Childhood Diarrhea and its management- a community based study estimating knowledge, attitude and practice of Saudi Mothers, Saudi Arabia

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January 9, 2021

Abstract

Aim To demonstrate the best home care of children with diarrhea in our community by investigating certain knowledge deficiencies, specific inappropriate attitudes, and particular improper practice toward children diarrhea and its management, this study was conducted to evaluate knowledge, attitude and practice of Saudi mothers towards diarrhea in their children and its management at home. Methods Online cross-sectional validated online survey targeting Saudi mothers who are living in Saudi Arabia was used to collect data from the beginning of March to the end of April 2019. Results A total of 1140 mothers (52.1% of them are housewives) participated in the study. About of 40.3 % of participating mothers believed that childhood diarrhea is major problem in Saudi community; however, Almost 23% of the participants were unable to identify any critical sign of sever diarrhea, and around 66% falsely stated that diarrhea is caused by teething. Although of 62 % of our participating mothers knew about the oral rehydration therapy (ORS), only 23.5 % of them used it for their children. Conclusion Adequate knowledge of mothers about the critical sings, causes, transmission, prevention, and management of childhood diarrhea should be applied in simple language to communicate the health-related information in clear manner.

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Methods

Online cross-sectional validated online survey targeting Saudi mothers who are living in Saudi Arabia was used to collect data from the beginning of March to the end of April 2019.

Results

A total of 1140 mothers (52.1% of them are housewives) participated in the study. About of 40.3 % of participating mothers believed that childhood diarrhea is major problem in Saudi community; however, Almost 23% of the participants were unable to identify any critical sign of sever diarrhea, and around 66% falsely stated that diarrhea is caused by teething. Although of 62 % of our participating mothers knew about the oral rehydration therapy (ORS), only 23.5 % of them used it for their children.

Conclusion

Adequate knowledge of mothers about the critical sings, causes, transmission, prevention, and management of childhood diarrhea should be applied in simple language to communicate the health-related information in clear manner.

Key words: Diarrhea; Saudi Arabia; Knowledge; Attitude; Children; Mother

What's known

- Every parents working hard to keep their children's healthy at all stages of child, and parent's knowledge and attitudes about health is very important
- Diarrhea is a common illness that is considered a major threat to children, and it may lead to death in developing countries particularly amongst children aged up to 5 years
- Enhancing mothers' proper knowledge and demonstrating appropriate practice is a key to prevent or halt the progression of diarrhea. However, mothers' harmful practices such as nourishment limitation, breast feeding avoidance, and utilization of inappropriate conventional therapy or wrong prescription have been reported.

What's new

In most cases, diarrhea can be treated at home by oral rehydration therapy (ORT) that has significantly decreased the mortality related to diarrhea disease.13 Although this method of treatment is cheap, adequate, reasonable, and safe, few mothers listed that the aim of using (ORS) during diarrhea is to treat dehydration of diarrhea.

In order to demonstrate the best home care of children with diarrhea in our community (Saudi) by investigating certain knowledge deficiencies, specific inappropriate attitude, and particular improper practice toward children diarrhea and its management

INTRODUCTION

Diarrhea is a common illness that is considered a major threat to children, and it may lead to death in developing countries particularly amongst children aged up to 5 years ¹⁻³ Twelve million children are estimated to die in developing countries before the age of five years. Around 70% of those children die because of five medical issues; one of them is diarrhea. ^{1,4} Despite of that age, climate changes, and the use of rotavirus vaccine can contribute to variations in pathogen-causative diarrhea, rotavirus was the most common causative pathogen especially in unvaccinated children against rotavirus.⁵ In Saudi Arabia, rotavirus was noticed in 41.3% to 65.5 % of cases causing children diarrhea.^{6,7} In addition to microbial-induced diarrhea, Diarrhea can result from intolerance of certain kinds of food particularly lactose containing milk.⁸

Regardless of diarrhea-induced causes, dirty weaning food, improper nourishing practice, absence of clean water, poor hand washing, constrained sterile transfer of waste, poor lodging conditions, and absence of access to satisfactory and moderate social insurance are aggravating factors of diarrhea in children under 5 years old.⁹ A study in Saudi Arabia reported that environmental risk factors associated children diarrhea included sewage leakage near the home, eating out after school hours and utilizing reusable cloths or sponges to dry dishes.¹⁰

