



# Knowledge, Attitude and Practice of Mothers regarding Diarrhoeal Illness in Children under Five Years of Age: A Cross Sectional Study in an Urban Slum of Delhi, India

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## Abstract

Diarrhoea is one of the lead killers of children worldwide. This study was done with an aim to determine the knowledge, attitude and practice regarding diarrhoeal illness, its prevention and management in mothers of under- five children. A descriptive cross- sectional study; 125 mothers were randomly selected from an urban slum of Delhi and were interviewed using a structured questionnaire. 96% mothers defined diarrhoea appropriately. Most common perceived causes of diarrhoea were contaminated food and drinking water (80%). Though 83% mothers believed that clean drinking water prevents diarrhoea, yet water treatment was practiced by only 36%. Most mothers believed in (90%) and practiced (88%) hand washing with soap post-defecation to prevent diarrhoea. While only 31% had knowledge on importance of use of latrine, fewer (19%) accepted that safe disposal of stool was very important and just 58% reported practicing it. Less than a third of the mothers recognized critical signs of dehydration. 79% mothers recognized importance of increased fluid requirement and 70% practiced it for management of diarrhoea. Though 76% mothers used ORS, only 26% considered it as the mainstay treatment of diarrhoea. Also, 42% mothers had incomplete knowledge regarding proper preparation of ORS. Though only 22% were aware of the role of breastfeeding in prevention of diarrhoea, a positive attitude towards (74%) and healthier practice (90%) of exclusive breast-feeding was observed. Thus, we conclude that though the community knowledge, attitude and practices on diarrhoeal illness and its prevention is marginally satisfactory, the poor knowledge regarding signs of dehydration and relevance of ORS as primary management component is a matter of concern for child survival.

**Keywords:** Diarrhoea, Health Knowledge, Attitudes, Practice, Mother, Children.

## Introduction

Worldwide, diarrhoea is the second most common cause of morbidity and mortality among children under the age of five, following acute respiratory infection, and is also an important cause of malnutrition. On an average, children below three years of age in developing countries like India, experience about three episodes of diarrhoea each year.<sup>1</sup>

Strategies known to be effective in prevention of

most diarrhoea cases are point of use water treatment, hand- washing with soap, and exclusive breastfeeding for first 6 months; rotavirus vaccine helps preventing agent specific diarrhea.<sup>2</sup> Practices such as use of latrines and proper disposal of excreta are helpful in prevention of diarrhoea and therefore measures aiming at promotion of sanitation and good hygiene practices are also pertinent.<sup>2</sup>

Diarrhoea accounts for 760,000 deaths in children under- five years of age worldwide<sup>3</sup>, with a recent

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estimate that India itself was burdened with 212,000 under- five diarrhoea deaths in 2010<sup>4</sup>. Most of these deaths are due to dehydration and can be prevented with oral rehydration therapy (ORT). According to UNICEF (United Nation Children's Fund), in 1990s, more than 1 million deaths related to diarrhoea may have been prevented each year, largely attributable to the promotion and use of these therapies. Today, however, there are indications that in some countries knowledge and use of appropriate home therapies to successfully manage diarrhoea, including ORT, may be declining.<sup>5</sup>

Other than ORT, essential elements in the management of childhood diarrhoea include increased & continued feeding of energy dense food in addition to breastfeeding, zinc therapy and the use of appropriate antimicrobials for the severe cases of diarrhea.<sup>2</sup> Timely and appropriate management at household and in health services remains an important intervention for reducing mortality due to childhood diarrhoea.<sup>6</sup> However, application of the guidelines recommended for diarrhoea management in communities remain suboptimal in large segments of vulnerable population such as those residing in urban slums across the developing world.<sup>7</sup> According to a national level survey NFHS III (National Family Health Survey), only 43% children suffering from diarrhoea in India receive any kind of ORT or increased fluids. Even more worrisome is the fact that this proportion seems to have stagnated or declined in most states in the last decade.<sup>19</sup>

A joint WHO/ UNICEF statement in 1981, while recognizing centrality of mothers in the management of diarrhoea, stressed the need 'to understand their present attitudes, perceptions and practices regarding diarrhoea'.<sup>9</sup> In this context, the objective of this study was to determine the knowledge, attitude and practice of mothers regarding diarrhoeal illness, its prevention and management in their children belonging to five years of age and below.

