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RESEARCH ARTICLE

MATERNAL KNOWLEDGE AND MANAGEMENT PRACTICE TOWARDS CHILDHOOD DIARRHOEA IN BHAKTAPUR, NEPAL

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ABSTRACT

Diarrhoea is a significant public health problem in Nepal with frequent reports of outbreaks. As mothers are the centre of family care and are involved in home management of childhood diarrhoeas, it is very important that they have correct knowledge about the disease and its management. Thus this study aims to assess maternal knowledge and management practice towards childhood diarrhoea in Sirutar Village Development Committee in Bhaktapur District. A cross-sectional descriptive study was conducted among 222 mothers having an under five children. Face-to-face interviews were conducted using semi-structured questionnaire. Data were entered using statistical software Epi-data and data analysis was done in terms of descriptive statistics by using SPSS to calculate the univariate analysis like frequency, percentage, mean and CI. Level of knowledge and practice was assessed by using a scoring system. Majority of the woman were Hindu, belonged to Upper caste groups and in the age group 21-30 years. Majority of the woman were illiterate and agriculture. Specifically, the knowledge was low among the respondents on consequences of diarrhoea, significance of breast milk (23%) and Zinc tablets (29%) during childhood diarrhoea. Most (78.4%) of the mothers used ORS for the management of paediatric diarrhoea and about three quarter of the mother had given ORS in the last episode of their child's diarrhoea. Less than half of the mothers correctly prepared ORS. Specifically, the respondents exhibited poor practice on purification of drinking water (3.2%) and use of Zinc ckakki (18%) during paediatric diarrhoea. Lack of awareness was the only reason mentioned for not using Zinc chakki. Overall, an insignificant proportions of the respondents exhibited good knowledge (5.9%) and good practice (10.8%). The mean score for knowledge was 0.3063 (95% CI 0.2302, 0.3824). Similarly, the mean score for practice was 0.7703 (95% CI 0.6871, 0.8534). In this study, the knowledge and practice of the mothers in Sirutar VDC, towards under five diarrhoea was poor.

INTRODUCTION

Diarrhoea, characterized by as the passage of three or more loose or liquid stools per day is the second leading cause of death in children under five years old (WHO, 2013). Together with Pneumonia, it accounts for 29% of all child deaths globally; resulting in the deaths of more than two million children each year (WHO, 2013). Even in the 21st century, when diarrhoea epidemics have been eliminated from many of the developed countries, they are significant public health problems in Nepal with frequent reports of outbreaks.

Despite of the many important interventions for under five diarrhoea in the country, the analysis of annual reports of Department of Health Services (DoHS), Nepal, from the year 2007 to 2014, reveals that there has not been any dramatic decline in the annual cases of under five diarrhoea (**Figure 1**). Similarly, the incidence of diarrhoea per 1,000 under five Populations is also in increasing trends (**Figure 2**), thus, making under five diarrhoea as a persistent significant health problem in Nepal.

Self medication and home management of diarrhoea is common in Nepal (Mukhtar *et al*., 2011, Rehan *et al.*, 2003). As mothers are the centre of family care and are involved in home management of paediatric diarrhoea, it is very important that they have correct knowledge about the disease and its management.

Thus this study aims to assess maternal knowledge and management practice towards childhood diarrhoea in Sirutar Village Development Committee (VDC) in Bhaktapur District.

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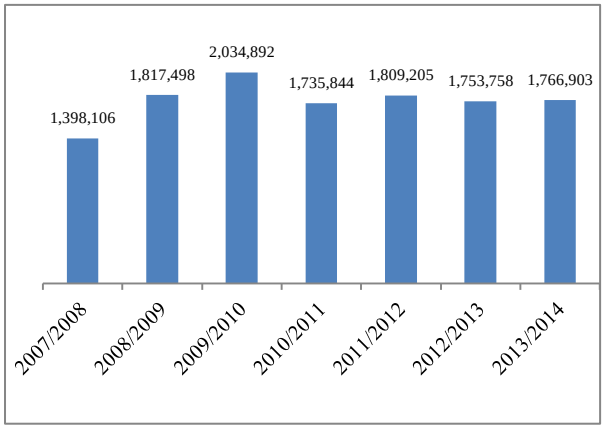

