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Hand hygiene: knowledge, attitude and practices among mothers of under 5 children attending a tertiary care hospital in North India

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ABSTRACT

Background: Hand hygiene remains the most cost effective strategy in prevention of health care associated infections as it may limit or completely stop the transmission of microorganisms. Poor hand hygiene practices, especially of the mothers of under five children are likely to pose a major threat to the health of their children. The present study aimed to assess the knowledge, attitude and practices of under-five mothers visiting an outpatient department in a tertiary teaching care hospital in North India.

Methods: This cross-sectional study was conducted among 330 mothers who were attending with their under five children in paediatrics OPD of Government Medical College, Jammu. A self-administered questionnaire which was pilot tested was administered to the consenting mothers. The questionnaire consisted of socio demographic information followed by knowledge, attitudes and practices of the respondents about hand washing.

Results: Knowledge about spread of disease was excellent among the respondents. Other knowledge parameters like responsibility of mother to ensure proper hand washing among children and long nails can spread bacteria were better among the urban mothers ($p<0.05$). Similarly attitudes of the urban mothers were found to be more favourable especially about towel sharing and teaching children about proper hand washing ($p<0.05$). Practices like usage of soap and water after defecation were found to be excellent among both the urban and rural respondents. However higher proportion of urban females reminded their children about hand washing before and after eating ($p<0.05$).

Conclusions: The study results reveal a better knowledge, attitude and practices among urban mothers in comparison to their rural counterparts. This necessitates community awareness generation regarding hand hygiene, more so in rural mothers, so that many communicable diseases which could be transmitted by improper hand hygiene are taken care of.

Keywords: Hand hygiene, Knowledge, Attitude, Practices

INTRODUCTION

About 1.8 million children under the age of 5 die each year from diarrhoeal diseases and pneumonia, the top two killers of young children around the world.¹ Children at day care and kindergartens are at higher risk of getting

infections. The contributory factors are overcrowding, lack of understanding on basic hygiene and lack of natural immunity to viruses and bacteria.²

Microorganisms spread via direct or indirect contact and also by air, food and vectors. Preventive strategies should

be directed at interrupting the chain of transmission, of which hand hygiene is the single most effective and cheapest measure available. Hand washing with soap could protect about 1 out of every 3 young children who get sick with diarrhea and almost 1 out of 5 young children with respiratory infections like pneumonia.³⁻⁵

However, the knowledge and practice regarding hand washing in the community is poor even today.⁶ As young children cannot wash their own hands and therefore cannot interrupt the transfer of pathogens between their hands and their mouth, they might benefit from a lower rate of diarrheal pathogen transmission from parents who wash their hands more frequently with soap and water.⁷ Although people around the world clean their hands with water, few use soap to wash their hands. Washing hands with soap removes germs much more effectively.

Hand washing, if regularly and properly practiced by mothers of children under 5 years of age, it will go a long way in reducing the prevalence of infectious diseases, hospital admissions due to these diseases and also mortality among the under 5 years old children, thereby making them grow well and healthy.⁸

So education on basic knowledge of infection and hand hygiene is crucial to minimize the risk of infection and transmission. It should be started during the early life at home where parents can set good examples, followed by formal education in preschools, primary and secondary schools. Principles of hygiene should be made part of everyday life and the best way for parents to teach their children about good hygiene is to lead by example.

There is paucity of available literature regarding parental knowledge, attitude and practice regarding hand hygiene. Most studies targeted children and teachers and aimed at school based interventions. Hence, the authors conducted the present study to assess knowledge, attitude and practice on hand hygiene among mothers of under 5 children. The study findings are likely to improve the delivery of hand hygiene education to the community, which consequently results in improved society perception and behaviour on hand hygiene.

METHODS

The present descriptive cross sectional study was conducted in the months of September, October and November 2017 among mothers of under five children attending the paediatric OPD of a tertiary care teaching hospital in Jammu city of J&K, India. Permission was duly obtained from the Institutional Ethical Committee, Government Medical College before the commencement of the current study. All the mothers who were willing to participate were enrolled in the current study while non consenting mothers were excluded from the purview of the study. The mothers were administered questionnaire pertaining to their knowledge, attitude and practices related to hand hygiene.

The questionnaire for the current study was prepared by the authors in consultation with each other along with the literature reviews. The questionnaire so developed consisted of two parts. Part A contained demographic data which included age, residence, type of family and monthly income. Part B of the questionnaire consists of 23 items (6 items on knowledge, 9 items on attitude and 8 items on practice), all pertaining to various aspects regarding hand hygiene.

