bring the child to health facilities during diarrheal disease [2]. Caretakers have played a critical role in child illness in habits to bringing their child too early at the health facilities that important in the reduction

of under-5 mortality [3-5]. Diarrhea is the second major cause of under-5 mortalities all over the world in 2017[6]. Every year, under-5 mortalities reasons for the diarrheal disease were 525 000 worldwide. Most deaths from diarrhea occur in Asia and sub-Saharan African [6]. Those reports have not revealed the caretakers' EHSB reasons for diarrheal disease. In Ethiopia, under-5 mortality rates have been 13% due to diarrhea illness, even if early health-seeking behaviors of caretakers might have reduced potentially [7]. Different studies showed that the determinant factors for caretakers EHSB were illness type, cultures, beliefs, socio-demographic, women autonomy, economic conditions, physical and financial accessibility, disease pattern, and health service issues [8]. Caretakers who have behaved delayed health-seeking, the child losses excess fluid volumes through diarrhea, which increased the chance of death [9]. Reports of the World Health Organization (WHO) and others who have indicated early health-seeking behavior and proper care can reduce child death and illness by 20% [10]. However, the magnitude of EHSB of caretakers in different localities of Ethiopia is little to know. Hence, achieving the Sustainable Development Goals (SDG) in reducing under-five mortality by 2030 needs evidence-based interventions, and identifying the magnitude and associated factors of EHSB is very important for the implementation of child health intervention programs, general assessment of resource requirements, and intervention prioritization. Therefore, this study has assessed the magnitude and associated factors of early health-seeking behavior among caretakers of under-five children who have an acute diarrheal illness at Gondar town, health centers Northwest Ethiopia.

Methods

Study design and setting

Cross-sectional study design by using interview data was conducted from March 25 to May 8, 2016 at Gondar town, among eight Governmental health centers that are, "Teda," woleka, "Bilajig,"Maraki, "Mintiwab, Gebreal", "Gondar, and "Azezo" health centers in Amahara Regional State, northwest Ethiopia. Gondar town locates 738 km from Addis Ababa, the capital city of Ethiopia. Administratively, it has two districts, 12 sub-cities, and 21 kebeles (smallest administrative units). The overall climatic condition of the town is favorable, not cold, and warm ("weyenadega"). According to the2007 Central Statistical Agency (CAS) of Ethiopia, the total population of the town was 333,432, 173,206 women, 160,226 men, and 45, 146 under-5 children, respectively [11].

Source and study population

All caretakers of under-five children with diarrheal illness who utilize health care services from governmental health centers at Gondar town were the source population. And those caretakers of under-five children with diarrheal disease who were visited governmental health centers during the data collection period were the study population.

Inclusion and exclusion criteria

The inclusion criteria considered for the study subjects were all caretakers of under-five children seeking care for acute diarrhea and visiting the Pediatric/IMNCI clinic of all governmental health centers at Gondar town.

Sampling size and sampling procedure

The sample size was determined by using the single population proportion formula:

$$n = \frac{z\alpha / 2^2.\mathrm{P}(1-\mathrm{P})}{D^2}$$

The following assumptions were considered: ''N" was the required sample size; ''Z" was a standard score corresponding to 95% confidence level; "D" was the marginal error of 5%; "P" =32 %, the proportion of mother's EHSB for acute diarrhea was taken from the Ethiopian Demographic and Health Survey of 2011 (EDHS)(7). $n=z\alpha/2^2$. p (1-P)/d^2) = $(1.96)^2$. 0.32.0.68/ $(0.05)^2$= 334, adding a 10% allowance for non-response was taken. 334+33= n= 367 which was the final sample size; 367 caretakers of under- five children have acute diarrhea were taken as a sample in all health centers.

