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Research Article

Study of hand washing practices in rural community of Pune, India

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ABSTRACT

Background: Hand washing is well recognized preventive tool disease prevention. To study hand washing practices in rural community; Objectives: a]. To study medium of hand washing, b]. To determine any association between hand washing practices and some socio-demographic characteristics, c]. To study association between hand washing practices and certain infections.
Methods: A community based observational study was conducted in five randomly selected villages in rural field practice area of medical college in Pune, Maharashtra. In house to house survey, interview was conducted on pre-tested questionnaire regarding hand washing practices. On site inspection of designated place for hand washing was also done. Statistical analysis: Percentages, Proportions and chi-square test.
Results: A total of 1468 (799 males & 669 females) individuals participated in the study. Majority (37.23%) were from 21 to 40 years age-group. 698 were studied up to secondary grade. In 48.46% study participants the family was major source of information regarding importance of hand washing was family. 1167 (79.49%) were using soap and water, 117 (7.98%) used water and antiseptic solution for hand washing. 184 (12.53%) used only water for hand washing. 100% practiced hand washing after defecation. There was significant association between medium of hand washing and age-group, literacy status. Association was also found between the history of episode of upper respiratory tract infection and diarrhea with medium of hand washing.
Conclusions: Majority of the study participants used water with soap for hand washing. This finding is encouraging and sustainable practice is recommended.

Keywords: Hand washing, Practices, Rural community, India

INTRODUCTION

Contaminated hands play a major role in fecal-oral transmission of diseases. Hand washing has been common practice since the Roman times, yet throughout history its' benefits for the control of infection have been, and still remain, frequently overlooked. It was not until 1847 that hand washing was proved to be effective in preventing infection by Hungarian physician Dr. Ignetz Senemmelweis. He found that 'child bed' (or puerperal) fever could be transmitted through poor hand hygiene, and that good hand washing practice amongst medical staff helped limit infection.[1] Public health importance of hand washing as well as its importance in reduction of communicable diseases such as diarrhea and acute respiratory infections have been highlighted in many studies worldwide.[2] The Millennium Development Goals have firmly established the issues of "water, sanitation, and hygiene" on the global agenda. Neglect of hygiene goes a long way in explaining why water and sanitation programmes have often not brought the expected benefits.[3] Hand washing with soap has been viewed as one of the most cost-effective ways of reducing the global infectious disease burden.[4] Despite the irrefutable evidence in favour of hand washing, it is rarely practiced

at times when pathogen transfer could be interrupted, and even more rarely involves the use of soap.[5] Every year 15th October is celebrated as a Global Hand washing Day. Global Hand washing Day was originally created for children and schools, but can be celebrated by anyone promoting hand washing with soap.[6]

Good hand washing requires water, soap and ideally clean hand drying facilities. But most importantly there must be hygiene promotion to encourage hand washing after using the toilet, handling food, changing a child's nappy and touching animals and before eating. There are few studies conducted regarding hand washing practices especially in rural community.

The present study was conducted with an aim to study hand washing practices in rural community with following objectives -

A. To study medium of hand washing,
B. To determine any association between hand washing practices and some socio-demographic characteristics,
C. To study association between hand washing practices and certain infections.

METHODS

A cross sectional study was conducted in rural field practice area of medical college in Pune city of Maharashtra state of India. The study was conducted in five villages in rural field practice area. These five villages were selected by simple random technique out of total 19 villages in rural field practice area. In these randomly selected five villages all the house-holds were selected by again simple random sampling method. Specific sample size was calculated for the study, but was decided to take at least 10% of the total population of these five villages as per latest census that is 2011 census. The informed written consent was taken from all adult study participants and informed written consent of parents was taken for study participants less than 18 years of age.

