



A study of hand washing practices among the chefs of the registered restaurants in Pune Cantonment

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ABSTRACT

Background

An important aspect of food safety is hand hygiene that can decrease food borne infections manifold. With the boom in the Indian food-service industry, hand washing practices among chefs gain special significance.

Objectives

To estimate the knowledge, describe the hand washing practices of the chefs & observe the hand washing facilities.

Methods

A cross sectional descriptive study was conducted among the chefs of registered restaurants in Pune Cantonment selected through multi stage random sampling. A pre tested and pre designed interviewer administered questionnaire was used for data collection which also included a checklist for the hand washing facilities.

Results

Among the 174 chefs, the mean age was 27.9 (+7.9) years. Of them 144 (82.8%) of the chefs considered hand washing important but only 66 (45.8%) were aware of the correct technique. The importance of hand washing and its proper technique was not the part of the training curriculum for 125 (71.8%) of the chefs. Soaps were used by 119 (68.4%) chefs for washing hands while 19 (10.9%) used plain water. Out of 87 restaurants, 26 (29.9%) had hand washing stations inside toilets and only 25 (28.7%) had hand washing stations in cooking areas.

Interpretations & Conclusions

Most of the respondents were aware of the necessary health aspects of hand washing but their practice was unsatisfactory. This needs to be redressed by regular & mandatory training, reinforcements in the form of posters, workshops etc. and implementing Food Safety and Standards Act (FSSA), 2006 guidelines in letter and spirit.

Keywords: Hand Washing, Restaurants, Food Safety, Infection, Cross Sectional Study

INTRODUCTION

Merrill Lynch has estimated urban consumption, including eating out, to grow at 20% per annum.¹ On an average, an Indian household spends 1.02% on

eating out, which is much more than what they spend on recreation (0.64%) and alcohol (0.6%).² The total food-service market in 2012 was estimated to be Rs. 43,000 crores, which is expected to grow to a

GJMEDPH 2015; Vol. 4, issue 5

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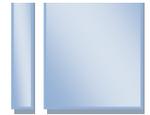
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Conflict of Interest—none

Funding—none



staggering Rs. 62,500 crores by 2015.¹ With the increase in eating out there has been a corresponding increase in outbreaks of food poisoning in India from 175 reported outbreaks in 2010, 300 in 2011 and 375 in 2013 and 100 in 2015(till 9th week, IDSP).³

WHO has announced "Food Safety: From Farm to Fork" as the theme for World Health Day, 2015. Among the "Five keys to Safer Food", proposed by Food Safety Department, WHO, proper and effective hand washing constitutes the first and the most important key.⁴ The effectiveness of hand washing as a Non Pharmaceutical Intervention to prevent diseases is now widely known.⁵ Food handlers can spread foodborne illness either through hand contact with pathogens from their gastrointestinal tracts or fomites. Typhoid Mary is a classic example of how improper hygiene in chefs can have catastrophic consequences.⁶ Staphylococcus aureus is the most common pathogen which gets transmitted if proper hand hygiene is not practised. Other common pathogens include streptococcus, salmonella and E.coli. . Hand washing by food handlers could save more lives than any single vaccine or medical intervention and reduce deaths from diarrhoea by almost half.^{5,7} Various studies and health inspections have listed improper hand washing as major issues.^{8,9} Considering the importance of hand washing, World Health Organization (WHO) celebrated the first Global Hand washing Day on 15 October, 2008.¹⁰

While the prevalence and applications of hand washing practices among Health Care Workers has received extensive attention and coverage in the academic field, the literature on awareness and practice of proper hand washing among food handlers is scant, even more so in India. To plug this knowledge gap and to address the scarcity of information on this issue, a study amongst the chefs of the registered restaurants in Pune Cantonment was conducted to assess their knowledge and practice as regards to hand washing.

METHODS

A cross sectional descriptive study was carried out among the chefs of the restaurants registered with the Pune Cantonment Board. The sample size was calculated to estimate 95% confidence interval for prevalence of proper hand washing practice, with 5% error of margin. With a sampling frame of 270, applying finite correction the sample size worked out to be 159 chefs. However, 174 chefs were interviewed. Computer generated multi stage random sampling was done. At first stage, using a random number table, restaurants were selected. Among the shortlisted restaurants, 2 chefs were randomly selected from each. In case there were 2 chefs, both of them were selected. There was, however, no restaurant with only a single chef in our study. Chefs who were regular employees of the restaurant for a period of more than 6 months were included in the study. This was done to include the permanent employees who would have gone some sort of training in food handling at the place of their service. An arbitrary period of six months was selected. Data was collected using a pre tested and pre designed interviewer administered questionnaire.

