



A survey of mothers' knowledge about childhood diarrhoea and its management among a marginalised community of Morang, Nepal

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RESEARCH

Please cite this paper as: Ansari M, Ibrahim MIM, Shankar PR. A survey of mothers' knowledge about childhood diarrhoea and its management among a marginalised community of Morang, Nepal. AMJ 2011, 4, 9, 474-479 <http://doi.org/10.21767/AMJ.2011.821>

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Abstract

Background

Diarrhoea, a common disease, is one of the major determinants of childhood morbidity and mortality in Nepal.

Method

This cross-sectional survey used a self-designed and pre-tested structured questionnaire to gather data on mothers' knowledge about childhood diarrhoea. The study was conducted in the Morang district of Nepal from June to August 2010. Data was analysed using descriptive and inferential statistics. Testing for significant difference and correlation of mothers' knowledge about diarrhoea with demographic factors were performed by using Kruskal-Wallis test and Spearman's rank correlation at an alpha level of 0.05.

Results

Mothers had some basic knowledge about the prevention of

diarrhoea, and fluids/foods which can or cannot be given during bouts of diarrhoea. Knowledge about signs of dehydration was poor. None of the mothers were able to mention all the steps for correct and complete preparation of oral rehydration salt (ORS) and salt-sugar-water (SSW) solutions. Only 8.5% of the mothers stated that the purpose of giving ORS solution during diarrhoea is to prevent the child from getting dehydrated.

Conclusion

Knowledge about signs of dehydration and the management approaches of diarrhoea at home was poor. Thus, there is a need for public health educational interventions.

Key Words

Childhood diarrhoea, knowledge, marginalised community, mothers, Nepal

What this study adds:

1. Though several studies have been conducted about mother's knowledge of childhood diarrhoea globally, this study is the first in Nepal. It provides information of relevance to health service provision in this country, allowing services to be targeted and distributed more effectively.
2. Studies conducted in other developing countries show that certain mothers had knowledge about the correct and complete preparation of oral rehydration solution but this study adds that none of the mothers of the marginalised Musahar community were able to prepare oral rehydration solution correctly and completely.
3. There was a common negligence among the Musahar community about proper disposal of stools in latrines



despite widespread acceptance of maintaining cleanliness towards preventing diarrhoea.

Background

Diarrhoea is a common disease and is one of the major determinants of childhood morbidity and mortality in Nepal.¹ Musahars (Rishidevs) are one of the dalit communities of the Terai (the lowlands of Nepal bordering India).² Dalits (the untouchables) are the social groups who 'possess the lowest rank' in the traditional Hindu caste hierarchy. This community is marginalised and poor. Musahars are the most illiterate among the dalits of the terai.^{2,3}

Mothers' basic knowledge about diarrhoea depends on various factors such as educational status, prior experience of managing the disease and even ethnicity.^{4,5} Studies in the literature show that though most of the mothers were familiar with the term oral rehydration salt (ORS), there were knowledge gaps as regards its correct preparation and administration.⁶⁻⁸ The signs of dehydration due to diarrhoea remain unnoticed by the majority of the mothers.⁹⁻¹¹ There are certain fluids which are beneficial to give during diarrhoea but most mothers in a rural community in Kenya were unaware of most of these.¹²

Mothers' knowledge about diarrhoea can be improved through educational interventions but written information only is not enough. It is more effective if pictorials and demonstrations are included along with written material.¹³

Though numerous studies have been conducted on diarrhoea throughout the world, there are very few studies in Nepal. Nepal is a small country but there are various ethnic and caste groups which have their own culture, traditions, beliefs and practices. Musahars are one of the highly neglected ethnic groups and they fall under the category of dalit caste. Thus, the study was designed to accomplish the objective of determining mothers' knowledge about childhood diarrhoea and its management among the Musahar community of the Morang district, Nepal.