Enhancing mothers' proper knowledge and demonstrating appropriate practice is a key to prevent or halt the progression of diarrhea. However, mothers' harmful practices such as nourishment limitation, breast feeding avoidance, and utilization of inappropriate conventional therapy or wrong prescription have been reported.¹¹ In addition, the knowledge of mothers toward the signs of dehydration secondary to diarrhea is poor.^{2,12} In most cases, diarrhea can be treated at home by oral rehydration therapy (ORT) that has significantly decreased the mortality related to diarrhea disease.¹³ Although this method of treatment is cheap, adequate, reasonable, and safe, few mothers listed that the aim of using (ORS) during diarrhea is to treat dehydration of diarrhea.^{2,13} In order to demonstrate the best home care of children with diarrhea in our community by

investigating certain knowledge deficiencies, specific inappropriate attitude, and particular improper practice toward children diarrhea and its management, the aim of this study is to evaluate knowledge, attitude and practice of mothers towards diarrhea in children and its management at home.

METHODS AND MATERIALS

Online cross-sectional survey based study targeting mothers who are living in Saudi Arabia were carried out to measure knowledge, attitude and practice of mothers towards diarrhea and its management in their children at home. The data collection was carried out from the beginning of March to the end of April 2019. The questionnaires for this study was prepared after an extensive literature review from similar studies published in this regard 2,13 . The questionnaires for this study grouped in four parts. The first part was to collect demographic data (such as age of mother, mother's education level, mother's job, child's age, etc.). The second part is the knowledge domain questions with the multiple-choice options discussing subjects like signs and symptoms of diarrhea, diarrhea causes, preventive measures and critical signs of diarrhea as well as critical signs of dehydration. The third part focused on manner of management practice of diarrhea at home. The fourth part was the attitude domain questions that were composed of 11 questions assessed by 5 point Likert Scale (strongly agree, agree, neutral, disagree, and strongly disagree). A panel of 3 members (two professors and a researcher) from college of pharmacy, king Saud university who were experts in preparing the study tool were reviewed the questionnaire. The survey was translated into Arabic language by an independent translator, and reviewed again for the appropriateness of language before testing its validity. The questionnaire was then validated through randomly selected 10 respondents in a pilot study carried out at college of pharmacy king Saud university. The respondents recruited in the pilot study were mothers and did not include in the final results or had no contact with the subjects of the study. Reliability test was determined using Cronbach's alpha of the questionnaire and it was found 0.73.

The sample size for this study was calculated using an online sample size calculator (http://www.raosoft.com/samplesize.html) by assuming a larger population size with a margin of error $\pm 5\%$ and a confidence level of 95%, which resulted in a sample of 384 individuals.¹⁴ Statistical Package for Social Sciences version 25 (SPSS) software was applied to analyze the data. Descriptive statistics and Chi-squared test were also used.

RESULTS

A total of 1140 respondents filled the questionnaire. About 24% of respondents were aged from 36 to 40 years, and only 5.4% of respondents received no formal education. More than half of mothers were housewife (52.1%). Slight more than one third of children were aged above 2 years. The demographic of mothers and their children are summarized in Table 1. Table 1. Demographic data of mothers and their children

Variables	Number
Age of the Mothers (years) 18-20 21-25 26-30 31-35 36-40 more than 41 years	130 130 166 192 271 2
Education level Illiterate Primary school/ secondary school High school University Postgraduate	$62 \ 160 \ 244 \ 479 \ 195$
Job Employer Health staff Housewife Students Other's	$427 \ 68 \ 594 \ 39 \ 12$
Insurance None Governmental Private	329 482 329
Age of the child (years) Less than on year 1-2 years Above 2 years	$217 \ 226 \ 697$
Gender of a child [?] Male Female	456 675

*Missing Data

In this study, mother rated the critical signs of childhood diarrhea as follows: blood in the stool (49%), followed by thirst and dry mouth (32.1%), and loss of stretchiness of the skin (24.3%). Nearly half (49.9%) of mothers believed that diarrhea is caused by eating dirty food. Table 2 shows mothers' knowledge about childhood diarrhea.