Hand washing behavior is known to be difficult to assess. In this study, we relied on two sources. A. self-reported hand washing and, B. as a proxy measure; spot-check observations of whether the household had a designated place for hand washing with both soap and water. At each house-hold interview of the family members was taken on pre-tested questionnaire. This pre-tested questionnaire included socio-demographic characteristics, hand washing practices which included medium of hand washing, timing of hand washing. It also included history episodes of acute respiratory infections or episodes of diarrhea in last three months period. The period of three months was taken to reduce any recall bias. For children less than five year old in the house-hold interview of the mother or care-giver was taken. For medium of hand washing three categories were made i. Hand washing only with water, ii. Hand washing with water and soap, iii. Hand washing with water and antiseptic solution.

Statistical analysis

Percentages and Proportion were calculated for descriptive statistics. Chi-square was used as a test of significance. P value less than 0.05 was taken as statistically significant. Primer of Biostatistics Statistical Software was used for analysis purpose.[7]

RESULTS

In the present study total 1468 individuals of total 659 house-holds were participated. 799 (54.43%) study participants were males while 669 (45.57%) were females. Majority of study participant were from age-group of 21 to 40 years those were 547 (37.26%) followed by 374 (25.48%) from 6 to 20 years age-group. 300 (20.44%) were from 41 to 60 years age-group. 135 (9.19%) study participants were below 6 years of age while 112 (7.63%) study participants were above 60 years of age. 142 (9.67%) study participants were illiterate. Majority of study participants were studied up to secondary grade those were 698 (47.55%) followed by primary grade educated 202 (13.76%). 141 (9.60%) study participants were graduate.

The major source of information regarding importance of hand washing was family (48.56%) followed by school (34.46%) and mass media like TV, Radio (21.25%). The medium of hand washing was determined. Of the total study participants 1167 (79.49%) were using soap and water for hand washing. 117 (7.98%) study participants used water and antiseptic solution for hand washing . 184 (12.53%) used only water for hand washing .

Only 2 study participants were able to demonstrate ideal way of hand washing. All study participants practiced hand washing after defecation or after using toilet. 1395 (95.03%) study participant practiced hand washing before and after taking food. Frequency of hand washing was ranged from 3 times to 18 times per day. Average frequency of hand washing was 5 times per day.

Of the total household surveyed 542 (82.24%) had designated place for hand washing. Of which 335 (61.81%) households had place of hand washing inside the house. There was statistically significant association was observed between age-group of study participant and medium of hand washing. In age-group of 21-60 years the main medium of hand washing was water with soap. No association between gender of study participant and medium of hand washing. Literacy status was significantly associated with medium of hand washing (Table 1).

Table 1: Association between some socio-demographic characters and medium of hand washing.

Sr. no	Socio-demographic Character	Medium of hand wash			X^2-Value	P- Value
		Water only	Water with Soap	Water with antiseptic		
A.	**Age-group**					
1.	1 to 5 years	12	105	18	307.15	0.0001 HS
2.	6 to 20 years	42	290	42		
3.	21 to 40 years	42	460	45		
4.	41 to 60 years	35	256	09		
5.	Above 60 years	53	56	03		
B.	**Gender**					
1.	Male	97	637	65	0.289	0.86 NS
2.	Female	87	530	52		
C.	**Literacy status #**					
1.	Illiterate	81	42	1	177.96	0.0001 HS
2.	Primary	27	167	8		
3.	Secondary	59	621	18		
4.	Higher Secondary	5	125	20		
5.	Graduate	0	89	52		

Illiterate and Literate categories, HS- Highly significant, NS-Not significant

Table 2: Association of hand washing medium and History of Upper Respiratory Tract Infection (URTI) Episode in last 3 months.

Sr. No.	Hand washing Medium	History of URTI		Total
		Yes	No	
1.	Water only	29	155	184
2.	Water with Soap	90	1077	1167
3.	Water with Antiseptic	5	112	117
	Total	124	1344	1468

$X^2 = 16.178$, d.f.=2; p= 0.001, highly significant

Table 3: Association of hand washing medium and history of diarrhea episode in last 3 months.