Figure 1 Total new cases of diarrheal among children under 5 years of age
Source: DoHS, Annual Report 2007/2008 to 2013/2014

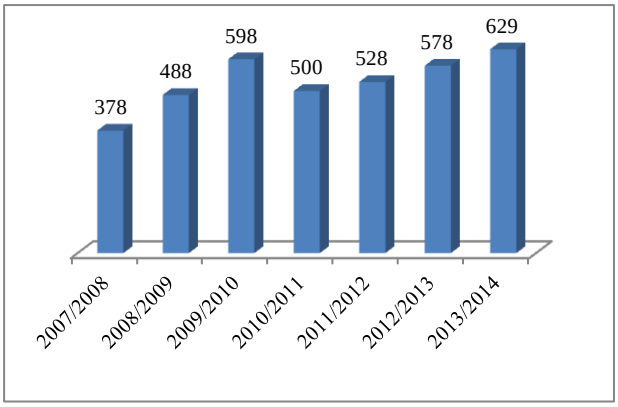

Figure 2 Incidence of diarrhoea /1,000 <5 yrs. Population
Source: DoHS, Annual Report 2007/2008 to 2013/2014

MATERIALS AND METHODS

A cross-sectional descriptive study was designed to achieve aforesaid study aims. The study site for this study was Sirutar Village Development Committee (VDC). Of the 16 VDCs and 2 municipality in Bhaktapur District, Sirutar is one of the VDC(NPHC, 2014). It is almost 4 km far from Bhaktapur nagar and is 9 km far from the Kathmandu city. Sirutar VDC is situated about 1300 meter above the sea level. The incidence of Diarrhoea/1000, in Bhaktapur district, was 342, 353 and 267 in the fiscal year 2067/68, 2068/69 and 2069/70 respectively (DPHO, 2013). According to District Public Health Office Bhaktapur, Sirutar VDC has high incidence of diarrhoea and in the fiscal year 2013/2014, the VDC had the highest diarrhoeal prevalence in Bhaktapur district. Sirutar V.D.C. has a total of 1,033 household, a total population of 4,790 with 278 under five population (NPHC, 2014). According to DPHO Bhaktapur, the district has 1 district hospital, 2 primary health care center, 14 health posts, 5 sub-health posts and 279 Female Community Health Volunteers (FCHVs).

The study population was mothers having under five children residing in Sirutar VDC. Mothers between 16–40 years of age, having a child below the age of 48 months, who had suffered from diarrhoea in past 3 months from the time of the study, were included in the study. The list of study population was obtained from Female community health volunteers (FCHV).The sample size for this study was calculated using the following statistical formula:

$$n = \frac{p(1-p)\times Z^2}{e^2} \times Deff$$

Considering 14 % prevalence (p) of under five diarrhoea (NDHS, 2012), with permissible margin of error (e) set at 5%, the z statistic is set at 1.96 which corresponds to the 95% confidence level and the design effect, (deff) at 1.2, the final sample size for the study was 222. The respondents were selected by using simple random sampling technique. One respondent was selected from each household. In case of availability of more than one eligible respondent, the mother of the youngest child was selected. Face-to-face interviews were conducted using semi-structured questionnaire. Each interview took about 15 to 20 minutes time.

The questionnaires in English language were translated into Nepali by one of the researchers. Nepali tools were further back translated to English by another researcher. Nepali questionnaires were pretested among 5% (n=12) mothers with under five children but residing in Katunje VDC of Bhaktapur. The pre-tested questionnaires were not included in the final dataset of the study. The purpose of the pre-testing was to check the clarity and relevance of the tools, ease or reluctance of the respondents and time taken to complete the questionnaire. Based on the pretesting, the questionnaire was further refined and final version of the questionnaire was developed.

Data were checked, edited, coded and entered on the same day using statistical software Epi-data. To ensure the accuracy and quality of data entry, 10% sample was manually tallied with computer data entry by generating random number using Decision Analyst Stat 2.0 software. Data analysis was done in terms of descriptive statistics by using SPSS to calculate the univariate analysis like frequency, percentage, mean and CI.

A score of one was given to each correct answer and every wrong answer got zero. The knowledge and practice score was calculated by adding the points for each "correct" answer. To assess the knowledge level, a scoring system was developed with reference to a study done in Kashan, Iran (Ghasemi *et al*., 2013) by taking the percentage for each range.

