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Original Research

Impact of maternal education on the comprehension of effective home management of pediatric diarrhea in Arar, Saudi Arabia

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Abstract

Aim: The current study evaluated the effect of education on maternal awareness of home management of pediatric diarrhea in Arar city, Saudi Arabia.

Material and Methods: It is a preformed-electronic questionnaire-based survey among mothers. The questionnaire was divided into 3 sections to collect participants' personal data and their level of awareness about pediatric diarrhea predisposing factors (PPF) (12 questions) as well as common home management methods (18 questions).

Results: Responses were received from 367 mothers after their informed consent was taken (mean age 27.4 years (range 21-39 years)). The participants' average scores of awareness about the PPF and home management methods were 8.1±3.9/12 (range 5-11) and 13.5±6.5/18 (range 8-19), respectively. Bad hand hygiene as a risk factor for diarrhea was widely known to the participants. However, 98.2% of the participants were aware of the role of oral rehydration solution. There was a significant difference among the participants' awareness scores in relation to their educational levels ($p<0.0001$). Interestingly, there was an inverse correlation ($p=0.002$, $r=-0.83$) between the mothers' scores and the duration of diarrhea in their children.

Discussion: Awareness among mothers in Arar is reasonable about pediatric diarrhea. Education level markedly affects the awareness level. Awareness campaigns should be conducted targeting uneducated mothers.

Keywords

Maternal Education, Home Management, Pediatric Diarrhea

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Introduction

Diarrheal diseases are quite prevalent all over the world and these are an important cause of morbidity and mortality in the pediatric age group [1]. More than a billion persons are affected by diarrhea around the globe. More than a million deaths are caused by diarrhea, which included approximately half-million deaths of children aged less than 5 years [2].

Diarrhea is characterized by the passage of three or more loose stools per day. Diarrhea causes loss of body fluid and leads to dehydration, hypotension, hypovolemic shock and even death in a significant number of cases. Diarrhea can also adversely affect the growth and cognitive development of children [3]. In the majority of pediatric patients suffering from diarrhea, diarrhea is caused by infections, which are transmitted due to hand, water and food contamination. A large number of children are hospitalized because of diarrhea that is caused by Rotavirus. Mortality and morbidity associated with diarrheal diseases are preventable and treatable with the help of simple and cost- effective measures [4].

Many research projects worldwide revealed that diarrheal morbidity in children is associated with poor sanitation such as improper hand washing, improper personal and food hygiene. Other causes were also reported as lack of breastfeeding, delay in the initiation of breastfeeding, lack of nutrient-rich foods, lack of rotavirus vaccination. Additionally, a lack of awareness of home management of diarrhea such as oral rehydration therapy with oral rehydration salt solutions and a lower level of education of mothers regarding the care of sick children were also reported as contributing factors in diarrheal morbidity among children [5-8].

Various studies from different communities raised the issue of the presence of harmful practices for the management of pediatric diarrhea, which further enhance diarrhea-related morbidity and mortality among children. Important and common harmful practices in pediatric patients suffering from diarrhea include restriction of food, limitation on fluid intake, curtailment of breastfeeding and inappropriate use of medications [9].

Awareness of mothers regarding preventable factors and proper measures for home management of diarrhea in children plays a vital role in the reduction of morbidity and mortality in children. Hence, the current study was conducted to study mothers' awareness level of diarrhea prevention measures and to assess the knowledge of mothers about home management of diarrhea in children. In addition, the level of awareness regarding pediatric diarrhea and various measures for home management among mothers was compared with respect to age and the educational levels of mothers.

Material and Methods

The local Bioethics Committee of Northern Border University, Arar, Saudi Arabia approved the study plan. The study was conducted as questionnaire-based survey. The questionnaire was composed of 3 sections. The first section questions were directed to the personal data of the participants including their age, children, breastfed children, level of education, and their previous experience with home management of their children's diarrhea. The second part contained 12 questions to assess the participant's awareness about the predisposing factors to diarrhea among children. While the 3rd section contained 18 questions and was designed to assess the participants' knowledge about the methods of home management of pediatrics diarrhea. The questionnaire was revised and evaluated by the staff members, of the pediatric department, Northern Border University.

Statistical analysis

The data were analyzed using Graph-Pad Prism 5 (GraphPad Software Inc., San Diego, CA). The participants' answers were given a score of 1 for right answers and a score of zero for false answers to both the second and third sections questions. One-way ANOVA and Tukey post-test were used to study the differences between the different groups. Pearson's correlation was used to correlate the mothers' awareness scores and the duration of their children's diarrhea. Significance was considered with a p-value <0.05.

Results

Three hundred eighty-seven mothers participated after giving their informed consent with the mean age of 27.4 years (range 21-39 years). Data regarding participants' ages, number of children, educational level and history of their children's diarrhea are shown in Table 1.