Sr. No.	Hand washing Medium	History of Diarrhea		Total
		Yes	No	
1.	Water only	36	148	184
2.	Water with Soap	18	1149	1167
3.	Water with Antiseptic	2	115	117
	Total	56	1412	1468

$X^2 = 137.366$, d.f.=2; p= 0.001, highly significant

DISCUSSION

The present study was carried out in rural community of Pune, Maharashtra state of India. 1468 individuals participated in the study. Previously no such kind of study was conducted in this study area. Overall very few studies were found on hand washing practices especially in rural areas of India. Most of the studies on hand washing practices were conducted in West Bengal state of India. Majority of the studies related to hand washing practices were carried out in healthcare workers, hospital staff and specific group. Studies about hand washing practices in general population are rare.

In the present study, almost 80% of the study participants used water with soap for hand washing. This particular finding was really encouraging. The study participant appreciated the role of hand washing in disease prevention. Around 12% were using only water for hand washing. All the study participants (100%) were practicing hand washing after defecation while 95% study participants were practicing hand washing before and after handling any food item.

In the study conducted by Ray SK et al in urban and rural communities in and around Kolkata, West Bengal 100% respondents interviewed practiced hand washing after defecation either with soap (59%) or with plain water, ash & mud (41%).[7] This finding is comparable with the present study where all the study participants practiced hand washing after defecation.

In another study conducted in West Bengal, in rural area 71% used soap and water after defecation while 26% used mud or ash.[8] As per conducted in rural areas of Bangladesh, 47% of caregivers reported and 51% demonstrated washing both hands with soap after defecation, in structured observation, only 33% of caregivers and 14% of all persons observed washed both hands with soap after defecation.[9] In Kerala state of India observed rates of hand washing with soap was 34% after defecation and 35% after cleaning the child. In another study from Kolkata slums in West Bengal state of India the observed rate of hand washing with soap was 16% after defecation. In Ghana observed rate of hand washing with soap rate of only 3% after defecation. In Senegal it was 31% after defecation and 26% after cleaning the

child. In rural areas of Nigeria 10% washed hands with soap and water after cleaning the child. In rural Kyrgyzstan observed rates of hand washing with soap was 18% after using the toilets and none after cleaning the child. In periurban areas of Northern England observed rates of hand washing with soap was 47% after cleaning the child. The cause of low hand washing rates is rarely a lack of soap. Soap is present in the vast majority of households worldwide, but it is commonly used for bathing and laundry, not hand washing. Lack of water is usually not a problem either, as hands can be effectively washed with little, or recycled, water. In studies around the world, the main reason given why rates of hand washing with soap are so low is that it is simply not a habit. The challenge remains to make hand washing with soap a habit and a social norm on a worldwide basis.[10]

Hand washing interrupts the transmission of disease agents and so can significantly reduce diarrhea and respiratory infections, as well as skin infections and trachoma. Studies consistently demonstrate that communities that received intensive hand washing promotion have less childhood diarrhea and respiratory disease.[10, 11,12] In the present study association between hand washing practices and history of episode of URTI and diarrhea was studied and it was significantly association with hand washing practices. Study individuals who were using only water for hand washing had more episodes of both diarrhea as well as URTI in last 3 months period.

In the present study, there was significant association between hand washing practices and age of the study participants. In the younger and middle age-groups hand washing practices were found to be better. Significant association was also observed between literacy status and hand washing practices. Hand washing practices were found to be better in literate study participants than illiterate study participants. No association was observed between gender of the study subjects and the hand washing practices. These observations could not be discussed as most of studies did not study these socio-demographic characters. Because hand washing can prevent the transmission of a variety of pathogens, it may be more than any single vaccine. Promoted on a wide-enough scale, hand washing with soap could be thought of as a 'do-it-yourself' vaccine.[10]

CONCLUSION

In the present study majority of the study participants were using water with soap for hand washing which underlines the fact that hand washing is an essential preventive tool in disease prevention the study participants appreciate this fact. The efforts are needed to encourage hand washing practices in those who were only using water for hand washing. It is important that this practice for hand washing with water with soap must be sustainable.

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