Sampling techniques

We selected a total of 367 under-5 children from eight health centers at Gondar town Northwest Ethiopia. The study subjects were selected by systematic random sampling technique that caretakers of under-5 children with signs and symptoms of acute diarrhea illness who came to the health centers. Of the 2008 Ethiopian physical year (EFY), the same quarter three-month report data was used to estimate the number of participants from each health center. The proportional allocation of the study subjects to the eight health centers calculated by the formula of ni= n/N *Ni. Where n= the selected total sample size, N= Total population, Ni= total population of each health center, and ni = sample size from each health center. The k^{th}-interval (K) was calculated for each health centers, as K=N/n= Teda (100/28) =4, Woleka 96/27= 4, Bilajig (37/11) = 3, Maraki (308/88) = 4, Mintwab (73/21) = 4, Gebreal (98/28) = 4, Gondar (218/62) = 4 and Azezo (361/102) = 4, respectively. We select the first study participant by using the lottery method and then continue every four intervals of caretakers until the required sample size.

Data collection tools and procedures

We used a pre-tested semi-structured questionnaire to collect socio-demographic, perceived need factors, the severity and symptom types, the health service characteristics, and enabling

factors of the study participant. We constructed data collecting tools by an intensive review of literature from India's urban slums of Kolkata and WHO guidelines of diarrhea [12,13]. We used eight clinical nurses under the supervision of two professional nurses for data collections. Data collectors and supervisors were take training for two days. The collected data were checked daily for completeness and consistency by the principal investigators.

Measurement of variables

Dependent variable

Early health seeking behaviors.

Independent variables

Predisposing factor/ or socio demographic factors such as age, sex, family number, educational status, ethnicity, occupation, religion, number of siblings and social relation with the child. Enabling factor of the caretakers is economic status of the family, out of pocket health expenditure and food and fluid given. Perceived need factors (clinical conditions of illness& symptom type) - severe, moderate and mild. Health system factors such as accessibility of health service, waiting time, distance (in time) and Rota vaccine.

Operational definitions

Early health seeking behavior

Under-5 children have signs/symptoms of acute diarrhea whose caretakers brought within 24-hours of the recognition [14] the response was dichotomized as "yes" when caretakers brought the child within 24 hours at the start of diarrhea to the health facilities ''early health seeking behaviors ''or "no" when they did not bring the child within 24 hours, 'not early health seeking behaviors".

Diarrhea

Passage of at least three liquid/ loose /watery stools within 24 hours as reported by mothers/caretakers [15].

Acute diarrhea

Diarrhea lasting less than fourteen days [16].

Caretaker

The responsible person whose age >18 that providing of care to a child (that can be mother/ father, grandmother/father, guardian).

Perceived severity

The respond of caretakers the magnitude of their child's illness in terms of- severe, moderateness or mildness [17]. Under-five Children: children from 0-59 months.

Data Quality Control

Data were collected by interviewing from study subjects by using the constructed tools. The data were collected and supervised by eight clinical and one professional nurse who have experience in pediatrics/IMNCI clinic care, respectively. The data collectors and supervisors were trained on data collection procedures by the principal investigator. A 5% pre-test was done at "Maksegntworeda" health center. The investigators followed the overall process of data quality during the data collection. We monitored each stage of research, including close follow-up during data collection; encouraged all the study subjects to participate in the study and to provide complete responses; double checked the data and cleaned it of errors.

Data Processing and Analysis

Data were entered into Epi- Info version 7 and transferred to Statistical Package for Social Sciences (SPSS) version 20 to analyze. Frequencies and percentages were used for most variables. Bi-variable logistic regression analysis was used to choose variables for the multivariable logistic regression analysis based on P- value of less than 0.2. Multivariable logistic regression was employed to identify factors associated with EHSB of caretakers of under-5 children based on the odds ratio (OR) with 95% confidence interval (CI) and $P < .05$ and to control the possible effect of confounders. Hosmer and Lemeshow test were used to check model fitness.

Results

Socio-demographic characteristics of caretakers and children

A total of 367 (98.9%) caretakers participated, of whom only 4 (1.1%) failed to respond. Most of the respondents, 338 (93.1%), were mothers for social relation. The mean age of the caretakers was 27.9 (SD ± 7.3) years. Less than 30%, 105 (28.9%), of the caretakers completed secondary school; more than half, 204(56.2%), of the caretakers were housewives; 195 (53.7%) of the children were male; the median and inter-quartile age ranges (IQR) of the children were between 19 and 21 months. Most of the children, 313(86.2%), lived in families with less than five members, and 159 (43.8%) of the diarrheal cases occurred between 24-59 months of age (Table1).

