

ENVIRONMENTAL AND SANITATION PRACTICES AMONG DIARRHOEAL PATIENTS ADMITTED AT INFECTIOUS DISEASE HOSPITAL, LUCKNOW

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Abstract

Introduction Diarrhoeal diseases are leading causes of mortality and morbidity in developing countries. In spite of many programmes and facilities provided by the government towards prevention of diarrhoeal diseases, it continues to be a threat.

Objective: To study the sanitation and hygiene practices followed by patients of diarrhoea admitted at Infectious Disease Hospital (IDH).

Methodology: A descriptive cross sectional hospital based study conducted on 300 patients admitted at Infectious Diseases Hospital, King George's Medical University, Lucknow. Patients were interviewed using a predesigned schedule after taking informed consent. Information regarding general characteristics including source of drinking water, sanitation practices, toilet facility available and mode of refuse disposal were taken. Data was analysed using SPSS 17.0 statistical software.

Results: Majority (50.67%) of patients' uses Municipal water supply/tap water as main source of drinking water and 30% patients uses India mark II hand pump. Around two-third of diarrhoeal patient practices hand washing with soap and water after household activities. Majority (63.33%) do not practices safe methods of storing drinking water, 87.33% uses sanitary latrines while 12.6% still uses open field for defecation. Almost half of the patients uses dustbin for refuse disposal. Use of sanitary latrines and India mark II drinking water was positively associated with higher socioeconomic status.

Conclusion: In spite of the improved facilities of water and sanitation provided by the government, there exists a lacuna between its availability and their proper utilisation. This leads on to the burden of diarrhoeal patients on the health sector. Proper awareness regarding safe drinking water and sanitation practices and proper refuse disposal can reduce the diarrhoeal load.

Key words: Diarrhoea, source of drinking water, sanitation practices, refuse disposal

Introduction

India is still lagging far behind many countries in the field of environmental sanitation¹. Lack of safe water supply, poor environmental sanitation, improper disposal of human excreta, and poor personal hygiene help to perpetuate

and spread diarrheal diseases in India. The unsanitary conditions are appalling in India and need a great sanitary awakening similar to what took place in London in the mid-19th century². World Health Organisation defines diarrhoea as the passage of three or

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more loose or liquid stools per day, or more frequently than is normal for an individual. It is caused by bacterial, viral, and parasitic organisms and is usually a symptom of gastrointestinal infection. Diarrheal disease is transmitted through the feco-oral route and is spread through contaminated food and drinking water or from person to person as a result of poor hygiene and sanitation. Diarrhea is life-threatening because it leads to fluid loss and can cause severe dehydration. It is leading cause of mortality and morbidity in developing countries. WHO estimated that around 700,000 Indians die each year from diarrhoea.³ Diarrhoea accounts for almost one fifth of all deaths (or nearly 535,000 annually) among Indian children under 5 years⁴ and repeated diarrhoea episodes result in widespread childhood malnutrition⁵. It is estimated that 10% health problems in developing countries are related to diarrhoea and helminthes both of which are mostly water born⁶. Approximately 88 % of diarrhoeal diseases are attributed to unsafe water supply and inadequate sanitation

and hygiene⁷. Target 10 of the UN Millennium Development Goals (MDG) is to reduce by half the proportion of people without sustainable access to safe drinking water by 2015. An estimated 55% of all Indians, or close to 600 million people, still do not have access to any kind of toilet⁸. Unsafe disposal of human excreta facilitates the transmission of oral-faecal diseases, including diarrhoea and a range of intestinal worm infections such as hookworm and roundworm⁹. In India, approximately 72.7 % of the rural population does not use any method of water disinfection and 74 % have no sanitary toilets¹⁰. It has been estimated that diarrheal morbidity can be reduced by an average of 6-20 % with Improvements in water supply and by 32 % with improvements in sanitation¹¹. The need of the hour is to identify the existing system of environmental sanitation with respect to its structure and functioning and to prioritize the control strategies according to the need of the country. These priorities are particularly important because of issue of water constraints,

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environment-related health problems, rapid population growth, inequitable distribution of water resources, issues related to administrative problems, urbanization and industrialization, migration of population, and rapid economic growth¹²

The present study was conducted to find the source of drinking water, sanitation and hygiene practices followed by patients of diarrhoea admitted in Infectious Disease Hospital at King George's Medical University (KGMU), Lucknow.

