



## Knowledge of Mothers in Management of Diarrhea in Under-Five Children, in Kashan, Iran

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### ABSTRACT

**Background:** Diarrhea has been considered as a major cause of mortality in children aged less than five years old. Most of these deaths are due to dehydration and mis management or delayed management of the disease. Most of the diarrhea episodes are treated in the home by mothers. Therefore the mothers' knowledge in management of diarrhea is likely related to its mortality and morbidity.

**Objectives:** This study designed to evaluate the knowledge of the mothers with children under five years old about diarrhea and its management and to identify the relation of the knowledge content with some demographic characteristics.

**Materials and Methods:** In this cross-sectional study, 430 mothers who had at least one child aged below five years old were selected by cluster sampling. The mothers were asked to complete the 22 items questionnaire designed to evaluate their knowledge of diarrhea. Some demographic characteristics such as age, number of children, education of the mother and her spouse and the source of knowledge also were recorded. Subsequently, the data analyzed using descriptive statistics and chi-square test.

**Results:** Most of the mothers were 25-30 years old (43.8%). Slightly more than half (55.6%) had just one child. The health center, educational programs and the personal reading were the main sources of the knowledge about the treatment (43.7%). Twenty eight point eight percent of the mothers had a good knowledge in diarrhea diagnosis and its treatment, while the 46.5% had medium and 24.7% suffered low knowledge. The knowledge of the mothers had significant relationship with the age of the mother, education of the father, number of children, occupation of the mother, and the source of the knowledge.

**Conclusions:** The mothers studied in this research had inadequate knowledge about diagnosis and treatment of diarrhea. The educational programs must be an essential part of the health centers programs.

**Keywords:** Diarrhea; Knowledge; Health; Mothers

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► Implication for health policy/practice/research/medical education:

This research provided beneficial information about the knowledge of the mothers in management of their children's diarrhea. This information is expected to be beneficial for the health system decision makers and the educational personnel of health centers.

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## 1. Background

Diarrhea is defined as the passage of three or more loose or watery stools in a 24-hour duration (1). The point-prevalence (last two weeks) of diarrhea among under-five children is about 9-20% (2). In developing countries the 4.9 children per 1000 per year die as a result of diarrheal illness in the first five years of life (1). Diarrhea causes an estimated 1.8 million deaths per year, and it is a major cause of mortality in children aged less than five years (3). In our country, diarrhea is the fourth cause of under five-year mortality. In a national survey in Iran, 10.1% of children reported to have diarrheal diseases two weeks prior to the interview (4). Young age, poor nutritional status, dehydration, and lack of breastfeeding are the major risk factors for death from diarrhea (5). Studies revealed that rotavirus is the most frequent etiological agent of diarrhea (2). Of the bacterial infectious agents, *Escherichia coli* are the major pathogens afflicting children aged less than five years (6). Most of diarrheal episodes are self-limited however the mortality is primarily due to dehydration (3). Oral rehydration therapy (ORT) with oral rehydration salt (ORS) solutions is the appropriate management of diarrheal dehydration and is the single most effective strategy in preventing diarrheal deaths in children (2). ORS has been considered as inexpensive and can be easily administered at home by the mothers as soon as a diarrhea episode begins. Its use has been widely advocated by World Health Organization (WHO) (7). It seems that death from diarrhea is easily preventable by simple programs. A systematic review by Shah revealed that only 26% of children used ORT during diarrhea. Only one in ten children was given increased fluids during diarrhea and twenty-seven percent of children were given less to drink; 10 percent were given much less to drink, and 4 percent were not given anything to drink, resulting in 4 in 10 children with diarrhea having their fluids decreased in diarrhea (2). In Iran, 51% of the children in urban and 65% in the rural areas had been treated with ORS (4). Research in Nigeria displayed that most of the mothers had a poor understanding of what caused the diarrhea and only 9.9% used ORS in treatment of diarrhea (8). These findings indicated poor management of diarrhea by mothers in particular areas. Mothers usually delay, seeking medical advice about diarrhea. Sometimes it is too late and the child is either already dehydrated or has started to lose weight. Therefore, it is imperative to notice and identify certain symptoms or signs in order to seek medical advice promptly (1). WHO recommended that mothers and caregivers should be able to identify the signs of dehydration including excessive thirst, sunken eye, reduced urine output, excessive drowsiness, poor skin turgor and restlessness and absence of tears. A study revealed that 73.1% of mothers identified only one of these signs correctly (7). Most of the diarrhea episodes are treated in homes, and mothers are the key caregivers in children under five years old. They are the ones who

decide about the nutrition and management of diarrhea in children therefore their knowledge about this common disorder is critically important. The main question of our study was to identify the knowledge of mothers with children under five years old about diarrhea and its management.