Method

A cross-sectional survey was carried out from June to August 2010 using in-person structured interviews in rural village development committees (VDCs) such as Kadmaha, Kathari, Budhanagar, Baijnathpur, Lakhantari, Siswanijahada and Tankisinuwari of the Morang district of Nepal. It was approved by the Research and Ethics Committee of Nobel Medical College Teaching Hospital and Research Center,

Biratnagar, Nepal. Written informed consent was obtained from each of the subjects enrolled in the study. Morang is a terai (plain) district of eastern Nepal with a total population of 999,346 with an under five population of 107,594.¹⁴ A VDC consists of a group of villages and is the basic administrative unit in rural Nepal.

A self-designed and pre-tested structured questionnaire designed with the objective of the study in mind was employed. The questionnaire was divided into two parts: Part A: socio-demographic characteristics and Part B: 10 knowledge-related questions consisting of knowledge about preventive measures (7 options), beneficial food/fluids (14 options), harmful foods/fluids (7 options), danger signs of dehydration (11 options), correct and complete preparation of ORS solution (4 steps) and SWS solution (6 steps), the most dangerous diarrhoea, role of ORS solution and quantity of ORS solution to be given to children. The options or steps were determined on the basis of WHO guidelines.^{15,16} The number of options/steps kept under the headings of preventive measures, beneficial food/fluids, harmful foods/fluids and danger signs of dehydration may vary while it was fixed for other questions. The instrument contained questions with single as well as multiple correct options. One score was assigned for each correct answer as per the option/steps mentioned in the instrument. The instrument was administered initially to 15 subjects in the pilot phase. Necessary amendments such as addition of suitable options under each of the questions along with modifications in wordings of the instrument were made after valuable comments from research experts and after piloting the instrument.

A total of 130 subjects were enrolled in the study. Due to unavailability of the exact data on under five diarrhoea among the Musahar community of the study area, an arbitrary 15% of the total children under five of Musahar community with diarrhoea in the whole district was set for determining the sample size.^{14,17,18} Subjects of the study were mothers between 16–40 years of age, having a child below the age of 45 months, children having diarrhoea at the time of the study or in the preceding three to six months and willing to participate in the study. A multi-stage random sampling method was used to select the subjects. The south-west region of the Morang district was selected because the study was community-oriented and the selected region is nearer to the Biratnagar municipality. Names of all the VDCs which were the part of the selected region were written on slips of paper and seven VDCs were selected randomly using a lottery method. The list of study population (mothers of Musahar community meeting the inclusion criteria) was obtained from community health



volunteers (CHVs)/government local health institutions which are responsible for providing primary healthcare to the people. The subjects were selected randomly using a lottery method. All the necessary information about the randomly selected subjects such as name of mother, guardian's name, VDC, tole/village, ward number and even contact numbers were noted. The subjects were approached and interviewed at their households as per the instrument by a previously trained bilingual (knowing local as well as Nepali languages) female interviewer.

The data was entered in Statistical Package for Social Sciences (SPSS) for Windows (version 11.0) SPSS Inc. Chicago and analysed for descriptive statistics. One Sample Kolmogorov-Smirnov Test was used to determine the distribution of data. The data was found to be skewed. Thus, non-parametric tests such as the Kruskal-Wallis test was used to compare mothers' knowledge about diarrhoea with the education, while Spearman's rank correlation was used to determine the correlation between demographic factors and maternal knowledge about diarrhoea. A priori significance level of 0.05 was used in all analyses.

Table 1: Demographic characteristics of the study population (n=130)

Socio-demographic factors	Number	Percentage
Age of the mother (years):		
16–20	37	28.5
21–25	10	07.7
26–30	22	16.9
31–35	40	30.8
36–40	21	16.1
Mothers' education:		
No education	94	72.3
Informal education	12	09.2
Primary education	23	17.7
Intermediate education	01	0.8
Husband's type of employment:		
Factory worker	53	40.8
Labourer	21	16.2
Rickshaw puller	17	13.0
House maker (<i>Rajmistiri</i>)	14	10.8
Others	25	19.2
Family income (NRs)/month:		
Up to 5000	27	20.8
5001–10,000	31	23.8
10,001–15,000	27	20.8
15,001–20,000	25	19.2
20,001–25,000	20	15.4
Median = 6000		