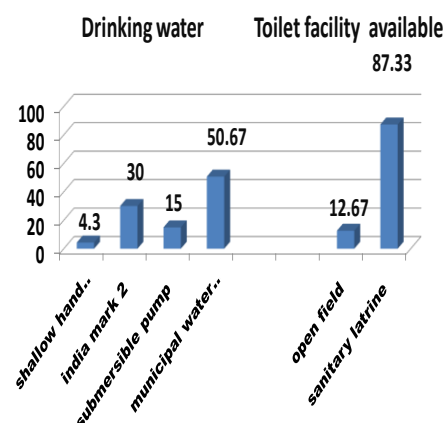
Material & Methods:

This cross-sectional hospital based descriptive study conducted among 300 patients, 15-50 years of age admitted with complaints of diarrhoea, dehydration and vomiting admitted at Infectious Disease Hospital (IDH) KGMU, Lucknow. Infectious Disease Hospital is managed by the doctors from the department of Community Medicine. Data was collected during the period from April 2010 to June 2010 as this is the peak season for loads of diarrhoea cases admitted. All patients of acute diarrhoea,

vomiting and dehydration were included in the study, while secondary diarrhoea and uncooperative patients were excluded from the study. Informed consent was taken and data was collected along with a detailed case history by direct interview using a pretested structured interview schedule. Modified Kuppaswamy scale was used to calculate the socioeconomic status. Data was analysed using statistical software SPSS 17.0. Statistical significance was accepted at $p < 0.05$ and chi-square test applied to test the significance of the associations.

Results:

Fig. 1 Source of drinking water supply & Toilet facility available at households



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Majority (50.7%) of the diarrhoeal patients had Municipal water supply as the main source of drinking water, only 30% uses India mark II hand pump while still 4.3% obtained water from shallow hand pump. As regard to the toilet facility, almost 87.3% uses sanitary latrines while 12.6 % still practiced open field defecation.

Table 1: Hand washing practices followed by diarrhoeal patients

Hand washing practices (n=300)	Only water	Water and soap	Others
before cooking	61(20.3%)	122(40.6%)	117(39%)
before eating	80(26.6%)	189(63%)	31(10.3%)
after defecation	80(26.6%)	154(51.3%)	66(22%)
after cleaning baby	101(33.6%)	109(36.3%)	90(30%)

Majority patients wash hands with soap & water, while around one-third of them use only water to wash their hands after household

activities. Still many patients use ash or mud to clean their hands.

Table 2: Association of hygiene and sanitation practices with socio-economic status

Practices		Socio economic status			Total N %	P-value
		III	IV	V		
storage of drinking water	Yes	47	7	56	110 (36.6%)	<.05
	No	0	39	151	190 (63.3%)	
covering of utensils	Yes	47	45	56	148 (49.3%)	<.05
	No	0	1	151	152 (50.6%)	
material used for cleaning utensils	water only	0	0	93	93 (31%)	<.05
	with detergent	47	46	94	187 (62.3%)	
	others	0	0	20	2 (6.6%)	
method used for taking water	by tilting the vessel	10	19	118	14 (49%)	<.05
	by inserting a cup or glass into the vessel	21	16	89	126 (42%)	
	by using a glass with long handle	16	11	0	27 (9%)	
	Total	47	46	207	300	

Table 3: Association of biosocial characteristics with source of drinking water and toilet facility

Biosocial characteristics		Drinking water			P-value	Toilet facility		P-value
		India Mark II	Shallow hand pump	Municipal water		Sanitary latrine	Open field	
Occupation	Profession	26	0	6	< .05	32	0	< .05
	Semi Profession	0	0	1		27	0	
	Clerk, Shop, Farm	26	4	11		35	6	
	Skilled	8	5	42		29	0	
	Unskilled	0	3	13		15	1	
	Unemployed	30	1	124		124	31	
	Total	90	13	197		262	38	
	Education	Illiterate	3	4		60	< .05	
Primary School		7	0	42	48	1		
Middle School		26	6	28	29	31		
High School		13	3	25	41	0		
Intermediate Grade & Above		41	0	42	83	0		
Total		90	13	197	262	38		
SES*		Class III	26	0	21	< .05		47
	Class IV	6	4	36	40		6	
	Class V	58	9	140	175		32	
	Total	90	13	197	262		38	

* SES (Socioeconomic status- scale of Modified Kuppuswamy's scale used)

Only 36.6% patient store water for drinking purpose and only 49.3% cover the container of drinking water. Practice of cleaning utensils with detergent was followed by class III and IV (62.3%) and some patients from class IV still uses ash or mud to clean utensils. Hygienic practices used for taking water from the container were practiced by only class III and IV. The association was found to be statistically significant (p<0.05).