Enabling factors

Nearly 45% of the caretakers earned a monthly income of ETB 601-2000. The majority of the respondents, 305(84%), were comfortable with the service fees. Of the cases, 144(39.7%) were given fluid during their diarrheal illnesses (Table2).

Health system factors

Most of the respondents, 325 (89.5%), said that the distance from home to health centers took less than an hour. Nearly 60%, 211(58.9%), obtained services in separate under-five clinics, and 100 (27%) were Rotavirus vaccinated (Table 3).

Table 1: Socio Demographic Characteristic of early health-seeking behaviors among caretakers of under-five children who have acute diarrhea illness at Gondar town, health centers Northwest Ethiopia, 2016 (N=363).

Variables	Frequency	Percent (%)
Child sex		
Male	195	53.7
Female	168	46.3
Caretaker sex		
Female	348	95.9
Male	15	4.1
Childs age		
0-11 months	101	27.8
12-23 months	103	28.4
24-59 months	159	43.8
Caretakers age		
≤19 years	24	6.6
20-29 years	216	59.5
30-39 years	101	27.8
≥40 years	22	6.1
Marital status of caretaker		
Single	4	1.1
Married	324	89.3
Divorced	35	9.6
Ethnicity		
Amahra	324	89.3
Tigre	36	9.9
Oromo	3	0.8
Religion		
Orthodox	291	80.1
Muslim	55	15.2
Protestant	17	4.7
Educational status of caretaker		
Not attend formal education	116	32
Attend formal education	247	68
Occupation of caretaker		
House wife	204	56.2
Governmental employee	46	12.7
Nongovernmental employee	113	31.1
Husband education		
Not attend formal education	100	27.6
Attend formal education	263	72.4
Husband occupation		
Governmental employee	115	31.7

Nongovernmental employee	248	68.3
Your relationship to the child		
Parents	352	97
Non parents	11	3
Family size		
<5	313	86.2
≥5	50	13.8
No of siblings u-5 child		
1	287	79.1
≥2	76	20.9

Table 2: Enabling factors to early health-seeking behaviors among caretakers of under-five children have acute diarrhea illness at Gondar town, health centers Northwest Ethiopia, 2016 (N=363).

Variable	Frequency(n)	Percent (%)
Family income (ETB)		
<600	71	19.6
601-2000	162	44.6
>2000	130	35.8
Fairness of health services fee		
Yes	305	84
No	58	16
Fluid given		
ORS		
No	291	80.2
Yes	72	19.8
Breast milk		
No	219	60.3
Yes	144	39.7
Cow milk		
No	325	89.5
Yes	38	10.5
Fruit juice		
No	271	74.1
Yes	92	25.4
Gruel		
No	300	82.6
Yes	63	17.4
Water		
No	272	74.9
Yes	91	25.1
Food given		
Porridge		
No	314	86.5

Yes	49	13.5
Soup		
No	339	93.4
Yes	24	6.6
Rice		
No	287	79.1
Yes	76	20.9
Egg		
No	321	88.4
Yes	42	11.6

Table 3: Health system factors of early health-seeking behaviors among caretakers of under-five children have acute diarrhea illness at Gondar town; health centers Northwest Ethiopia, 2016 (N=363).

Variables	Frequency (n)	Percent (%)
Waiting time		
<30 minutes	158	43.5
30-60 minutes	148	40.8
>60 minutes	57	15.7
Time taken to health center		
<60 minutes	325	89.5
≥60 minutes	38	10.5
Availability of separated u-5 clinic		
Yes	211	58.1
No	152	41.9
Rota virus vaccination		
No	263	72.5
Yes	100	27.5

Perception of caretakers of child illness symptom and severity

Of the respondents, 163 (44.9%), 165(45.5%), and 35(9.6%) perceived child illnesses as severe, moderate, and mild, respectively; 244(67.2%), 237(65.3%), 171(47.1%), and 118 (32.5%) were aware of symptoms, such as dehydration, vomiting, fever, lethargy, and inability to drink or breastfeed, respectively (Table 4).