Regarding the knowledge of the participants about the predisposing factors for pediatrics diarrhea, the participants' overall average score was 8.1±3.9/12 (range 5-11). Awareness was high regarding the effect of bad hand hygiene as a risk

Table 1. Demographic data of mothers who participated in the study

Parameter	Number	%
Age		
20-25	121	31.3
26-30	101	26.1
31-35	98	25.3
>35	67	17.3
Education		
Uneducated	68	17.6
Primary to Secondary school	112	28.9
University education	207	53.5
Children numbers		
1	87	22.5
2	132	34.1
3	102	26.4
4	50	12.9
> 4	16	4.1
History of diarrhea		
Yes	232	59.9
No	155	40.1
Duration of diarrhea (days)		
1	75	19.4
2	102	26.4
3	43	11.1
4	12	3.1

Please make sure about the total number of responses in this column (the total here is 232 and not 387), Revised and it is correct as not all the participants reported diarrhea in their children

factor for diarrhea, while low levels of awareness were shown regarding the role of lead in diarrhea among children (Table 2). There was a significant difference among the participants in the scores for knowledge regarding the predisposing factors in relation to their ages (p<0.0001) and educational levels (p<0.0001) (Figure 1A, 1B).

The questions investigated the awareness of the participants about household methods for management of pediatrics diarrhea. The participants showed an overall average score of 13.5±6.5/18 (range 8-19). About 98.2% of the participants were aware of the role of oral rehydration solution, while only 78.3, 75.5, and 69.8 % were oriented by the value of black tea, curd and green tea, respectively. Around 30% of the mothers chose not to take any action and just to wait for spontaneous improvement (Table 3). There was a significant difference among the participants in the scores for knowledge household methods for management of pediatrics diarrhea in relation to their ages (p<0.0001) and educational levels (p<0.0001) (Figure 1C, 1D). Interestingly, there was an inverse correlation (p=0.002, r =-0.83) between the mothers' scores and the duration of their children's diarrhea.

Discussion

The study was conducted to evaluate the effect of maternal education on household management of pediatrics diarrhea in Arar. Three hundred eighty-seven mothers participated after obtaining their informed consent with mean age of 27.4 years (range 21-39 years). Regarding the knowledge of the participants about the predisposing factors for pediatrics diarrhea, the participants showed an overall average score of 8.1±3.9/12 (range 5-11). The questions, which investigated the awareness of the participants about household methods for

Table 2. Response of participants to the survey questions related to the awareness levels regarding the preventable predisposing factors to pediatric diarrhea.

Questions	Yes		No		Totals	
	n	%	n	%	n	%
If the children eat food without hand washing	387	100.0	0	0.0	387	100.0
If the children do not wash hands after defecation	387	100.0	0	0.0	387	100.0
Washing hands without soap	251	64.9	136	35.1	387	100.0
Preparation of food by mothers without hand washing	387	100.0	0	0.0	387	100.0
Lack of breastfeeding	211	54.5	176	45.5	387	100.0
Drinking unsafe water	305	78.8	82	21.2	387	100.0
Eating green salads without proper washing	312	80.6	75	19.4	387	100.0
Lack of protection of food from the flies	361	93.3	26	6.7	387	100.0
Lack of good maternal personal hygiene	320	82.7	67	17.3	387	100.0
By eating soil containing lead	201	51.9	186	48.1	387	100.0
By ingestion of paint chips with lead	205	53.0	182	47.0	387	100.0
Sucking the toy jewelry items containing lead	212	54.8	175	45.2	387	100.0

Table 3. Response of participants to the survey questions related to the commonly used home management methods for pediatric diarrhea.

Questions	Yes		No		Totals	
	n	%	n	%	n	%
Use of Oral rehydration solution (ORS)	380	98.2	7	1.8	387	100
Visit hospital in case of severity	303	78.3	84	21.7	387	100
Use of black tea	292	75.5	95	24.5	387	100
Use of curd	270	69.8	117	30.2	387	100
Use of green tea	253	65.4	134	34.6	387	100
Consultation of health care person	253	65.4	134	34.6	387	100
Reduction in use of food to give rest to bowel	232	59.9	155	40.1	387	100
Use of anti-diarrheal drug without consultation of physician	231	59.7	156	40.3	387	100
Restriction of breast milk	223	57.6	164	42.4	387	100
Use of citrus fruit juice	222	57.4	165	42.6	387	100
Use of ginger	220	56.8	167	43.2	387	100
Use of Lemon water	215	55.6	172	44.4	387	100
Use of bananas	212	54.8	175	45.2	387	100
Use of camel milk	198	51.2	189	48.8	387	100
Use of honey	187	48.3	200	51.7	387	100
Use of herbal medicine	178	46.0	209	54.0	387	100
Use of antibiotics without consultation of physician	154	39.8	233	60.2	387	100
Reduction in use of fluids for the reduction of loose stool	118	30.5	269	69.5	387	100
No special steps, just wait for improvement	112	28.9	275	71.1	387	100

