

## Original Research Article

# A study of personal hygiene among food handlers in Panaji city, Goa

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### ABSTRACT

**Background:** Food is an elementary requirement for human survival. Food handlers are essential components in the link between the environment of cooking food and the prepared or served food. Food handlers with poor personal hygiene employed in food establishments could be likely sources of infection. Hence this study was undertaken to evaluate the personal hygiene among various food handlers in the city of Panaji, Goa.

**Methods:** This cross sectional study was carried out among 227 study participants in 12 food establishments registered under corporation of city Panaji for duration of 18 months (September 2015 to February 2017). Sampling was done by stratified random sampling.

**Results:** Out of the 227 food handlers, only 65 (28.6%) of the study participants used head caps while cooking. Only 70 (30.8%) had clean nails at the time of examination. As per the scale of scoring it was observed that majority i.e. 112 (49.4%) had fair personal hygiene, 77 (33.9%) had poor personal hygiene and only 38 (16.7%) had good personal hygiene. There was significant statistical association between the personal hygiene of the study participants and the training received in food safety.

**Conclusions:** Personal hygiene levels among the food handlers were found to be sub-standard indicating essentiality of creating awareness among the food handlers regarding importance of maintaining good personal hygiene and food hygiene.

**Keywords:** Food handlers, Personal hygiene

### INTRODUCTION

Food is the elementary requirement for human survival.<sup>1</sup> Safety of the food is of extreme importance and is a matter of human concern. It would be challenging to find a person who never experienced foodborne illness in the past.<sup>2</sup>

The health of the people largely depends on the quality food they eat. The risk of diarrhoea rises among those consuming food at places apart from home such as restaurants and cafeterias.<sup>3</sup>

There is a strong informal food production and marketing system in most South East Asian countries, causing it

difficult to enforce food safety regulations in these countries. Street food is common in urban backgrounds in many countries.<sup>2</sup> Low and middle-income countries are at an increased risk of foodborne diseases owing to poor hygiene in food production, poor knowledge and insufficient application of legislation in food safety.<sup>4</sup>

Food handlers are essential components in the link between the environment of cooking food and the prepared or served food. Microbes may be transmitted to food by the handlers through various routes like faeco-oral, transcutaneous or trans-nasal. Food handlers may also transmit pathogens passively from a contaminated source.<sup>5</sup>

Food handlers with poor personal hygiene employed in food establishments could be likely sources of infection. Their periodic health check-ups are of utmost importance to ensure that employees maintain good personal hygiene while handling food. Hence this study was undertaken to evaluate the personal hygiene among various food handlers in the city of Panaji, Goa.

## METHODS

This cross sectional study was carried out among 227 study participants in 12 food establishments registered under Corporation of City Panaji for a duration of 18 months (September 2015 to February 2017). Sampling was done by stratified random sampling. Institutional Ethics Committee approval was obtained from Goa Medical College. Permissions were also obtained from the Public Health Department of the State of Goa and Institutional Review Board of Directorate of Health services respectively.

### Inclusion criteria

All categories of food handlers working in food establishments who gave consent to participate in the study including cook or chef, captains, waiters, cleaning staff, dish washers were enrolled in the study.

### Exclusion criteria

Food handlers unavailable despite of three visits at fortnightly intervals & those not consenting were excluded from the study.

Before entering the food establishment, verbal consent was taken from the owner and the purpose of the study was explained, confidentiality was assured and informed consent was obtained. A pre-designed, pre-tested, structured questionnaire was used.

The study questionnaire was administered by the investigator to each study participant. Information was obtained under components of the questionnaire including socio demographic profile and personal hygiene habits.

General examination of each food handler was performed by the investigator after administering the interview. Personal hygiene was evaluated using a scale of scoring for personal hygiene which was adapted from the Community Medicine Practical Guide by Gaur.<sup>6</sup> Health education on personal hygiene was given to each food handler to improve their personal hygiene and thus ensure food safety.

The data collected data from the completed questionnaires was duly entered into Microsoft excel spread sheet 2015 and transferred to SPSS version 14. Frequencies and proportions were calculated. Pearson's Chi square test was used for analysing association

between the qualitative variables and odds ratio was calculated. P value less than 0.05 was considered significant.

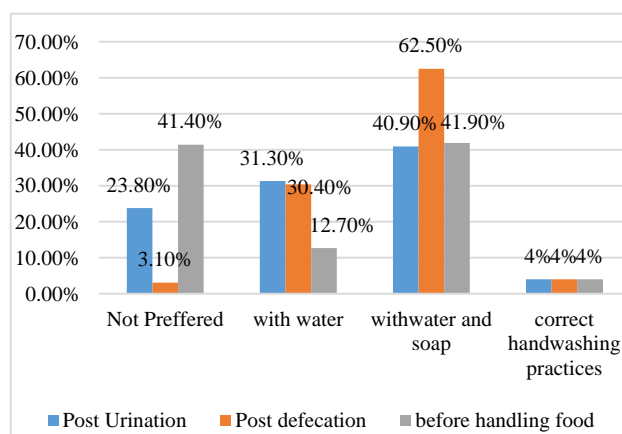
## RESULTS

The total number of food handlers included in the study was 227 from six different categories of food establishments registered under corporation of city Panaji. Out of the 227 study participants, it was seen that majority i.e. 142 (62.55%) were youth between of 21–30 years and majority i.e. 221 (97.4%) were males.