Magnitude of early health seeking behavior

The magnitude of early health-seeking behaviors noted in this study was 22.6% (95% CI: 18.5-27.3). Of the participants, 80(22.6%) reported to health facilities on the first day/24hours, while 45(12.4%), 96(26.4%), 42(11.6%), 25(6.9%), and 73(20%) after two, three, four, five, and more than six days, respectively.

The reasons for not early health seeking behaviors of the respondents (n=281): Out of the participants who did not seek care early, 141(50.3%) chose self-healing; 42(14.9%) faced a shortage of money; 37(13.2%) used home treatment; 28(9.9%) cared for no other children; 16 (5.7%) complained about long waiting time; 14(4.9%) said the clinic was far away, and 3(1.1%) mentioned other reasons.

The history of caretakers that previous care seeking places when the child was sick: Two hundred twenty- nine (63.1%) sought no care; 134 (36.9%) went to in different places; 55(12.5%) visited health centers; 38(10.5%) used traditional healers; 14(3.9%) visited pharmacies; 25(6.9%) went to private clinics and 2(0.6%) to hospitals.

Associated factors of early health seeking behavior

Variables such as age, sex of the child, marital status, educational status, occupation, family size, income, availability of IMNCI clinic, waiting time, perceived health status, heard about danger sign of diarrhea, given breast milk/ORS, dry mouth, vomiting, lethargy,

and bloody diarrhea were entered into the univariable analysis. The selected variables for multivariable logistic regression analysis were waiting time, perceived health status, and given breast milk/ORS. This study found that waiting time was statistically associated with EHSB among caretakers of under-5 children who have acute diarrhea. The probability of EHSB was 2.15 times to be higher among caretakers who had to wait time less than one hour (AOR=2.15; 95% CI: (1.13-4.10). The current study identified that mild health status was significantly associated with EHSB. The likelihood of having EHSB was 2.62 times to be higher among caretakers who have perceived mild condition (AOR=2.62; 95% CI: (1.02-6.70). This study found that fluid given breast milk/ORS was statistically associated with EHSB among caretakers of under-5 children who have acute diarrhea. The less likelihood having EHSB were (AOR=0.38; 95% CI: (0.19 - 0.78) (Table 5).

Table 4: The severity and symptom type perceived by caretakersofunder-5 children have acute diarrhea at governmental health centers in Gondar town, northwest Ethiopia, 2016 (n=363).

Variables	Frequency (n)	Percent (%)
Perception, child illness severity		
Moderate	165	45.5
Sever	163	44.9
Mild	35	9.6
Identification for the severity		
By combined symptoms of the DHS	200	55.1
Un able eat/ breast feed	83	22.7
The diarrhea continues for long time	80	22
Signs and Symptoms of Dehydration Vomiting		
Yes	244	67.2
No	119	32.8
Fever		
Yes	237	65.3
No	126	34.7
Unable to drink/Breast feed		
No	245	67.5
Yes	118	32.5
Lethargy		
No	192	52.9
Yes	171	47.1
Irritability		
No	315	86.8
Yes	48	13.9
Dry mouth		
No	328	90.4
Yes	35	9.6
Sunken eye		
No	297	81.8
Yes	66	18.2
Decrease urine out put		
No	339	93.4

Yes	24	6.6
Thirsty		
No	309	85.1
Yes	54	14.9
Blood in the stool		
No	315	86.8
Yes	48	13.2

Table 5: Bi-variable & multivariable logistic analysis of factors associated early health-seeking behaviors among caretakers of under-five children have acute diarrhea illness at Gondar town, health centers Northwest Ethiopia, 2016 (n=363).