## Material and Methods

This community- based descriptive cross-sectional study was conducted in Gokulpuri, an urban slum located in eastern part of Delhi over a period of five days (24<sup>th</sup>-28<sup>th</sup> September, 2012). Rehabilitation efforts have led to its now been considered as resettlement tenements. A pilot study suggested that the socio- demographic profile of its inhabitants were quite similar to that

of dwellers in other urban slums of Delhi, as described by the 65<sup>th</sup> National Sample Survey report.<sup>10</sup>

There were a total of 2404 houses with 4341 households in this slum. The study targeted to interview the mothers of the household for her youngest child five years old and below. Mothers that had been resident in the slum area for less than a year were excluded from the study. The target sample size for this study was estimated at 125 mothers with children belonging to under-five age group. This sample size was calculated with an assumption that the proportion of awareness on diarrhoeal illness among the mothers' population is 50%, permitting for 95% confidence level, 10% precision and 30% non-response rate.

Systematic random sampling method was used to select the households in such a manner that every 19<sup>th</sup> house was interviewed. In case the selected household did not fulfil the selection criteria, the next household that fulfilled the criteria was selected.

Information was collected using a close ended questionnaire, where a number of questions were adapted from the NFHS questionnaires.<sup>8</sup> Diarrhoea was defined as per World Health Organization (WHO) definition.<sup>11</sup> The questionnaire contained sections on socio-demographic data and the knowledge regarding diarrhoea (signs and symptoms, complications and management) along with attitude and practices followed for its prevention and management. The questions were framed as multiple choice questions with opportunity to choose more than one option in some questions. The questions on attitude judged the importance that the respondent attributed to the factor or behaviour on a Likert five item scale ranging from "not important" to "very important." Translated version of the questionnaire was pre- tested using role- play method and also during the pilot study at the slum. The research protocol was approved by an institutional committee of National Centre for Disease Control, Delhi. The interviewees were informed on the purpose and nature of the study in local language and the consents obtained. The physician-investigators conducted a face to face interview using the structured questionnaire. Data was analyzed using EpiInfo<sup>TM</sup>7 statistical software and the results were described in frequencies and percentages.

## Results

125 mothers were interviewed in total. Socio-demographic profiling suggested that mothers' mean ( $\pm$ SD) age was 27 ( $\pm$ 3.6) years, ranging from 20-40 years. The mean ( $\pm$ SD) age of their child in question was 2.6 ( $\pm$ 1.1) years. On an average, these mothers had 1.2 ( $\pm$ 0.4) children of less than 5 years of age. 91% respondents followed Hinduism as religion. Majority of these families (80%) had their total monthly family income in the range INR 5,000-15,000/month. 15% respondents were illiterate, 14% had primary education, 23% had higher primary education, 30% had secondary education, 12% had higher secondary education and there were 6% graduate mothers. In our sample, all mothers were non-working and looked after their children and domestic work. All the investigated houses had access to tap water supply and sanitary latrines.

However, over-crowding was a common issue with an average of 6.0 ( $\pm$ 2.4) residents living per household. Among investigated children in context, 37% had an episode of diarrhoea within the last one month of interview.

Almost all of the respondent mothers (96%) could define diarrhoea as the passage of watery stools three or more times a day. Knowledge of respondents regarding the causes of diarrhoea has been presented in table 1. The most widely acknowledged factor was "contaminated drinking water and food" (80%). While less than half of them acknowledged "unhygienic surroundings" as a responsible factor, around a fifth of the mothers had misconceptions that teething and overeating caused diarrhoea.