**Table 1: Personal hygiene habits among food handlers.**

Personal hygiene habits	No. of food handlers	Percentage (%)
Daily bath	227	100
Use of head cap	65	28.6
Clean nails	70	30.8
Use of separate foot wear	131	57.7
Use of gloves	77	33.9

With regards to the personal hygiene habits among the study participants, all of them had daily bath. Only 65 (28.6%) of the study participants used head caps while cooking. Only 70 (30.8%) had clean nails at the time of examination. More than half i.e. 131 (57.7%) of the study participants wore separate foot wear at the work place. Only 77 (33.9%) used gloves at the work place (Table 1).



**Figure 1: Hand washing practices among food handlers.**

Majority of the food handlers did not report correct hand washing practices post urination, post defecation & before handling food. 23.8% of the study participants did not report washing hands after passing urine, 31.3% reported washing with water only, 40.9% reported hand washing with water and soap and only 4% reported following correct hand washing practices. It was observed that 3.1% of the study participants did not

report hand washing after defecation, 30.4% report washing with water only and 62.5% reported hand washing with water and soap. Only 4% reported following correct hand washing practices. While 41.4% of the study participants did not report washing hands before handling food and 12.7% reported washing with water only, 41.9% reported hand washing with water and soap and only 4% reported following correct hand washing practices (Figure 1).

**Table 2: Distribution of food handlers according to their personal hygiene.**

Personal hygiene	Sex		Total N (%)
	Males N (%)	Females N (%)	
Good	37 (16.3)	1 (0.4)	38 (16.7)
Fair	108 (47.6)	4 (1.8)	112 (49.4)
Poor	76 (33.5)	1 (0.4)	77 (33.9)
Total	221 (97.4)	6 (2.6)	227 (100)

When the personal hygiene levels were assessed among the study participants, as per the scale of scoring it was observed that majority i.e. 112 (49.4%) had fair personal hygiene, 77 (33.9%) had poor personal hygiene and only 38 (16.7%) had good personal hygiene. Out of the 221 (97.4%) males, majority 108 (47.6%) had fair personal

hygiene, 33.5% had poor personal hygiene and 37 (16.3%) had good personal hygiene. Out of the 6 (2.6%) females, majority i.e. 4 (1.8%) of the females had fair personal hygiene, 1 (0.4%) had poor personal hygiene and 1 (0.4%) female had good personal hygiene (Table 2).

Out of 77 (33.9%) participants who had poor personal hygiene, majority i.e. 65 (28.6%) received no training in food safety, 9 (3.9%) received informal training and a minority i.e. 3 (1.4%) were fully trained but not qualified. None of the qualified and fully trained food handlers had poor personal hygiene.

Out of 112 (49.3%) participants who had fair personal hygiene, majority i.e. 81 (35.7%) received no training in food safety, 21 (9.3%) received informal training, 8 (3.5%) were fully trained but not qualified. Minority i.e. 2 (0.8%) were qualified and fully trained food handlers having fair personal hygiene.

It was observed that majority i.e. 5 (2.2%) of the qualified and fully trained food handlers and 10 (4.4%) of fully trained but not qualified food handlers had good personal hygiene. There was significant statistical association between the personal hygiene of the study participants and the training received in food safety (Table 3).

**Table 3: Association between personal hygiene and level of training in food safety among food handlers.**

Training in food safety	Personal hygiene			Total N (%)
	Good N (%)	Fair N (%)	Poor N (%)	
No training	19 (8.4)	81 (35.7)	65 (28.6)	165 (72.7)
Informal training	4 (1.8)	21 (9.3)	9 (3.9)	34 (15)
Fully trained	10 (4.4)	8 (3.5)	3 (1.4)	21 (9.3)
Qualified & fully trained	5 (2.2)	2 (0.8)	0 (0)	7 (3)
Total	38 (16.8)	112 (49.3)	77 (33.9)	227 (100)

$\chi^2=36.65$ ,  $df=6$ ,  $p=0.000$ .