The questionnaire was pilot tested on a sample of 20 mothers attending the paediatric OPD who were not part of the actual studied sample. From the feedback, the necessary modifications were incorporated in the actual questionnaire before it was finally put to use. The study was conducted three times a week and a minimum of 10 respondents were interviewed on a daily basis. Thus a total of 330 respondents were interviewed during the three month study period.

The data thus collected was tabulated and analysed. Frequency distribution and percentages were used to analyse categorical variables. Chi square was the test of significance and $p<0.05$ was considered statistically significant.

RESULTS

The results revealed that 75.15% of the respondents belonged to 20-29 year age group and 51.52% belonged to urban areas. Two third of respondents belonged to Hindu religion (66.06%) among the studied sample. 38.79% of the respondents were educated up to secondary level while 23% had literacy up to higher secondary and above. Nearly three fifth (61.52%) of the respondents were residing in nuclear families (Table 1).

Among the various knowledge parameters, the results have shown that both rural and urban respondents had very good knowledge about spread of disease from hands, unwashed hands leading to diarrhoea and prevention of diseases after proper hand washing ($p>0.05$). Knowledge of other parameters regarding hand washing like responsibility of mothers to ensure proper hand washing among children, long nails can spread bacteria and washing hands with both soap and water is really helpful were found to be better among the urban respondents than their rural counterparts. This difference among the urban and rural females on their knowledge parameters was found to be significant statistically ($p<0.05$) (Table 2).

The results on the attitude parameters were found to be more favourable among the urban respondents in comparison to rural respondents. Higher proportion of urban respondents (97.06%) replied positive for hand washing with soap after going to toilet than rural respondents (89.38%) and this difference was statistically significant ($p<0.05$). On a similar note, urban respondents

had better attitude towards handling of raw fruits and vegetables as well as nail hygiene ($p<0.05$). Attitude towards towel sharing and teaching children about proper hand washing was also more favourable in the urban mothers ($p<0.05$). On the other hand, rural mothers in majority had the attitude of having sufficient hand knowledge in contrast to urban mothers who were candid

enough to admit about lack of sufficient hand hygiene ($p<0.05$). Higher proportion of urban females agreed that emergencies may make hand hygiene difficult on certain occasions than their rural females counterparts ($p<0.05$). However an equal proportion of both urban and rural females assumed hand hygiene as habit in their personal lives ($p>0.05$) (Table 3).

Table 1: Socio-demographic profile of the respondents (n=330).

Socio demographic variable		Number	Percentage (%)
Age group	<20 years	30	9.09
	20-29 years	248	75.15
	30-39 years	36	10.90
	>40 years	16	4.85
Residence	Urban	170	51.52
	Rural	160	48.48
Religion	Hindu	218	66.06
	Muslim	63	19.09
	Others	49	14.85
Education	Illiterate	51	15.45
	Primary	75	22.73
	Secondary	128	38.79
	Higher secondary and above	76	23.03
Type of family	Nuclear	203	61.52
	Joint	127	38.48
Monthly income (in rupees)	<10000	23	6.96
	10000-25000	101	30.60
	>25000	206	62.42

Table 2: Knowledge of the respondents regarding hand washing (n=330).

Question	Response	Urban females (n=170)	Rural Females (n=160)	Total (n=330)	P value
Bacteria may spread from hands to the nose and mouth	Yes	152 (89.41)	147 (91.88)	299 (90.61)	0.44
	No	18 (10.59)	13 (8.12)	31 (9.39)	
Unwashed hands can cause diarrhoea and related disease	Yes	156 (91.76)	149 (93.13)	305 (92.42)	0.64
	No	14 (8.24)	11 (6.87)	25 (7.58)	
Proper hand washing can prevent infectious disease	Yes	161 (94.71)	152 (95.00)	313 (94.85)	0.90
	No	09 (5.29)	08 (5.00)	17 (5.15)	
It is our responsibility to ensure that children wash hands properly	Yes	169 (99.41)	151 (94.38)	320 (96.97)	0.01
	No	01 (0.59)	09 (5.62)	10 (3.03)	
Bacteria can spread easily if we keep long nails	Yes	143 (84.12)	117 (73.12)	260 (78.79)	0.01
	No	27 (15.88)	43 (26.88)	70 (21.21)	
Washing hands with both water and soap is really helpful	Yes	165 (97.06)	139 (86.88)	304 (92.12)	0.00
	No	05 (2.94)	21 (13.12)	26 (7.88)	