Accordingly, Knowledge score of '0-5', '6-8' and '9-11' was considered as 'Poor Knowledge', 'Moderate Knowledge' and 'Good Knowledge' respectively. Similarly, the scoring system for practice was developed with reference to a study done in Northwest, Iran (Abdinia *et al*., 2014) by taking the percentage for each range. Accordingly, practice score of '0-3', '4-6' and '7-9' was considered as 'Poor practice', 'Moderate practice' and 'Good practice' respectively.

The respondents were briefed about the aim of study and verbal informed consent was taken before preceding the data collection. Privacy and confidentiality were fully maintained throughout the whole process of study.

FINDINGS

Socio-demographic characteristics of respondents

Majority (36.5%) of the woman belonged to age group 21-25 years followed by 26-30 years (32%). Shapiro-Wilk test for normality was significant (p value = 0.000) and suggested non-normal distribution of the data. Accordingly, the median age of the respondents was 26 years (Interquartile Range = 7). Except one Buddhist, all other women were Hindu. HMIS tool on ethnicity was used for 'caste/ethnic groupings'. More than half (57.7%) of the respondents belonged to Upper caste groups; followed by Disadvantaged Janajatis (27.5%) and Dalit (14.9%). Majority of the respondents were either Illiterate (39.5 %) or had completed primary level of education (21.4%). Almost all of the respondents (91.4%) were involved in Agriculture.

Table 1 Socio-demographic characteristics of respondents

		Frequency	Percent
Age Range (n=222)	18-20	26	11.7
	21-25	81	36.5
	26-30	71	32.0
	31-35	32	14.4
	36-40	12	5.4
Religion (n=222)	Hindu	221	99.5
	Buddhist	1	.5
Ethnicity (n=222)	Upper caste groups	128	57.7
	Disadvantaged Janajatis	61	27.5
	Dalit	33	14.9
Education (n=220)	Illiterate	87	39.5
	Informal education	26	11.8
	Primary level	47	21.4
	Lower secondary level	24	10.9
	Secondary level	15	6.8
	Higher secondary level	21	9.5
Occupation (n=222)	Agriculture	203	91.4
	Labour	16	7.2
	Service	2	.9
	Student	1	.5

Maternal knowledge towards childhood diarrhea

Majority (67.2%) of the respondents had correct knowledge of the definition of diarrhoea as watery stool more than three times in a day. However, none of the respondents had knowledge on the microbial cause of the disease. Dirt and lack of cleanliness was identified as the causes of diarrhoea by most (91.0%) of the respondents. Loss of weight (58.4%) and lethargy (30.8%) was identified as the main consequences of diarrhoea. Remarkably, none of the respondents identified dehydration as the major consequences of diarrhoea. Homemade cooked food i.e. Dal-bhat (rice with pulse) was identified as the most beneficial food during diarrhoea by most (78.4%) of the respondents.

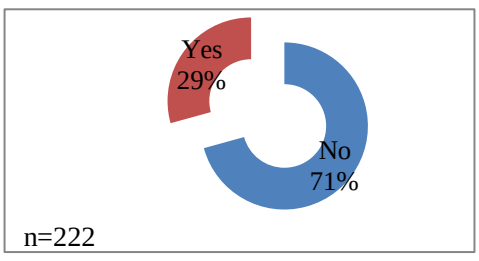

Figure 3 Knowledge of Zinc chakki

It is noteworthy to mention here that the significance of breast milk during childhood diarrhoea was identified by comparatively lower proportions i.e. only by a quarter of the mothers. The importance of Zinc ckakki (tablets) in the treatment of childhood diarrhoea was recognized by comparatively lower proportions (29%) of the mothers. **(Figure 3)**