Results

Socio-demographic characteristics

Table 1 illustrates that the majority of the mothers were from the two categories of age groups: 16–20 years (28.5%) and 31–35 years (30.8%) while in terms of occupation, almost all of the mothers were working as farm labourers and looking after house-related activities. Most (72%) of the mothers were uneducated. Among the mothers who had some sort of education, some had an informal education or primary level education. In terms of household income, the main source was through their husband working in a factory or field as a labourer (with a median monthly income of Nepalese Rupees 6000 = US \$84.65). The average family size was 5.8 ± 1.8 which constitutes an average number of children of 2.66 ± 1.44

Table 2: Mothers' knowledge about diarrhoea and its danger signs (n=130)

Mother's knowledge about	Number	Percentage
Preventive approaches for diarrhoea (out of 7 options):		
One correct response	07	5.4
Two correct responses	87	66.9
Three correct responses	36	27.7
Beneficial foods/fluids (out of 14 options):		
One correct response	01	0.8
Two correct responses	13	10.0
Three correct responses	94	72.3
Four correct responses	21	16.1
Five correct responses	01	0.8
Harmful foods/fluids (out of 7 options):		
One correct response	42	32.3
Two correct responses	79	60.8
Three correct responses	08	06.1
Four correct responses	01	0.8
The most dangerous diarrhoea:		
Thin watery diarrhoea	103	79.2
Red or green diarrhoea	27	20.8
Danger/emergency signs of diarrhoea(out of 11 options):		
Two correct signs	25	19.2
Three correct signs	93	71.5
Four correct signs	11	08.5
Five correct signs	01	0.8

Mothers' knowledge about diarrhoea and its danger signs
The majority of the mothers believed that the occurrence of diarrhoea in children can be prevented through preventive approaches such as maintaining cleanliness and making a habit of washing hands before feeding the child. None of the mothers pointed out the use of latrines and water quality. The ORS solution, SSW solution and salted soft loose rice were the most favoured items for use during diarrhoea. Oily, spicy, and hard food items were pointed out by most of the mothers as harmful to be given during diarrhoea. The majority (about 79%) of the mothers were aware of thin watery diarrhoea being the most serious type of diarrhoea. A large number of mothers opined thin watery stool, repeated vomiting and febrile conditions as indicative



of more serious diarrhoea. Mothers were unaware of other important signs of dehydration such as sunken eyes, thirst (eagerly drinking), skin pinch receding slowly, passage of concentrated or dark coloured urine, a drowsy child and the child not getting better after three days (Table 2).

Table 3: Mothers' knowledge about preparation and use of ORS and SSW solution (n=130)

Mothers' knowledge about	Number	Percentage
Role of ORS solution in diarrhoea:		
Prevents child from getting dehydrated	11	08.5
Either increases or decreases diarrhoea	119	91.5
Steps for the preparation & storage of ORS solution (out of 4 steps):		
Did not mention any step	07	05.4
One correct step	12	09.2
Two correct steps	111	85.4
Quantity of ORS solution to be given for child below 2 years:		
Correct volume (50–100 ml)	01	0.8
Incorrect volume	119	91.5
Do not know	10	07.7
Quantity of ORS solution to be given for child of 2 years or above:		
Correct volume (100–200 ml)	02	01.5
Incorrect volume	115	88.5
Do not know	13	10.0
Steps for preparation of SSW solution (out of 6 steps):		
Did not mention any step	27	20.8
One correct step	28	21.5
Two correct steps	24	18.5
Three correct steps	08	06.1
Do not know	43	33.1

Mothers' knowledge about preparation and use of ORS and SSW solutions

Table 3 shows that mothers' knowledge about the role of ORS in diarrhoea was poor. The most common response of the mothers about ORS was that it mainly decreases the frequency of diarrhoea while in some cases frequency may increase. None of the mothers were able to mention all the four steps of correct preparation of ORS solution. The main reason for using an incorrect volume of water during the preparation of the ORS solution was due to the use of local uncalibrated water-measuring devices. Many parents gave the wrong volume of ORS solution to the child during diarrhoea. Knowledge about the preparation of SSW solution was very poor. Most of the mothers were not aware of preparing SSW solution and even those who were aware mostly did not mention any of the preparation steps or they mentioned only a few steps.