Practice regarding hand hygiene after toilet was excellent in both rural and urban mothers. Higher proportion of urban females reminded their children about hand washing before and after eating ($p<0.05$). Other practices like hand washing after interacting with their children/sick person and wiping wet hands till dry were also found to be better among the urban mothers

($p<0.05$). Higher proportion of urban respondents had hand washing place inside their homes ($p<0.05$) which makes hand washing easy and more convenient than rural respondents. Among other practices, both the urban and rural mothers were using soap and water after defecation ($p>0.05$) (Table 4).

Table 3: Attitude of the respondents regarding hand washing (n=330).

Question	Response	Urban females (n=170)	Rural Females (n=160)	Total (n=330)	P value
We need to wash hands with soap after going to toilet	Yes	165 (97.06)	143 (89.38)	308 (93.33)	0.00
	No	05 (2.94)	17 (10.62)	22 (6.67)	
We need to wash hands both before as well after eating meals	Yes	161 (94.71)	152 (95.00)	313 (94.85)	0.90
	No	09 (5.29)	08 (5.00)	17 (5.15)	
I have to keep my nails short and clean for good hand hygiene	Yes	159 (93.53)	133 (83.13)	292 (88.48)	0.00
	No	11 (6.47)	27 (16.87)	38 (11.51)	
Hand towels should not be shared	Yes	102 (60.00)	37 (23.13)	139 (42.12)	0.00
	No	68 (40.00)	123 (76.87)	191 (57.88)	
I don't have to teach children how to wash hands properly	Yes	19 (11.18)	48 (30.00)	263 (79.69)	0.00
	No	151 (88.82)	112 (70.00)	67 (20.31)	
I have sufficient knowledge about hand hygiene	Yes	149 (87.65)	154 (96.25)	303 (91.82)	0.00
	No	21 (12.35)	06 (3.75)	27 (8.18)	
Emergencies and other priorities make hand hygiene more difficult at times	Yes	160 (94.12)	138 (86.25)	298 (90.31)	0.01
	No	10 (5.88)	22 (13.75)	32 (9.69)	
The hand hygiene is assumed as a habit in my personal life	Yes	150 (88.24)	142 (88.75)	292 (88.48)	0.88
	No	20 (11.76)	18 (11.25)	38 (11.52)	

Table 4: Practices of the respondents towards hand washing (n= 330)

Question	Response	Urban females (n=170)	Rural Females (n=160)	Total (n=330)	P value
I wash my hands with soap after going to toilet	Yes	170 (100)	160 (100)	330 (100)	-
	No	00 (0.00)	00 (0.00)	00 (0.00)	
I always remind the children to wash hands before and after eating	Yes	145 (85.29)	113 (70.63)	258 (78.18)	0.00
	No	25 (14.71)	47 (29.37)	72 (21.82)	
I wash hands after interacting with children/ sick person	Yes	152 (89.41)	121 (75.63)	273 (82.73)	0.00
	No	18 (10.59)	39 (24.37)	57 (17.27)	
I always wash my hands before and after handling raw material such as vegetables/ chicken/mutton etc	Yes	162 (95.29)	153 (95.63)	315 (95.45)	0.88
	No	08 (4.71)	07 (4.37)	15 (4.55)	
I wipe my wet hands until dry	Yes	142 (83.53)	112 (70.00)	254 (76.97)	0.00
	No	28 (16.47)	48 (30.00)	76 (23.03)	
Washing hands with soap is my routine practice	Yes	167 (98.24)	152 (95.00)	319 (96.67)	0.10
	No	03 (1.76)	08 (5.00)	11 (3.33)	
Place of hand washing inside home	Yes	164 (96.47)	111 (69.38)	275 (83.33)	0.00
	No	06 (3.53)	49 (30.62)	55 (16.67)	

DISCUSSION

The results of the present study have depicted that both rural and urban respondents have good knowledge on basic hand hygiene and it has been attributed to their usual understanding on personal as well as hand hygiene acquired from formal and informal learning processes. The results are in agreement with those reported by Mohammad et al in Malaysia.⁹ Among the urban mothers, some of the knowledge parameters were found to be better than their rural counterparts. Clean hands are the single most important factor to prevent the spread of

pathogens in health care settings. Resistance organisms which usually spread through close contacts lead to infections which cause increase morbidity and mortality, health care costs and the need for broad spectrum antibiotics.¹⁰ Thus it becomes all the more necessary to embark upon public education on hand hygiene which is one of the simplest and cost effective ways to decrease the disease burden.