Written informed consent was obtained from all participants before administering the questionnaire. The questionnaire also included a checklist for the hand washing facilities present in the restaurants for which due permission was taken from the owners/managers. Institutional ethics committee approval was obtained prior to the study. The study was carried out for a period of 2 months from June to July 2014. The data was analysed using appropriate statistical software.

RESULTS

Out of the total of 174 chefs, majority 162 (93.1%) of the respondents in our study were males. The mean (\pm SD) age of our study participants was 27.9 (\pm 7.9) years and mean (\pm SD) workload was 8.8 (\pm 1.6) hours. 36 (20.7%) chefs were illiterates. Most, 105 (60.3%), of the chefs belonged to Lower Middle class (Table I).



Table 1 Socio-demographic characteristics of the Chefs of registered restaurants at Pune Cantonment, Maharashtra, 2014

Demographic Characters	Frequency N=174	Percentage
Gender		
Male	162	93.1
Education		
Illiterate	36	20.7
Primary school	44	25.3
Middle school	37	21.3
High school	30	17.2
Intermediate	23	13.2
Graduate	4	2.3
Socio Economic Status		
Upper Middle	34	19.5
Lower Middle	105	60.3
Upper Lower	35	20.1

Overall, 144 (82.8%) chefs knew that hand washing is important. In spite of the acknowledgement of its importance, when it came to implementation, only 66 (45.8%) were aware of the correct technique of

hand washing. The importance of hand washing and its proper technique had been the part of the training curriculum for only 49 (28.2%) of the chefs (Table II).

Table 2 Knowledge of the Chefs of registered restaurants at Pune Cantonment, Maharashtra, 2014

Question	Frequency N=174	Percentage
Is hand washing important?	144	82.8
Are you aware of the correct technique of hand washing? (n=144)	66	45.8*
Does hand washing prevent transmission of infections?	122	70.1
Are diarrhoeal agents transferred by hand?	131	75.3
Can dirty nails transmit infection?	135	77.6
Can covering the mouth and nose with hand while coughing & sneezing and then not washing the hands transmit infection?	142	81.6
Was hand washing ever a part of any training curriculum of chefs you underwent?	49	28.2
Have you heard the word germs?	110	63.2

* Denominator used for calculation is 144 (among people who know hand washing is important)

Soaps were used by 119 (68.4%) of the chefs for washing hands while in 19 (10.9%) plain water alone was being used. 152 (87.4%) chefs used cloth (towel, etc.) after washing to dry their hands. The practice of hand washing was prevalent in 125 (71.8%) of the

chefs washed their hands before cooking, 124 (71.3%) before cutting vegetables, 88 (50.6%) when they switched from preparing non-vegetarian food to vegetarian food and 126 (72.4%) after attending the toilet. (Table III)



Table 3 Practice of the Chefs of registered restaurants at Pune Cantonment, Maharashtra, 2014

Question	Frequency N=174	Percentage
How do they wash hands?		
Plain Water	19	10.9
Ordinary soap	16	9.2
Anti-bacterial soap	119	68.4
Dishwashing soap	8	4.6
Powder/Detergent	12	6.9
Do you wash hand before cooking?	125	71.8
Do you wash hand after cooking?	150	86.2
Do you wash hands before cutting vegetables?	124	71.3
Do you wash hands while switching from non-veg to veg?	88	50.6
Do you wash hands after attending toilet?	126	72.4

Water supply through the Pune Cantonment Board was the major source to 82 (94.3%) of the restaurants. (Table IV) On observing the facilities for hand washing, it was found that only 25 (28.7%) of the restaurants had hand-washing stations present in

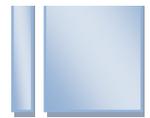
the cooking area, 50 (57.5%) had soap available at both the hand washing station and the toilet while 13 (14.9%) restaurants did not have any soap available at all. (Table V)

Table 4 Types of the registered restaurants and their water supply at Pune Cantonment, Maharashtra, 2014