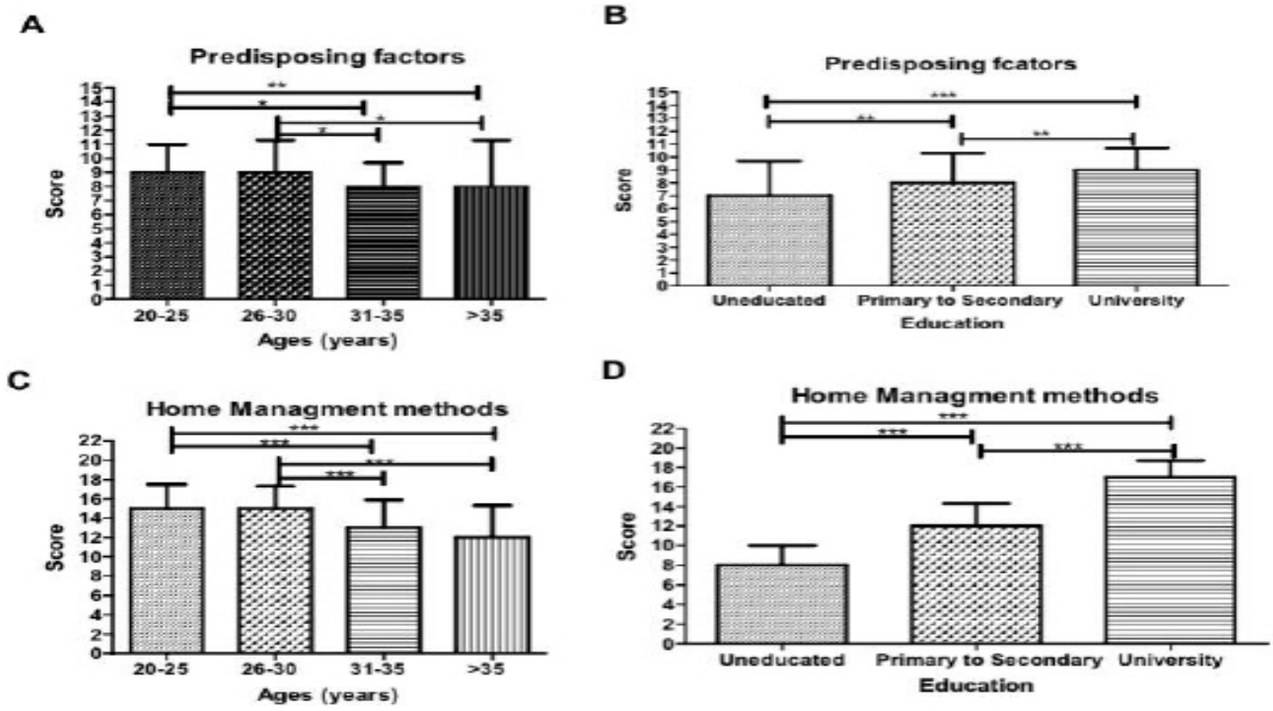

Figure 1. Effect of age and educational level on the participants' scores of awareness regarding preventable predisposing factors and commonly used home management methods for diarrhea in children. Significant was studied using One-way ANOVA with Tukey post hoc test to evaluate the difference between the groups. * means p<0.05, ** means p<0.01, while *** means p<0.001.

management of pediatrics diarrhea showed an overall mean score of 13.5±6.5/19 (range 8-19). Interestingly, 98.2% of the participants were aware of the role of oral rehydration solution, while only 78.3, 75.5, and 69.8 % were focused on the value of black tea, curd and green tea, respectively. Around 30% of the mothers had chosen not to take any action and just to wait for spontaneous improvement.

Respondents also showed that ages and levels of education significantly affect the awareness related to the predisposing factors to pediatrics diarrhea and home-hold management; poor knowledge in home management was among the uneducated and the elderly. Educational level has been shown to affect the awareness of mothers related to pediatric diarrhea in previously published data, including predisposing factors, management, as well as signs of dehydration [10-14].

The study showed high levels of awareness about ORS among all participants and the importance of all household fluids in the management of diarrhea. This is in agreement with other studies showing a high level of awareness about the importance of proper hydration in the management of diarrhea [15-17].

The current data also showed that awareness to ask for medical advice in severe cases was reported among about 70% of participants, which is mainly due to easy access to the healthcare services in Arar with large numbers of primary healthcare centers and specialized hospitals for pediatric disease with totally unpaid medical service.

Conclusion

The current data showed accepted levels of awareness among mothers in Arar about the predisposing factors and household management methods for pediatric diarrhea. However, more training and awareness programs should be directed to the mothers, especially the uneducated mothers, about pediatric diarrhea. This training is expected to improve the outcome and reduce pediatric diarrhea hospital visits and admission. This training can be conducted through the media or specialized awareness programs, which may be conducted in healthcare facilities, especially in primary healthcare centers, especially for mothers coming for the compulsory vaccination of their kids.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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