Table 2. Mothers' knowledge and practice about diarrhea and its managements

Variables

Critical signs and symptoms of diarrhea* Passage of >3 loose stools with blood in 24 hours Thirst and dry mouth Te Cause/mode of transmission of diarrhea* Drinking bad/dirty water Eating dirty food Eating with dirty hands Eating Management of child's diarrhea Visit the physician Visit the pharmacist Use ORS Give homemade fluids Feed the child

*Multiple-answers question

In this study, the most reported practice among mothers towards management of their child's diarrhea included seeing the physicians (68.9%), giving homemade fluids (52.6%), using ORS (23.0) and visiting pharmacists (20.4) (Table 2).

In this study, about 62% of mothers know the ORS, but only 53.5% of them recognized that ORS could prevent child from getting dehydrated. The resources of information for utilizing ORS in childhood diarrhea were gained mainly from medical prescription (50.3%), followed by family (15.7%) and then by consultation of pharmacists (15.1%) as presented in Table 3.

Table 3. Mothers' knowledge about the use of ORS

Characteristic	Number	Percentage
Do you know the ORS? Yes	706 434	61.9 38.1
No		
Role of ORS solution in diarrhea Prevents child from getting dehydrated	$610\ 183\ 77$	$53.5 \ 16.1 \ 6.8$
Either increases or decreases diarrhea		
No role in diarrhea treatment		
Sources information of use ORS Medical prescription	$573\ 172\ 179\ 112\ 31$	$50.3 \ 15.1 \ 15.7 \ 9.8 \ 2.7$
Consultation of pharmacists		
Family		
Internet		
TV		

In this study, around 33.5% of mothers thought diarrhea can attack bottle-feed children. Majority of mothers (65.9%) reported that teething is the main cause of diarrhea. The disagreement of that "liquid food aggravates diarrhea" were reported by 22.5% of the mothers. About 41% mothers thought that diarrhea is a problem in the Saudi community, and 60.9% of mothers stated that handwashing prevents diarrhea. More details on mothers' attitude on childhood diarrhea is showed in Table 4.

Table 4. Mothers' attitude about childhood diarrhea

Questionnaires	Strongly agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)
Diarrhea attacks mostly bottle-feed children	146(12.8)	236(20.7)	522(45.8)	180(15.8)	56(4.9)
Diarrhea is a disease of the	36(3.2)	49(4.3)	223(19.6)	431(37.8)	401(35.2)
poor Diarrhea is a problem in the community	124(10.9)	347(30.4)	411(36.1)	190(16.7)	68(6.0)

Questionnaires	Strongly agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)
Teething causes	282(24.7)	470(41.2)	239(21.0)	105(9.2)	44(3.9)
Diarrhea is a curable disease	559(49.0)	449(39.4)	81(7.1)	30(2.6)	21(1.8)
Liquid food aggravates diarrhea	111(9.7)	243(21.3)	529(46.4)	209(18.3)	48(4.2)
Oral rehydration salts solution cures diarrhea	141(12.4)	368(32.3)	485(42.5)	122(10.7)	24(2.1)
Human feces are a source of diarrhea	120(10.5)	196(17.2)	648(56.8)	133(11.7)	43(3.8)
Handwashing prevents diarrhea	248(21.8)	446(39.1)	264(23.2)	122(10.7)	60(5.3)

Discussion

This study assessed the knowledge of mothers about the critical signs of diarrhea. About 49% of the mothers stated that the passage of three or more loose stools with blood during the day is an obvious critical sign of diarrhea that require hospital or physician visit, and almost 23% reported no knowledge of any critical sign of diarrhea. These results showed low knowledge among Saudi mothers about the critical sings of diarrhea, but their knowledge of the critical signs of diarrhea were higher compared to other mothers in different communities. A study carried out in Ethiopia found that 39.5% of mothers stated that passage of three or more loose stools with blood during the day is mark of severe diarrhea.¹⁵ A similar study was done in rural setting of Kenya determined that majority of mothers (76.4%) did not identify the critical signs of childhood diarrhea.¹⁶ A study from Nepal reported that 20.8 % of mothers identified the red-colored diarrhea as "the most dangerous diarrhea".² The critical signs of dehydration have the similar importance of bloody diarrhea, and the participating mothers in our study were unable to identify the most common signs of dehydration. Only 32.1%, 11.6%, and 24.3% were able to recognize thirst/dry mouth, tearless eyes, and loss of strictness of skin respectively as the critical signs of dehydration secondary to diarrhea. The poor knowledge and unrecognized sings of dehydration among mothers are noticed globally. ^{2,17-19} Adequate knowledge of mothers about the critical sings of childhood diarrhea is essential as the early referral of child with severe diarrhea is fundamental for appropriate treatment.¹⁵