Table 2 Maternal knowledge towards childhood diarrhea

*Denotes multiple response		Frequency	Percent
***Definition of diarrhea (n=293)**	Watery stool more than three times in a day	197	67.2%
	Increased frequency of stool	83	28.3%
	Don't know	13	4.4%
***Causes of diarrhoea (n=339)**	Dirt and lack of cleanliness	201	91.0%
	Disposal of stool near home in open air	81	36.7%
	Change in weather	34	15.4%
	Carelessness of mother	6	2.7%
	Don't know	17	7.7%
***Consequences of diarrhoea (n=291)**	Lethargy	68	30.8%
	Loss of weight	129	58.4%
	Unconsciousness	1	.5%
	Death	15	6.8%
	Don't know	78	35.3%
***Beneficial Food/Fluids during diarrhoea (n=301)**	Homemade cooked food	174	78.4%
	Mother Brest milk	51	23.0%
	Pulses / Legumins	31	14.0%
	Green leafy vegetables	17	7.7%
	Potato boils in cow's milk	1	.5%
	Don't know	27	12.2%

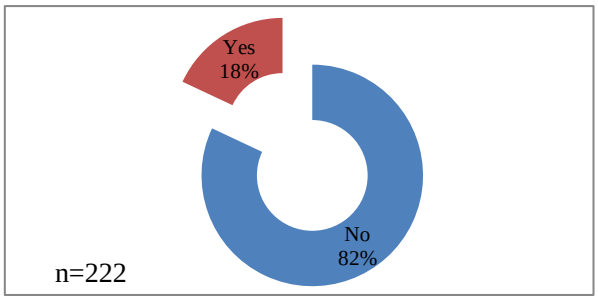

Figure 4 Use of Zinc chakki during childhood diarrhoea

Maternal management practice towards childhood diarrhoea

The practice of purification of drinking water was negligible. Only 3.2% of the respondents used purified drinking water. Among the seven respondents who purified drinking water, five of them boiled and remaining two filtered water. It was overwhelming to see that majority (66.2%) of the household had the facility of toilet for defecation. However, haphazard defecation and defecation by the river bank was also notable. Most (78.4%) of the mothers revealed that they used ORS and modern biomedicines for the management of their children's diarrhoea. Similarly, the practice of using homemade ORS (i.e. salt sugar water solution) was also revealed but by lower proportions of the mother. About three quarter of the mother had given ORS in the last episode of their child's diarrhoea. Among the mothers who had given ORS in the last episode of their child's diarrhea. A further inquiry was made to find if they correctly prepared ORS. The findings revealed that less than half of the mothers correctly prepared ORS. **(Table 3)**

The use of Zinc ckakki (tablets) in the management of childhood diarrhoea was practiced by comparatively lower proportions (18%) of the mothers (**Figure 4**). A further inquiry was made, among the mothers who did not use Zinc ckakki, to find the reason for not using Zinc chakki for the management of their child's diarrhoea. All of the mothers revealed that they were not aware and had not even heard of Zinc chakki. **Table 3**

Table 3 Maternal management practice towards childhood diarrhoea

		Frequency	Percent
Purification of drinking water (n=222)	Yes	7	3.2
Methods of water purification (n=7)	Boil	5	71.4%
	Filter	2	28.6%
Place for defecation (n=306)	Toilet	147	66.2%
	Haphazardly	75	33.8%
	River bank	75	33.8%
Management of diarrhoea (n=301)	ORS	174	78.4%
	Modern biomedicines	105	47.3%
	Salt sugar water solution	19	8.6%
	Traditional medicines	2	.9%
	Do Nothing	1	.5%
ORS use during last episode of diarrhoea (n= 222)	Yes	164	73.9
Correct Preparation of ORS (n= 222)	Yes	108	48.6
Reason for not using Zinc chakki (n= 182)	Lack of awareness	182	100%

Table 4 Level of knowledge and practice

		Frequency	Percent
Level of knowledge (n=222)	Poor Knowledge	167	75.2
	Moderate Knowledge	42	18.9
	Good Knowledge	13	5.9
Practice level (n=222)	Poor practice	75	33.8
	Moderate practice	123	55.4
	Good practice	24	10.8

An insignificant proportions of the respondents exhibited good knowledge (5.9%) and good practice (10.8%) (**Table 4**). The mean score for knowledge was 0.3063 (95% CI 0.2302, 0.3824). Similarly, the mean score for practice was 0.7703 (95% CI 0.6871, 0.8534).

DISCUSSION

A cross sectional descriptive study was conducted in Sirutar VDC of Bhaktapur District. Majority of the woman were Hindu, belonged to Upper caste groups and in the age group 21-30 years. Majority of the woman were illiterate and involved in agriculture.