Majority of patients from lower socioeconomic class still practice open field defecation. Use of India mark II hand pump drinking water shows a safe form of drinking water; its use was positively associated with higher education & better occupation group. This association was found to be statistically significant (p<0.05).

Table 4: Mode of refuse disposal according to education status

Mode of refuse disposal		dustbin	indiscriminate throwing	Total N %	P-value
Education Status(n=300)	illiterate	22	45	67 (22.3%)	< .05
	primary School	10	39	49 (16.3%)	
	middle School	36	24	60 (20.0%)	
	high School	25	16	41 (13.6%)	
	Intermediate & above	67	16	83 (27.6%)	
Total		160	140	300	

Practice of refuse disposal is positively associated with literacy status of the respondent.

Discussion:

Source of Drinking water

The study shows that more than half (50.6%) of the respondents uses municipal water supply while 30% uses India mark II hand pump as source of drinking water National Family Health Survey III (NFHS 2005-06) states that 93.7% of households in UP have access to improved water source. It also states that 53.2% derive water from tube well

or bore well & 84.5% has access to improved water source.

Toilet facility and sanitation practices

The study shows that 87.3% households use sanitary latrines while 12.6% practices open field defecation. These findings are consistent with findings from NFHS III report of availability of sanitary latrines in around four-fifth of urban areas. It was found that open area defecation was mostly practiced by rural migrant population in urban area and also the labour population who have a temporary habitation in the urban. More than half of the respondents wash their hands with water and soap after performing household activities as, before cooking, before eating, after defecation and after cleaning baby. Study done by Prisma (2004)¹³ shows only 14% practiced hand washing with soap before eating, 7.5% before cooking and 5.7% before feeding child. Studies have shown that hand washing can reduce diarrhea episodes by about 30%. This significant reduction is comparable to the effect of providing clean water in low-income areas¹⁴

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Providing private excreta disposal would be expected to reduce diarrhea by 42%, while eliminating excreta around the house would lead to a 30% reduction in diarrhea¹⁵

Source of water and sanitation practices according to biosocial characteristics

Only 30% of the respondents use India mark II hand pumps while majority (50.67%) obtained water from Municipal/ tap water. This shows that particularly in urban areas municipal / piped water is the major source, a safe mode of drinking water. Association with socioeconomic class shows that Class IV and V form the vulnerable group who do not practice proper storage of water. Most do not cover the utensil used for storing drinking water and also do not follow hygienic method of taking out water from the container. A lack of adequate sanitation also leads to significant economic losses for the country. A Water and sanitation Program (WSP) study The Economic Impacts of Inadequate Sanitation in India (2010) showed that inadequate sanitation caused India considerable economic losses, equivalent to 6.4

per cent of India's GDP in 2006 at US\$53.8 billion (Rs.2.4 trillion)¹⁵. In addition, the poorest 20% of households living in urban areas bore the highest per capita economic impacts of inadequate sanitation¹⁶

Refuse disposal

Present study shows that around half (50.33%) of the respondents use dustbins for waste disposal while half of the patient practice indiscriminate throwing. The lack of adequate sanitation and safe water has significant negative health impacts including diarrhoea, referred to by travellers as the "Delhi Belly" and experienced by about 10 million visitors annually.¹⁷

Most of the interventions (including multiple interventions, hygiene, and water quality) were found to significantly reduce the levels of diarrheal illness, with the greatest impact being seen for hygiene and household treatment interventions¹⁸.

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Conclusion:

Safe drinking water and proper & appropriate sanitation practices have an important bearing on the health of individuals. Waterborne illness especially diarrhoea forms the major disease burden owing to the above factors. In spite of the improved facilities of water and sanitation provided by the government, there exists a lacuna between its availability & their proper utilisation. This leads on to the burden of diarrhoeal patients on the health sector. Proper awareness regarding water & sanitation & proper refuse disposal can reduce the diarrhoeal load.

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