Knowledge	Frequency	Percentage (%)
<i>What causes diarrhoea?*</i>		
Contaminated water/foods	100	80.0
Unhygienic surroundings	55	44.0
Teething	30	24.0
Over-eating	20	16.0
Incomplete immunization	15	12.0
Bottle-feeding	8	6.4
Don't know	7	5.6
Malnutrition	6	4.8
Worm infestation	4	3.2
<i>What prevents diarrhoea?*</i>		
Drinking clean water	102	81.6
Eating fresh, clean, cooked foods	102	81.6
Hand washing with soap	77	61.6
Keeping surroundings clean	53	42.4
Use of latrine	39	31.2
Sterilizing milk bottle	37	29.6
Breast feeding	28	22.4
Don't know	8	6.4
Complete course of immunization	1	0.8
<i>What indicates possibility of dehydration?*</i>		
Irritability	46	36.8
Don't know	41	32.8
Lethargy	39	31.2
Dry lips & tongue	35	28.0
Sunken eyes	27	21.6
Low output of urine	18	14.4
Deceased elasticity of skin	4	3.2

<i>What amount of fluid is required to be given during diarrhoeal illness?<sup>†</sup></i>		
More than usual	90	72
Same as usual	25	20
Less than usual	5	4
Don't Know	5	4
<i>Assessed knowledge on preparation of ORS<sup>‡</sup></i>		
Complete Knowledge	90	72
Partial Knowledge	25	20
No Knowledge	5	4
Don't Know	5	4

\* multiple responses allowed, total not applicable

<sup>†</sup> single response allowed, total applicable

**Table 1. Knowledge of mothers regarding diarrhoea/dehydration in their under-5 children, its causes and preventive/management measures (n=125)**

While table 1 also presents the knowledge of the mothers on behaviours to prevent diarrhoea, the attitude and practices of the mothers to measures of prevention of diarrhoea has been shown in table 2 and 3 respectively. There was a relatively better awareness among mothers on personal hygiene factors such as water and food hygiene (82% each) and washing of hands (62%) (table 1). Similarly, the mothers' attitude towards personal hygiene was relatively healthy with 83% and 90% of respondents considering drinking safe water and

washing hands with soap after critical events such as defecation, respectively to be "important" or "very important" for prevention of diarrhoea (table 2). In concurrence to healthy attitude, there was also a healthy practice (88%) of hand washing (table 3). However, contrary to the fair knowledge (table 1) and attitude (table 2) on matters of food and water hygiene, the practice of purification of water for daily consumption was routinely followed only by 36% of the mothers (table 3).

<b>Attitude<sup>§</sup></b>	<b>Don't know n (%)</b>	<b>Not important n (%)</b>	<b>Somewhat important n (%)</b>	<b>Important n (%)</b>	<b>Very important n (%)</b>	<b>Total n (100%)</b>
<i>Preventive measures</i>						
Drinking clean water	6 (4.8)	3 (2.4)	12 (9.6)	51 (40.8)	53 (42.4)	125
Washing hands with soap after defecating	2 (1.6)	0 (0.0)	11 (8.8)	31 (24.8)	81 (64.8)	125
Washing hands with soap after handling child's stool	3 (2.4)	4 (3.2)	8 (6.4)	44 (35.2)	66 (52.8)	125
Disposal of child's stool in appropriate way	8 (6.5)	10 (8.1)	12 (9.7)	70 (56.5)	24 (19.4)	125
Exclusive breast feeding until 6 months of age	9 (7.2)	4 (3.2)	19 (15.2)	40 (32.0)	53 (42.4)	125
<i>Management measures</i>						
Giving fluids	3 (2.4)	4 (3.2)	19 (15.2)	57 (45.6)	42 (33.6)	125
Giving ORS	11 (8.8)	12 (9.6)	27 (21.6)	43 (34.4)	32 (25.6)	125

<sup>§</sup> rated on a scale of 1-5 by the mothers; based on the relative importance attached by them to the relevant measure

**Table 2. Attitude of mothers towards preventive and management measures for diarrhoea of their under-5 children (n=125)**

Practices	Frequency	Percentage (%)
<i>Preventive measures</i>		
Follow household purification of water (boiling/filtration)	33	36.4
Wash hands with soap after defecating/handling child's stool	110	88.0
Usually dispose of child's stool by - †		
a) child uses toilet himself/herself	30	24.0
b) placing stool in toilet/latrine	43	34.4
c) throw in garbage/leave it open in drain/doesn't matter	52	41.6
Exclusive breast-feeding of child for 6 months	113	90.4
<i>Management measures</i>		
Usual response to diarrhoeal illness - †		
a) immediate medical care	67	53.6
b) home care with ORS	21	16.8
c) home care with self-medications	4	3.2
d) medical care if diarrhoea persists 3 days	33	26.4
Take medical advice from - †		
a) government or private medical practitioner	115	92.0
b) quack/local chemist/others	10	8.0
Fluids and feed during diarrhoeal illness -		
a) ORS	95	76.0
b) increased fluid intake	88	70.4
c) khichadi (rice meal)	88	70.4
d) continue breast-feeding	86	68.8
e) banana	53	42.4
f) rice water	26	20.8
g) usual home foods	25	20

