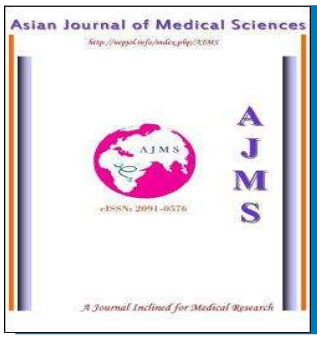

THE SANITARY CONDITION OF FOOD ESTABLISHMENTS AND HEALTH STATUS AND PERSONAL HYGIENE AMONG FOOD HANDLERS IN A RURAL AREA OF WESTERN MAHARASTRA, INDIA

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[1]Jayant D. Deshpande, [2]Deepak B Phalke. [1]Professor, [2] Professor and Head, Department of Preventive and Social Medicine, Rural Medical College, Pravara Institute of Medical Science, Loni, Maharashtra, India.

CORRESPONDENCE:

Jayant D. Deshpande
Professor;
Department of Preventive and Social Medicine
Rural Medical College,
Pravara Institute of Medical Science, Loni,
Maharashtra, India
Phone: +919762601050
E-mail: drjayant10@gmail.com

"There is need of hygienic food handling and preparation practices in public food establishments to safeguard the health and well being of the consumers"

ABSTRACT

Background: Foodborne disease occurs in mass catering establishment that is not complying with sanitary and hygienic food handling and preparation.

Objective: Objective of the present study was to explore the status of sanitary condition of food establishments and to assess hygienic practices among food handlers.

Material and Method: A cross-sectional study design was used to assess the sanitary condition of food establishments and personal hygiene of food handlers. Data was collected with the help of structured and pre-tested questionnaires. The questionnaire also allowed the interviewers to record their observations. All the data obtained was entered into Microsoft Excel and analyzed using the software StatistiXL version 1.8.

Result: Separate kitchen and Onsite solid waste storage containers/receptacles were available in 4(16%) establishments. Provision for heating devices for cooked food was available in 5(20%) establishments. Wash basin present with soap were available in 10 (40%) of the food establishments. Sweeping and washing floor with water and disinfectant was done in 8(32%) food establishments. Male and female food handlers' have equal percentage of morbidity and this difference was not statistically significant ($\chi2=0.0329$, $p=0.84$), but anaemia was significantly higher among female food handlers ($\chi2=6.30$, $p=0.01$). Poor hygienic practices were significantly associated with presence of infectious diseases like ARI, diarrhoea, dysentery and skin infections. ($\chi2=5.71$, $p=0.017$). **Conclusion**: Food establishments in the study area were found to have poor sanitation and were not maintained well. The health status and the level of personal hygiene of the food handlers in the eating establishments were found to be unsatisfactory**.** There is need of enforcement of sanitary provisions and educating the food handlers about personal hygiene.

Key-words: Food Establishments, Sanitary Condition, Food Handler, Hygiene

INTRODUCTION

During the early 21st century, food borne diseases can be expected to increase, especially in the developing countries, in past because of environmental and demographic changes. These vary from climatic changes, changes in microbial and other ecological systems, to decreasing fresh water supplies. Illness resulting from eating contaminated food is perhaps the most widespread health problem in the contemporary world. Contamination of food is serious health problem. Food handlers with observable infections (such as skin and respiratory infections) handle and prepare foods.[1] There has been a growing demand for eating places and as a result, a large number of eating establishments have mushroomed all over which are manned by different categories of workers.[2] Growing urbanization and lifestyle changes lead people to dine away from home more often, contributing to the unregulated opening of eating establishments that often have inadequate hygiene conditions. In India the aspect of routine medical examination of food handlers varies considerably amongst health authorities especially at local government level. Some enforce it, while others do not require it at all. Regular monitoring and surveillance by health authorities and management of the food handling process are, however, crucial elements in the prevention of food borne diseases.[3] Food handling, preparation, and servicing practices are important factors in determining the safety of food. With this background in mind the objective of the present study was to explore the status of sanitary condition of food establishments and to assess hygienic practices among food handlers.

MATERIALS AND METHODS

A cross-sectional study design was used to assess the sanitary condition of food establishments and health status of food handlers. The study units were all food establishments regardless of their licensing status. Data was collected with the help of structured and pre-tested questionnaires. The questionnaire also allowed the interviewers to record their observations. Questionnaire items included the presence and/or nature of the floor; roof; walls; doors, windows and other openings. Type of establishments, sanitary facilities, waste management, food storage, fruit and vegetable washing and the personal hygiene of food handlers and health status of food handlers were the main variables used. Food handler is any person who handles food, regardless whether he actually prepares or serves it. Practices such as handling of food, place of preparation of food, personal hygiene, environmental conditions, methods of washing utensils and preservation methods of food were studied. The facilities assessed were availability or lack of hand washing facilities, running water, soap, towels and disposal of waste. Privacy and confidentiality of data was maintained at all stages of the study. The study sample comprised the food-handling personnel employed at these establishments. The food handlers were approached through their managers of the concerned hotel. Food handlers of each hotel were approached informally to explain the nature of study. Each food handler was interviewed to derive information regarding medical history. The past history was restricted to 3 months to facilitate better recall. Detailed physical examination was carried out for all food handlers.

STATISTICAL ANALYSIS

All the data obtained was entered into Microsoft Excel and analyzed using the software StatistiXL version 1.8. Descriptive statistics, such as frequency distribution and percentages were employed for the analysis. Chi square test was used as test of significance.