Table 4 shows that although there were positive correlations between mothers' knowledge about diarrhoea and mothers' age and education, family size and husbands' income, the associations between mothers' knowledge and husbands' income were only statistically significant. Kruskal-Wallis test showed a statistical significance between mothers' knowledge about the prevention of diarrhoea and education ($\chi^2 = 6.325, p < 0.05$). This indicated that a mother with higher education has better knowledge about preventing diarrhoea.

Table 4: Correlation analyses between demographic factors related to maternal knowledge about childhood diarrhoea by Spearman's rho (r_s)

Socio-demographic factors	Knowledge	
	r_s	P-value
Mother's age	0.046	0.600
Husband's monthly income	0.295	0.001*
Mother's education	0.002	0.985
Total number of family members	0.110	0.212
* Correlation(2-tailed) is significant at a level of 0.01		

Discussion

Childhood diarrhoea is a widespread problem in developing countries like Nepal and is a common public health concern. In the Morang district of Nepal where the study was conducted, there is an increasing incidence of diarrhoea in children under five.¹⁴ Despite the increasing incidence of diarrhoea in Morang and common public concern, there are several discrepancies about the knowledge and management of diarrhoea among the mothers. Generally, socio-demographic factors such as mothers' education and occupation, husbands' employment status, family income and family size are linked with mothers' knowledge about diarrhoea and its management apart from mothers' personal attitude and behaviour. Although mothers were aware of diarrhoea and its home management, the level of awareness was insufficient. Low preference towards the use of latrines and consumption of water of good quality might be related with several factors such as unavailability of latrines in their homes, unavailability of a good water source, poverty, attitude, ethnicity and social status, locality (rural), education and monthly income.

Though mothers were aware of some signs of dehydration, the level of knowledge about the actual signs of dehydration due to diarrhoea was very poor. The study conducted in Tanzania and Indonesia also found similar results.^{9,19} Similarly, none of the mothers were able to mention all the steps for the correct and complete preparation of ORS solution which is contrary to the other



studies which found approximately 20% to 50% of the mothers were able to prepare ORS solution correctly and completely.^{6,8,20,21} This might be due to mothers' lack of prior experience, a lack of proper education about the concerned matters and their ethnicity itself. Regarding the use of ORS, almost all the mothers were lacking knowledge of giving the correct volume of ORS to the child with diarrhoea which is radically different from a similar study conducted by Rasania and colleagues which found that 41.6% of mothers were knowledgeable about the exact volume of ORS solution to be given during diarrhoea.⁸ The poor knowledge among the mothers about the role of ORS in diarrhoea is due to their poor knowledge about the concept of dehydration and rehydration and strong beliefs that ORS either decreases or increases the frequency of diarrhoea. As compared to ORS, knowledge about the preparation of SSW solution was poor. This might be due to its use being uncommon and mothers might not have any prior exposure to it. Furthermore, its ingredients are not available in ready-made form unlike an ORS sachet and thus there may be more chances of errors during its preparation. Older mothers and mothers having a bigger family were more knowledgeable about diarrhoea. This also suggests that these mothers might have had prior exposure and experience with diarrhoea.

Conclusion

Overall knowledge about diarrhoea and its management at home was poor among the mothers of Musahar community. Although mothers were aware about diarrhoea and its home management, their knowledge pertaining to vital issues such as danger signs of dehydration, actual role of oral rehydration fluids during diarrhoea, correct and complete preparation of ORS and SSW solutions and the correct amount of ORS solution to be given to children during diarrhoea was very poor.

Thus, there is a need for extensive educational interventions especially to the marginalised ethnic groups like Musahar community for the improvement in their knowledge and practices about childhood diarrhoea and its management at home.

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ACKNOWLEDGEMENTS

The authors would like to thank the District Public Health Office, Morang Nepal for allowing the study to be carried out. We also would like to offer sincere thanks to Dr Subish Palaian, College of Medical Sciences, Bharatpur Nepal for his valuable support in formatting and reviewing the manuscript.

PEER REVIEW

Not commissioned. Externally peer reviewed

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

FUNDING

None

ETHICS COMMITTEE APPROVAL

Research and Ethics Committee of Nobel Medical College Teaching Hospital and Research Center, Biratnagar, Nepal