Attitude of the majority of respondents (94%) about hand washing with soap and water after toilet and before/after eating meals was positive. These results are similar to

what Mohammad et al also reported.⁹ About 80% of the respondents in the current study disagreed with the statement "I don't have to teach children how to wash hands properly" where as 94.2% disagreed with the same statement in the study conducted by Mohammed et al.⁹ About one fourth of the respondents in the current study said that they need not wash hands while handling raw fruits and vegetables. This aspect can be attributed to their incomplete knowledge about hand hygiene. Other attitudes like towel sharing and teaching children about proper hand washing were better among the urban respondents which are best explained on their better literacy levels than their rural counterparts. In this regard Nematian et al reported that parents with higher educational level were related to decrease infection rate in the children.¹¹

All the respondents had good practice of hand washing with soap and water after going to toilet which is consistent with the results reported by Mohammad et al and De Maumita et al.^{9,12} In contrast Kuberan et al reported that 17% of the respondents used plain water or water with ash to clean their hands.¹³ Good hand hygiene practice is very essential to break transmission of infectious diseases as recommended by World Health Organisation "Five moments of hand hygiene". These five moments are- i) before touching patients ii) after touching patients iii) after doing procedure iv) after touching patient's environment and v) before doing aseptic technique. This hand hygiene is recommended to be adapted at home where parents and other adults wash their hands before and after touching children and infants. Regarding practice of washing hands after interacting with children/sick person, 90% of the urban mothers were doing it in comparison to 82% of the rural mothers. In contrast to the results of current study, majority of the parents didn't wash their hands before or after contact with their child in the study conducted by Mohammad et al.⁹ Pang et al had similar findings where half of adult respondents didn't wash hands before and after attending to a child or sick person.¹⁴ It is well documented that washing hands before and after interacting with children and sick people had a protective effect against diarrhoea and respiratory illness.^{3,15}

De Maumita et al concluded that mothers of under five children practised hand washing after defecation (100%), after cleaning child's faeces (99%), before eating (95%), before cooking (81%) and before breast feeding (75%).¹² Yerpude et al reported that hand washing before preparing food and before serving food were practised by 76.8% and 67.4% mothers respectively.¹⁶ In contrast Ray et al reported that hand washing wasn't practised before preparing food and after handling raw vegetables in two communities of eastern India.¹⁷ Aithal et al reported that majority of the mothers wash their hands with soap and water after defecation (90%) but fewer women wash their hands before cooking (31.1%), before eating (33.3%) and before feeding the child (38.9%).¹⁸

Mothers in general are usually concerned about cleanliness of their child, his vaccination and clinic appointment and his overall health in particular. In this regard, maternal literacy has been suggested to be a powerful and significant determinant of child health status.¹⁹ It is pertinent to mention that community based public education, focussed more on mothers should be encouraged in order to improve children's hygienic behaviour and their health status.

Hand hygiene awareness generation in the community is also important in view of recent expression in the options and use of hand hygiene products in the community and the risk of acquiring antibiotic resistant bacteria, associated with use of some hand hygiene products like antibacterial soaps.⁴ School pupils should also come under the domain of community based programs. Many countries in Europe teach hand hygiene topic both at junior and senior school level and these children have replied that hand washing can help prevent the spread of infection.²⁰ Theoretical and practical teaching and learning should be supported by adequate facilities so as to exert a long lasting positive influence on hygiene routines.

Limitations

The main limitation of the current study is the study sample which mayn't be the representative of the population and thus the results can't be generalized. More over since the current study only involved mothers but not their children; the correlation between parents and their children knowledge, attitude and practice on hand hygiene couldn't be determined.

CONCLUSION

Overall the knowledge, attitude and practices of urban mothers were found to be better than their rural counterparts. Besides majority of the respondents assumed hand hygiene as a habit in their personal lives which is indeed a healthy sign. Since higher proportion of urban females had hand washing places inside their residences, it may be the reason for better attitudes and practices among them. Authors recommend that community awareness about hand hygiene among mothers, especially rural mothers, needs to be updated and reinforced at regular intervals.

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