## 2. Objectives

This study was designed to evaluate the knowledge of the mothers with children under five years old about the diarrhea and its management and to identify the relation of this knowledge with some demographic characteristics. We also investigated the sources of the mother's knowledge regarding management of diarrhea.

## 3. Materials and Methods

In this cross-sectional study, the 430 mothers who had at least one child below five years old were selected through cluster sampling. The inclusion criteria were mothers' age over 18 years and living in Kashan city, Iran. The three city-areas and three health centers from every area were selected randomly. The mothers who were referred to these centers between December 2009 and February 2010 for vaccination were asked to complete the questionnaire. The sample size determined using a formula for cross-sectional study ( $n = z^2 \cdot pq / E^2$ ) with the assumptions: proportion of mothers well informed about diarrhea to be 35% (1); 95% confidence level, 5% error and 20% non-response rate. Subsequently, 420 subjects were enrolled into the study however for better confidence, 430 subjects were selected. The questionnaire was completed by an interview. It had three parts. In the first section, the demographic characteristics, including age, education, and education of husband, the occupation and the number of children were recorded. In the second part, the knowledge about diarrhea and its management were evaluated using 22 multiple-choice questions. The researchers designed the questionnaires using related literature (9, 10). The questionnaire was evaluated and approved by nursing and public health professionals. Twenty cases completed the questionnaire prior to main study and its reliability was calculated 0.87 with split-half method. Some questions were: "What are the symptoms of the diarrhea in your children?" "What food do you give to your children when suffering from diarrhea?" "How do you perform the breast feeding during diarrhea?" "What is ORS?" Every right answer received the score of 1, and every wrong answer got zero. The women could get the score between zero and 22. The scores below 11, between 11 and 17, and more than 18 were considered, low, medium and good knowledge respectively. In the third part, the women were requested about the sources of their knowledge.

The research was approved by the ethical research committee of Kashan University of Medical Sciences. The aim

of the study was explained to the mothers, and informed consent was completed. The data kept anonymous, and declaration of Helsinki was respected in the protocol. The relations between the knowledge and the variables such as age, sex, education, number of children, occupation and the sources of children were analyzed using SPSS version 16 with chi-square test.

#### 4. Results

The 430 mothers completed the questionnaire. Most of the mothers were 25-30 years old (43.8%). The 60.8% of mothers and 60.5% of fathers had a high school education. The 55.6% had just one child. The 93% of the cases were housewives, and 7% were working outside the home.

The health center, educational programs and the personal reading were the main sources of the knowledge about the diarrhea treatments (43.7%). The 28.8% of mothers had a good knowledge of diarrhea, while the 46.5% had medium and 24.7% had low knowledge in diarrhea. The knowledge of the mothers had significant relation with their age, education of the father, number of children, occupation of the mother, and the source of the knowledge (Table 1). The mothers older than 31 years and those who were working outside the home and the mothers with three or more children had significantly better knowledge. The knowledge was not related to the education of the mothers however the women with higher educated husbands had significantly better knowledge.

**Table 1.** The Knowledge of the Mothers According to the Personal Characteristics

Personal variables	Level of knowledge			Chi-square	P value
	Good, No. (%)	Medium, No. (%)	Low, No. (%)		
Age, y				45.336	0.0001
Lower than 25	31 (25.6)	45 (37.2)	45 (37.2)		
25-30	35 (18.6)	108 (57.5)	45 (23.9)		
over 31	58 (47.9)	47 (38.8)	16 (13.3)		
Education				10.748	0.096
Primary	21 (20.4)	53 (51.4)	29 (28.2)		
Secondary	24 (25.3)	42 (44.2)	29 (30.5)		
High school	58 (34.9)	71 (42.8)	37 (22.3)		
University	21 (31.8)	34 (51.5)	11 (16.7)		
Education of husband				8.523	0.005
Primary	14 (15.1)	48 (51.6)	31 (33.3)		
Secondary	38 (33.9)	52 (46.5)	22 (19.6)		
High School	41 (27.7)	66 (44.6)	41 (27.7)		
University	31 (40.3)	34 (44.1)	12 (15.6)		
Number of children				14.774	0.005
1	56 (23.4)	112 (46.9)	71 (29.7)		
2	48 (32.9)	67 (45.9)	31 (21.2)		
3 and more	20 (44.4)	21 (46.7)	4 (8.9)		
Occupation				9.310	0.01
Housewife	109 (27.2)	187 (46.8)	104 (26)		
Working outside	15 (50.0)	13 (43.3)	2 (6.7)		
Source of information				33.491	0.0005
Media	36 (43.4)	40 (48.2)	7 (8.4)		
Health Centers	58 (36.7)	58 (36.7)	42 (26.6)		
The physician	16 (21.6)	42 (56.8)	16 (21.6)		
Relatives	17 (23.6)	34 (47.2)	21 (29.2)		
Personal reading	32 (40.5)	38 (48.1)	9 (11.4)		