Variables	EHSBS		COR (95% CI)	AOR (95% CI)
	Yes	No		
Previous waiting time services used (in minutes)				
May-50	58	129	**2.85(1.68-4.84)***	**2.15(1.13- 4.10)****
51-180	24	152	1	1
Perceived health status				
Mild	28	135	1	1
Moderate	36	129	1.35(0.78-2.33)	0.89 0.47-1.70)
Severe	18	17	**5.11(2.34-11.11)***	**2.62(1.02-6.70)****
Heard about diarrhea danger sign				
Yes	33	67	1	1
No	49	214	**0.46(0.28-0.78)***	0.86(0.42-1.80)
Good Breast feed				
Yes	36	159	**1**	**1**
No	46	122	**0.60(0.37-0.99)***	**0.36(0.19-0.78)****
Dry mouth				
Yes	13	22	**1**	
No	69	259	**2.22(1.06-4.63)***	-

***Note**: = statistically significant at P- values ≤0.05 at bi-variable analysis. The model adequately fits the data at p –value 0.625 (Hosmer&Lemeshow Test; for goodness of fit), 1=reference**= statistically significant at P-values ≤0.05 in multivariable analysis 5-50.

Discussion

This institution-based study found that 80(22.6%) caretakers of under-5 children who have acute diarrhea had early health-seeking behaviors. The finding of the current study is lower than the study findings in Ethiopia (EDHS) 32% [7], urban slums of Kolkata, India 47.6% [12], Pakistan 29% [18], and Nigeria 70.4% [19]. The possible explanation for this difference might be due to socio-demographic, cultural differences, and the extent of access to health information of caretakers who seek early. Whereas the national study used pooled data, a large sample size, and included both the urban and rural areas. This study showed that EHSB was significantly associated with waiting time for less than one hour. Caretakers who have EHSB and came to the health facilities should get proper management at the appropriate time by giving fast and respectful services. This finding is in line with the results of other studies [3, 9, 20]. It might be the fact that long waiting times for services can affect the perceptions of early health-seeking behavior of caretakers that harm the child's health and worsens to respond by medical management.

The current study also identified caretakers bring the child in severe symptoms were significantly associated with EHSB. The likely hood of early health-seeking behavior was higher among children who come in the first 24 hours. The supported studies were [21, 22]. This might be the fact that caretakers bring their child at the start of diarrhea were EHSB. Caretakers who bring their child after several days of diarrhea become severe. Due to delayed, child deteriorates their health condition because diarrhea

is frequently losses or watery bowel movement more than three times /24 hrs that alters the child's health pattern to severe as the duration prolonged [6]. This study revealed that caretakers have good breast feed were 62% less likely to be EHSB than those who did not breast feed. This study is in line with the studies [18, 23, 24]. The reasons might be providing antibiotics, and something at home can hinder the symptom of the child and decreases the caretaker's early health-seeking behavior outside the home.

Implications of Findings

The findings of this study may indicate low magnitude of EHSB of caretakers of under-5 children with acute diarrheal illness are hallmarks that show the performs of early health seeking behaviors by the communities and provide initial evidence to the local health authorities or health practitioners about the early health seeking behaviors in the area and papers further research on EHSB.

Limitation

This study was not triangulated, not measured the incidence rate. We interviewed, and the health professionals diagnosed the child at the same time due to this occasion, the current study might be affected by social desirability bias.

Conclusion

The magnitude of EHSB of caretakers of under-5 children who have acute diarrhea illness in this study was low. EHSB was statistically associated with waiting time less than one hour the previous service used, brought of the ill child at the mild condition, and giving breast milk/ Oral Rehydration Solution (ORS). Therefore, caretakers should build up constant behaves to bring their ill child early to the available health centers and promote the health services to reduce clients waiting time are proactive in the care of the child.

Ethics Approval and Consent to Participate

Ethical clearance was obtained from the School of Nursing University of Gondar, College of Medicine and Health Sciences Ethical Review Committee in a letter Ref. No. N/D/533/02/2016. Cooperation letters were obtained from Gondar town health offices to ensure the permission and support of all health centers. The heads of all health centers permitted us to collect data. Verbal consent was taken from the respondents. During data collection at each selected health center, the aim of the study was clearly explained to respondents. Respondents were assured about the confidentiality of the information they provided and about their rights to refuse to participate.

Availability of Data and Materials

All necessary data generated or analyzed during this study are included in this manuscript.

Author's Contributions

DGK wrote the proposal, supervised the data collection process, analyzed, presented the data and drafted the manuscript. MMK approved the proposal with revisions, participated in data analysis and manuscript preparation. DBA wrote the proposal and first draft of manuscript.

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Conflict of Interest

None.

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