†single response allowed, total applicable

**Table 3. Practices followed by mothers towards prevention and management of diarrhoea in their under-5 children (n=125)**

The findings regarding inadequate awareness on role of environmental hygiene factors such as cleaner surroundings (42%) and use of latrine (31%) in prevention of diarrhoea (table 1) were concurrent with less than a fifth mothers considering safe disposal of stool as "very important" (table 2) and only 58% mothers self-reporting of implementing this practice (table 3).

The survey revealed that the community as a whole had a very low level of knowledge regarding the signs of dehydration (table 1). While a third of the mothers had no understanding of it, correct responses on critical signs of dehydration varied from 3% to 37%.

In issues related to management of diarrhoeal illness, the knowledge and attitude towards the importance of increased fluid requirement were relatively better with 72% being aware that more than usual amount of fluids need to be given during diarrhoeal illness (table 1), 79% respondents considering it "important" or "very important" (table 2) and also 70% were practicing

this measure (table 3). Khichadi (rice gruel) was the usual complementary food.

Only a quarter of mothers regarded ORS as the mainstay treatment of diarrhoea (table 2). This suggestive scepticism in importance of ORS is further corroborated by finding that only 17% mothers reported prompt initiation of home treatment with ORS instead of rushing to professional care (table 3). Nevertheless, 76% of the mothers did report giving ORS to their children during diarrhoeal episodes (table 3). However, over a fifth of the mothers had no knowledge and another one-fifth had incomplete knowledge on correct preparation of ORS (table 1).

Though a low 22% reported having knowledge of the role of continued breastfeeding in prevention of diarrhoea (table 1), the attitude towards (74%) (table 2) and practice (90%) (table 3) of exclusive breast-feeding for first six months was much better. The reported low frequency on the knowledge regarding significance of continued breastfeeding gathers further support from finding

that only 69% mothers practiced continued breastfeeding during the period of diarrhoeal illness (table 3).

Though 92% mothers preferred to seek medical advice from qualified medical practitioners of both private and government institutions, immediate medical care was sought by only 54% of the mothers (table 3).

## Discussion

The study suggested that mothers had a fair understanding of diarrhoeal disease as defined by WHO.<sup>11</sup> The proportion of mothers defining diarrhoea properly has been reported as 50% and 68% in studies from Rewa, Madhya Pradesh<sup>12</sup> and Wardha, Maharashtra<sup>13</sup> respectively. In Asian and African studies, this has been reported as 35%, 65% and 79% in studies from Sudan<sup>14</sup>, Philippines<sup>15</sup> and Nepal<sup>16</sup> respectively.

Among causes and preventive measures for child's diarrhoeal illness, the most acknowledged factor in our study was access to safe food and water; however, this was not reflected in mothers' practice. Behaviour change models are complex and knowledge alone may not guarantee health behaviour practice. One possible reason for this non-concordance in knowledge and practice could have been lack of financial resources to prioritize recurrent expenses on boiling water or purchasing water filters. Our study also found that though mothers had fair knowledge, attitudes and practices for personal hygiene factors such as washing hands, the knowledge, attitudes and practices on environmental hygiene factors such as clean surroundings and safe disposal of child's stool were relatively inadequate. Studies from Asia and Africa have shown different results for community knowledge, attitudes and practices towards personal and environmental hygiene factors in relation to diarrhoeal illness in small children. While Khalili et al.<sup>17</sup> in a study from south-east province of Iran reported 81% and 58% mothers acknowledging unsafe water and unclean hands respectively as causes of diarrhoeal illness, Cabatbat<sup>15</sup> in the study from Philippines informs of 77%, 34% and 23% mothers acknowledging unsafe drinking water, failure to wash hands after defecating, and after handling faeces respectively as common reasons for diarrhoeal illness in their children. Astonishingly, an Indian<sup>12</sup> study conducted two decades earlier had reported just 15% and 6% mothers knowing that dirty water and dirty environment could cause diarrhoea. Similar to our finding that a quarter mothers had misconception about teething causing

diarrhoea, previous studies from India<sup>12</sup> and Iran<sup>17</sup> have reported this misconception in 64% and 48% mothers respectively.