	Frequency N= 87	Percentage
Type of Food Joint		
Fast Food	14	16.1
Fast Casual	12	13.8
Casual Dining	51	58.6
Fine Dining	10	11.5
Type Of Water Supply		
Civic Body	82	94.3
Underground	3	3.4
Other	2	2.3

Table 5 Availability of Hand washing & associated facilities in the registered restaurants at Pune Cantonment, Maharashtra, 2014

Facility	Frequency N=87	Percentage
Type Of Hand Washing Facility		
Tap	86	98.9
Bucket Water drawn directly by hands	1	1.1
Hand Washing Station (Kitchen)		
At cooking area	25	28.7
Within 3 m of cooking area	45	51.7
Beyond 3 m of cooking area	17	19.5
Hand Washing Station (Toilet)		



Inside Toilet	26	29.9
Within 3 m of Toilet	41	47.1
Beyond 3 m of Toilet	20	23.0
Availability Of Soap		
Not available at all	13	14.9
At cooking area only	12	13.8
At toilet only	13	14.9
At both cooking area & toilet	49	56.3

DISCUSSION

In our study, we found that most chefs had the knowledge that hand washing, cutting nails and covering the mouth while coughing/sneezing was important to prevent transmission of infections, diarrhea, etc. However, the awareness of proper technique of hand washing was low. Most restaurants did not have hand-washing stations either at the cooking area or inside the toilet or both. The results are similar to another study done on food handlers by Bhobate et. al.¹¹

The average workload of the chefs (8.75 ±1.618 hours) was as per the accepted industrial standards (8 hours). Most of the workforce belonged to the Lower Middle socio-economic group 105 (60.3%) and only 57 (32.8%) had completed high school and beyond. Only 36 (20.7%) of the chefs were illiterate which is less as compared to the (38%) illiterate in another study conducted in a neighboring South Asian country.¹²

Most chefs 144 (82.8%) recognized hand washing as important which was significantly higher than that of the other study (67%).¹² However, only 66 among them (45.8%) were unaware of the proper technique of hand washing in our study, which was higher (63%) in another study in South Asia.¹² This may be attributed to the growing awareness about hygiene and stress on hand washing in schools. Better surveillance and quality control & checks by the civic body too could have contributed to this result. Only 49 (28.2%) chefs had ever undergone formal training in hand washing techniques. This may be because more attention was paid on honing the culinary skills than hygiene practices.

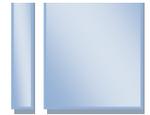
In our study, most chefs washed their hands before cooking meals, which was similar to another study.¹² Interestingly, in 2002, the UK's Food Standards

Agency said that half (53%) of the managers and staff of catering companies in Great Britain and Northern Ireland did not wash their hands before preparing food. Nevertheless, only few (28%) wash hands before cutting vegetables in the other study¹² compared to our study 124 (71.3%). Only 88 (50.6%) of the participants washed their hands before switching from non-vegetarian to vegetarian food in our study. This is important due to the fact, that food safety is important when touching raw non-veg food items and shifting on to preparing other food items. Besides, it may also hurt the religious sentiments of some communities.

The fact that not many restaurants had hand-washing facilities near their work zone 25 (28.7%) and this was uncommon even inside toilets 26 (29.9%) is a serious issue and needs attention.

However, the study has some of its own limitations. The study primarily relied on voluntary responses by the participants. The participants are likely to give more positive and socially acceptable responses than normally what they actually practice. We ensured confidentiality of the participant, giving an insight into the overall benefits of the results of the study to minimize false responses from the participants.

In conclusion this study found that there is a difference between knowledge and practices of hand washing. The increased practice of proper hand washing by the food handlers will be instrumental in decreasing a large number of foodborne outbreaks. The knowledge practice gap brought out by this study, identification of the areas needed for improvement calls for targeted interventions in these areas. Corrective measures need to be taken on priority basis at all levels, whether it be at the industry level (through rigorous training), at the



governmental level (implementing the FSSA, 2006) or at the administrative level (through monitoring and awareness). Formal training for both chefs and restaurant owners needs to be carried out to convert knowledge into attitude and attitude into behavior.

Future studies may focus on conducting bacterial counts of food utensils as well as bacteriological examination of water that is being used by the chefs for washing their hands as well as utensils.

ACKNOWLEDGEMENT

We would like to thank Indian Council of Medical Research (ICMR) for funding this research. There are no conflicts of interests.

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