Majority (67.2%) of the respondents had correct knowledge of the definition of diarrhoea as watery stool more than three times in a day. None of the respondents had knowledge on the microbial cause of the disease. The finding was similar to another study (Rehan *et al*., 2003) where most mothers did not knew about the aetiology of diarrhoea. The lack of knowledge among mothers about the aetiology of diarrhoea may be due to the fact that majority of the respondents are illiterate or have only primary level of education.

Majority (66.2%) of the household had the facility of toilet for defecation and rest practiced open defecation. The findings are consistent with other national surveys from Nepal. Nepal Millennium Development Goals Progress Report, 2010 reports that more than half of the population still defecate in open spaces (NPC, 2010). Similarly, in consistent to findings of this study, Nepal Demographic and Health Survey, 2011 (NDHS, 2012) reports that thirty-six percent of households have no toilet facility.

Most (78.4%) of the mothers revealed that they used ORS for the management of their children's diarrhoea. These findings are higher than the findings of other studies. NDHS 2011 also reported that half of children with diarrhoea were treated with ORS (NDHS, 2012). Similar findings were also reported by another study conducted in urban slum of Delhi whereby 46% of respondents used ORS for diarrhoeal remedy in under-five children (Rasania *et al*., 2005). Likewise, majority (67.5%) of children, aged less than six years, with diarrhoea, were treated with ORS in another study (Wang *et al*., 2011). Similarly, the use of modern biomedicines for the management of children's diarrhoea was also high which resembles the findings of another study (Mukhtar *et al*., 2011) where mothers preferred allopathic drug as first option for self-medication. Nearly half of the mothers correctly prepared ORS. The findings were similar to other studies (Jha *et al*., 2006, MacDonald *et al*., 2005, Rehan *et al*., 2003, Rasania *et al*., 2005) which reported about 20% to 50% of the mothers was able to prepare ORS correctly. In contrast, a study conducted among marginalized community of Morang, Nepal reported that none of the mothers were able to mention all the steps for the correct and complete preparation of ORS solution (Mukhtar *et al*., 2011). The difference in findings may be attributed to the difference in ethnicity of the respondents. The latter study was conducted among marginalized community who has been disadvantaged in many aspects including health education.

The joint statement issued by WHO and UNICEF, in 2004, recommends new guidelines for the treatment of diarrhoea with ORS and Zinc (WHO, 2004). Nepal's national scale-up of Zinc therapy program began in late 2005. Almost after a decade of the initiation, this study still reports a low use of Zinc in the management of diarrhoea. The finding is intermediate to the findings of two national level surveys for Zinc coverage which reports 6.2% (NDHS, 2011) and 22% (MICS, 2010) country-wide Zinc tablet use (with or without ORS) in Nepal. Another study reports that 15.4% of the children with diarrhoea were treated with Zinc (Wang *et al*., 2011) ; similar to findings of this study.

Overall the knowledge and practice of the mothers towards childhood diarrhoea was unsatisfactory. Two studies (Abdinia *et al*., 2014, Ghasemi *et al*., 2013) conducted in different parts of Iran reveals poor yet comparatively higher proportions of good knowledge among the mothers about paediatric diarrheal disease. The higher proportions of knowledge as reported by the studies from Iran may be due to the fact that the latter studies also had higher level of education among the respondents compared to this study. Similarly, this study shows a better management practice on paediatric diarrhoea compared to another study from Iran (Abdinia *et al*., 2014).

CONCLUSION

In this study, the knowledge and practice of the mothers in Sirutar VDC, towards under five diarrhoea was poor. These mothers should be targeted for awareness programmes. More specifically, these mothers should be made aware on dehydration and its symptoms, and the significance of breast milk and Zinc ckakki during childhood diarrhoea. These mothers should also be motivated to enhance proper practice through appropriate behavior change programmes. More specifically these mothers should be encouraged to use purified drinking water, increase frequency of breast feeding and to use Zinc ckakki during paediatric diarrhoea. As the practice of open defecation was revealed by significant proportions of respondents, the concerned authority should also focus on the use of toilet for defecation.

Competing Interests

All authors declared that they have no competing interest.

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