Poor sanitation of food and water may lead to diarrhea with approximately 3000 deaths and 135,000 hospitalizations annually secondary to food-borne transmission of diarrhea causative pathogens in the United States.²⁰ With the regards for the causes and transmission of diarrhea, nearly 50 % of participating mothers believed that eating polluted food is the most common cause of childhood diarrhea, and only 31 % of mothers identified drinking unclean water as the reason for childhood diarrhea. In consistent with our findings, many studies reported low level of mothers towards causes and transmission of diarrhea.^{2,16,22} A study from Nigeria reported that the most common causes for childhood diarrhea were contaminated food (24.1%) and unclean water (11.3%).⁸ Another study from Iran showed that only 24.66% of mothers knew that the unclean water can cause diarrhea.²² A study was carried out in Malawi reported that 55 % of mothers stated that unhealthy water is the main causes of diarrhea.²³ The change in knowledge of childhood diarrhea could be due to variance in mothers' education levels.

The misconception between teething and diarrhea seems disseminated widely. The results of present study showed that 66 % of mothers stated teething is a reason of their children diarrhea. These results come agreed with other studies from different countries.^{8,22} In addition to the wrong belief of association between diarrhea and teething, mothers tend to consider diarrhea secondary to teething as "non-serious diarrhea", and they may deal with it loosely even if it's accompanied by critical signs like dehydration.²⁴ The efforts should be applied to educate the mothers about the critical signs of children diarrhea and to disassociate the belief link between diarrhea and teething.

The mothers' sufficient knowledge on reasons, prevention and management of diarrhea utilizing proper therapies is the key for home management of childhood diarrhea.^{14,25} According to the Integrated Management of Childhood Illness (IMCI) guidelines, the use of ORS is the principle therapy of diarrhea ²⁶. However, the use of ORS seemed not highly encouraging among mothers. Although of 62 % of our participating mothers knew about the ORS, only 23.5 % of them used it for their children. Similar findings were reported. A study from Nigeria reported that most of mothers (63%) were aware of ORS, but 27% of them used it for their children.8 In another study did in Pakistan mentioned that 58% mothers used ORS to treat their childhood diarrhea disease. ¹² Also in our study, it was found the main resources of mothers regarding ORS usage were medical prescriptions (50.3%), family/relatives/friends (15.7%), and pharmacists (15.1%). In a similar study the two main resources of ORS information were families/friends (76%) and pediatricians (58%). ²⁷Despite of 53.3 % of our participants reports that "ORS prevents a child from getting dehydrated", few mothers are using ORS (23.5%). The reason for a few mothers used ORS could be due to their level of education and awareness of the mothers on diarrhea management due to inadequate public information on this issue.

Due to the high rate of literacy and social media usage among Saudis,^{28,29} and the aim of study to assess the knowledge, attitude, and practice of mothers towards childhood diarrhea from community perspective, the study was conducted online to diminish geographical dependence. The study was performed with significance that mothers' knowledge of childhood diarrhea prevention and management would decrease the unnecessary hospital or clinic visits; however, most of the participating mothers (68.9%) seek treatment from medical doctor for their children with diarrhea. This practice of mother was observed in previous study. ¹⁵ In contrast, our subjects showed good preventive measure. The majority of mothers (70.9%) believed that handwashing, which is one essential measure to decrease the prevalence of diarrhea, ³⁰ prevents childhood diarrhea.

CONCLUSION

About of 40.3 % of participating mothers believed that childhood diarrhea is major problem in Saudi community. These beliefs are supported by reports mentioned the prevalence of diarrhea is high in some area of Saudi Arabia.¹ However, insufficient knowledge of childhood diarrhea and its management were observed. Adequate knowledge of mothers about the critical sings, causes, transmission, prevention, and management of childhood diarrhea should be applied in simple language to communicate the health-related information in clear manner. Also, There is a lack between the understanding the role of ORS and its use. Understanding of ORS is not adequate and it needs reliable efforts to highlight on importance of ORS in resolving dehydration of childhood diarrhea.

COMPETING INTERESTS

The authors declare that they have no competing interests.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil.

DATA AVAILABILITY

Data will be available upon request from the corresponding author of the study

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