Another significant finding was lack of awareness in population regarding importance of exclusive breast feeding as a tool in prevention of diarrhoea and its continuation during diarrhoeal illness. This low level of awareness has been reported in few other studies.<sup>15</sup> However, our study found a healthy attitude and practice regarding exclusive breast feeding for the first six months. This may be on account of strong propagation of this practice under child health programs for malnutrition.<sup>18</sup>

NFHS III,<sup>19</sup> revealed that less than 10% and 30% of under-five children from Delhi received appropriate fluids or ORS for management of diarrhoea, respectively. Though our study suggests that a better proportion of interviewed mothers administered increased amount of fluids and ORS, the attitude towards prime importance of ORS was relatively low and even proper knowledge of ORS preparation was lacking in substantial number of mothers. Similar to our findings in Gokulpuri, knowledge on use of ORS has been found to be low or moderate in a number of other Indian studies<sup>2,12,13,20,21,22</sup> and international studies from Philippines<sup>15</sup>, Iran<sup>17</sup>, Cambodia<sup>23</sup> and Nepal<sup>24</sup>. It has been suggested that misconceptions regarding relevance, palatability and accessibility of ORS may be some reasons for its non-popularity.<sup>22</sup> Surprisingly, a review study<sup>2</sup> suggests that it is the practitioners' tendency to prescribe antibiotics rather than ORS that has led to under popularity of ORS.

Akin to NFHSIII<sup>19</sup> finding about a substantial proportion of under-five children from Delhi getting advice or management by a health provider, our study showed healthy behaviour of mothers seeking medical advice from qualified medical practitioners. However, this advice was not sought immediately, suggesting that diarrhoea may not be regarded as a serious illness in community. Considering that not many mothers in our study could recognize critical signs of dehydration, this relaxed approach to diarrhoea may be risky. A poor capacity of mothers to recognize dehydration has also been reported in other studies of Indian<sup>20</sup>, Asian<sup>15,16,23,24</sup> and African<sup>14</sup> origin.

On the contrary, it may be argued that mothers opting for medical consultation instead of initiating home ORT may lead to irrational prescription of antibiotics in children.<sup>2,25</sup> This is

all the more relevant when an estimate suggests that about 150,000 under-five diarrhoea deaths in India are of rotavirus origin.<sup>26</sup>

In general, the relatively positive findings on breastfeeding child up till 6 months of age, diarrhoea management and seeking medical consultations in this particular community could be attributed to Gokulpuri being adopted for health service coverage by an Urban Health Centre (UHC) attached to a reputed Medical College of Delhi. This centre provides outpatient and outreach care for maternal and child health issues. Thus it may not come as a surprise that the Gokulpuri residents are relatively more health conscious with informed healthier behaviours.

This study has its limitation in being sampled to only a single slum which prevents generalization of its findings. However, it has its strength in addressing in a detailed manner the issues of knowledge, attitudes and practices related to diarrhoea and this information would substantially contribute to our existing knowledge on slum community perceptions and behaviours on this subject. Not many Indian studies in the recent past have addressed this public health concern for this marginalized population.

Overall, the study revealed that health behaviours pertaining to diarrhoea in such socially weaker communities are complex. Presence of health knowledge has not always translated into healthier attitude and practices. At the same time, healthy behaviours have been adapted even in absence of necessary knowledge regarding it as probable consequence of easier accessibility to health service and constant presence of health messengers in the community. The knowledge attitude and behaviour of mothers from these communities towards diarrhoeal illness of their under-five children still needs reasonable improvement. The local health practitioners and educationalists need to sensitize the community on the relevance of breastfeeding and ORS in diarrhoea, educate them on signs of dehydration and proper management with ORS. Innovative IEC strategies need to be adapted to imbibe principles of environmental hygiene in the community.

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