## DISCUSSION

Food handlers while at work should have clean nails and use gloves while handling food. Only 70 (30.8%) study participants had clean nails at the time of examination and 77 (33.9%) of the study participants used gloves at the work place. Similarly, Singh et al in their study done in North India reported that 34.8% food handlers used gloves while handling food.<sup>7</sup> Deshpande et al in their study on food handlers in Western Maharashtra reported that 32% had clean nails.<sup>8</sup>

Hand hygiene of the food handlers is of utmost importance. Soap and clean water should be made available at all times.<sup>9</sup> Food handlers should wash their hands properly before preparing food and after using toilets.<sup>10</sup> WHO recommends hand washing for 20-30 seconds. In our study, 62.5% reported hand washing with

water and soap and only 4% reported following correct hand washing practices post defecation. However, Mudey et al in their study in a Wardha, reported that 49.38% washed hands with soap and water after visiting toilet.<sup>11</sup> Deshpande et al in their study in Western Maharashtra observed that 42 (58.33%) reported washing hands with soap.<sup>8</sup>

In the present study majority of the food handlers 108 (47.6%) had fair personal hygiene, and 77 (33.9%) had poor personal hygiene. Similar results were seen in a study done by Takalkar et al in Solapur where 32.5% had poor personal hygiene Ansari et al in their study in Aligarh reported 47.5% had satisfactory personal hygiene status.<sup>12,13</sup> Kulkarni et al in their study in Bangalore reported that 16.8% had good personal hygiene status as per 10 point scoring system.<sup>14</sup>

## CONCLUSION

Personal hygiene levels among the food handlers were found to be sub-standard. In our study we observed that there was significant association between the personal hygiene of the study participants and the training received in food safety. These findings emphasize the importance of pre-employment training and periodic training in personal hygiene and food safety to be given to the food handlers.

The findings of this study indicate that it is essential to create awareness among the food handlers regarding importance of maintaining good personal hygiene and food hygiene so as to ensure food safety.

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## REFERENCES

1. Mohan V, Mohan U, Lakshman D, Manohar L. An evaluation of health status of food handlers of eating establishments in various educational and health institutions in Amritsar city. *Indian J Community Med.* 2001;26(2):80–4.
2. WHO. Food safety: What you should know. New Delhi: WHO; 2015: 3- 27.
3. Tjoa Ws Dupont HL, Sullivan P, Pickering LK, Holguin AH, Olarte J. Location of food consumption and travellers diarrhoea. *Am J Epidemiol.* 1977;106:61–6.
4. WHO. WHO's first ever global estimates of foodborne diseases. World Health Organization; 2015. Available at: <http://www.who.int/media/centre/news/releases/2015/foodborne-disease-estimates/en/>. Accessed on 9 December 2015.
5. Sharif L, Obaidat MM. Food Hygiene Knowledge, Attitudes and Practices of the Food Handlers in the Military Hospitals. *Food Nutr Sci.* 2013;4:245–51.
6. Gaur KL, Soni SC, Rajeev Y. *Community Medicine Practical Guide and log book.* 1st ed. New Delhi: CBS publishers; 2014: 20.
7. Singh A, Chaudhary V, Agarwal K, Joshi HS, Narula K, Chandra R. Study of sociodemographic characteristics and awareness about personal hygiene among the food handlers. *Int J Med Sci Public Heal.* 2015;4(9):2–7.
8. Deshpande JD, Phalke D. The sanitary condition of Food Establishments and Health status and personal hygiene among Food handlers in a rural area of Western Maharashtra. *Asian J Med Sci.* 2013;4(2):23–9.
9. Dudeja P, Singh A, Kaur S. *Food safety implementation from farm to fork.* New Delhi: CBS publishers; 2016: 297-302.
10. Ministry of Health and Family welfare (Food Safety and Standards Authority of India) Notification New Delhi. Available at: [http://www.fssai.gov.in/Portal/0/Pdf/Food safety and Standards \(Licensing and Registration of Food business\) regulation, 2011.pdf](http://www.fssai.gov.in/Portal/0/Pdf/Food%20safety%20and%20Standards%20(Licensing%20and%20Registration%20of%20Food%20business)%20regulation,%202011.pdf). Accessed on 29 December 2016.
11. Mudey AB, Kesharwani N, Gargi AB, Goyal RC, Dawale AK, Wagh VV. Health Status and Personal Hygiene among Food Handlers Working at Food Establishment around a Rural Teaching Hospital in Wardha District of Maharashtra, India. *Glob J Health Sci.* 2010;2(2):198–206.
12. Takalkar AA, Kumavat AP. Assessment of Personal Hygiene of Canteen workers of Government Medical College and Hospital, Solapur. *Natl J Community Med.* 2011;2(3):2–5.
13. Ansari MA, Khan Z. An Evaluation of Health Education Intervention on Hygienic status of food handlers in Aligarh - A three years experience. *J community Med Heal Educ.* 2012;2(4):1000142.
14. Kulkarni P, Masthi N. Personal hygiene and health status of food handlers in a Medical college Hostel, Bangalore. *Karnataka J Community Heal.* 2010;21(1):1–8.

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