The women who got their knowledge from media and personal reading had better knowledge while the women

whose source of knowledge was the physician had the least knowledge.

## 5. Discussion

In total, 28.8% of the mothers had a good knowledge in diarrhea, while the 46.5% had medium and 24.7% had low knowledge in diarrhea. The knowledge of the mothers had significant relation with the age of the mother, education of the father, number of children, occupation of the mother, and the source of the knowledge. In this study, the mothers did not have adequate knowledge about the diarrhea. This low level of knowledge had been noted in other studies (11, 12). In Indonesia, only 38% of the mothers identified two or more precise signs of dehydration (13). Worse than that, even mothers with good knowledge were not used it in practice. A study revealed that despite three-fourths of women knowing about ORS, only one-fourth used it when their child suffered from diarrhea (2). In spite of this, studies revealed that educational interventions could improve the mothers' behaviors in management of diarrhea (1, 14). The prevalence of diarrhea dropped from 53% to 47% following educational intervention (1). It seems that health system doesn't consider its responsibility to train mothers, in management of diarrhea. The education of the mothers didn't reveal significant relation to their knowledge about diarrhea. A study in India revealed that the educated mothers were more likely to take their child with diarrhea to a health facility or use ORS (2). In a study in Nigeria, the occurrence of diarrhea was significantly associated with the education of mother (15). Although some studies revealed that the education of the mother was not related to the diarrhea management (7, 16), it seems that other factors such as the social class or family income might influence the mothers' knowledge more than just their own education. As we identified, the education of the father was related to the knowledge of the mothers. The educational status of the father might determine the economy and the social class of the family. The roles of the fathers seem to be influential in the management of the diarrhea. Interestingly there are very limited studies that remark this factor (17, 18). In India, the knowledge of ORS packets was lowest among mothers who were not regularly exposed to any mass media (2). Another study revealed that caregivers' previous experience and seeking advice from health facilities were found to be the positive determinants of ORT intake (7). In this study the mothers who received their information from media and personal reading had better knowledge compared to those whom their source of the information was their physician or their relatives. Studies showed that the former experiences of the mothers are related to their knowledge about the management of diarrhea (2, 7). In this study, the mothers older than 31 years and mothers with 3 or more children had better knowledge about diarrhea management. A study in Iran indicated that the care-seeking pattern was related to the number of siblings and mothers with more children used less professional assistance. Sometimes it imagines that diarrhea is an old and non-significant

problem, but the reality is that diarrhea is still a very serious problem in developing countries (4). Most of the episodes of diarrhea are treated in homes, and mothers are key care-givers in diarrhea. Therefore the poor knowledge of the mothers requires to be addressed by the health system. The educational programs for mothers must be an essential part of the health facility programs. Unfortunately, the physicians and health centers were not effective sources of the knowledge. This issue needs more investigation. Moreover, the research showed that media acts effectively in giving knowledge to the mothers. This should be considered in national educational programs. On the other hands, the fathers are mostly neglected in the health issues such as diarrhea management. Our study showed that the roles of the fathers require being re-investigated. This research just studied the knowledge of the mothers. The knowledge doesn't guarantee the proper action. Therefore we suggest that the mothers' performance and its relation to the consequences of the diarrhea might be considered in future studies.

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## Authors' Contribution

The first author (Ghasemi AA) designed the research and collected the data, the second author (Talebian A) contributed in designing the research and collecting the data. The third author (Masoudi Alavi N) contributed in designing the research, analyzing the data and writing the manuscript. The fourth author (Mousavi GA) designed the research and analyzed the data.

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