RESULT

A total of 25 food establishments, rendering meals daily (breakfast, lunch and dinner) were identified in the study. The median years of service of the establishments were three years, ranging from six month to twenty years. Piped water was the only source of water supply for all establishments.

Table 1 Status of sanitary facilities in food service establishments

Variables	Number	Percentage
Separate kitchen	04	16.00
Rat proof kitchen premises	04	16.00
Kitchen drainage	17	68.00
Open disposal of Waste	10	40.00
Wash basin present with soap	10	40.00
Provision for heating devices for cooked food	05	20.00
Adequate ventilation	16	64.00
Rat-proof and fly-proof premises	04	16.00
Sweeping and washing floor with water and disinfectant	08	32.00
Refrigerator for storage raw material	12	48.00
Daily cleaning the drinking water container	08	32.00
Availability of latrine	09	36.00
Exhaust Facility/Smoke Outlet	15	60.00
Same water container used for washing utensils	08	32.00
Washing of vegetables before cooking	20	80.00
Availability of water Filters	05	20.00
Separate vessel with long handle for water withdrawal of drinking water from container/ Tap	18	72.00

Separate kitchen and Onsite solid waste storage containers/receptacles were available in 4(16%) establishments. Provision for heating devices for cooked food was available in 5(20%) establishments. Wash basin present with soap were available in 10 (40%) of the food establishments. (Table 1)

In some of the food establishment's food preparation areas were unclean and not well repaired. Ineffective washing techniques, improper handling and storage of clean utensils, rare changing of water used for washing plates, and use of dirty clothes to wipe and dry plates were some of the common practices in these food establishments. Sweeping and washing floor with water and disinfectant was done in 8(32%) food establishments at the beginning and end of business hours. It was observed that 8(32%) food establishments washed their utensils with dirty water which was recycled and used severally. Some of the establishments 10(40%) openly disposed of their waste, water/sullage generated from hand washing and dishwashing. .

Seventy five food handlers (22 females and 53 males) were included in the study. Of all the participants, 45.33% of respondents were below 30 years of age and only 3 (4 %) respondents were above 60 years. Their median age were found to be 25 years with a minimum age of 12 and a maximum of 61 years. The educational levels, age category and type of work performed were shown in (Table 2).Only 16 (21.33%) were educated high school and above. A large fraction 26(34.66 %) were cooks followed by 22 (29.33 %) waiters, and 18 (24%) were dish washers. (Table 2) Majority of the food handlers were earning around 1500 – 3000 rupees per month

According to the length of service, majority 72% of food handlers were having experience of between 1-5 years.

Table 2 Socio-demographic characteristics of food handlers

Age	Number	Percentages
<14	3	4.00
15-30	31	41.33
31-45	22	29.33
45-60	16	21.33
>60	3	4.00
Sex		
Male	53	70.66
Female	22	29.33
Marital status		
Married	48	64.00
Unmarried	27	36.00
Occupation		
Cook	29	38.66
Waiter	19	25.33
Dish washer	18	24.00
Helper	09	12.00
Education		
Illiterate	07	9.33
Primary	32	42.66
Secondary	20	26.66
High-school and above	16	21.33
Service year		
<1 years	09	12.00
1-5 years	54	72.00
Above 5 years	12	16.00

In present study, 16 (21.33%) of the food handlers were free from any of the common addictions. However the percentage of food handlers with one or more addictions is high. Majority of the food handlers were habituated to more than one habit (54.66%) was mostly found to be both smokers as well as alcoholics. In hand washing practices, 42 (58.33%) food handlers had a habit of washing of hand with soap. Very few number, 15 (20%) of food handlers had a habit of hand washing after touching dirty materials and different body parts (hair, nose and ear) between handling of food items. It was observed as the education level increased the proper hand hygienic practices also improved. This difference in the distribution of educational status regarding to hand hygienic practices was statistically significant ($\chi 2=8.19$, $p=0.004$).

Table 3: Addictions and personal hygiene practices of food handlers

Practices of food handlers	Total no.	Percentages
Addictions		
Chewing dry tobacco with lime	34	45.33
Betal chewing	09	12.00
Smokers	22	29.33
Consuming alcohol	27	36.00
Mixed/double habits	41	54.66
No addiction	16	21.33
Personnel hygiene		
Use of separate cloth	12	16.00
Use of Head cover/cap	4	5.33
Not Using of Head cover/cap	71	94.67
Tidy hair	28	37.33
Clean nails/Fingers nails cut short	24	32.00
Use of footwear	9	12.00
Washing of hand With soap	42	58.33
With water and ash	06	8.33
Washing of hand with only water	24	33.33
Washing of hand before Food preparation	14	18.66
Washing of hand after handling dirty equipment, utensils, or cloths, touching body	15	20.00

In present study, anemia and dental caries were the most common disorders among the food handlers, followed by febrile illness and gastroenteritis. Regarding the morbidities in past three months, 14 (18.66%) subjects had suffered from febrile illness,

11 (14.66%) cough / cold / sore throat, 09(12.00 %) diarrhoea / dysentery and 09 (12.00%) skin infections. It is also evident that only 08 (10.67%) had undergone a pre placement examination while rest 67 (89.33%) had not undergone any such examination. Male and female food handlers' have equal percentage of morbidity and this difference was not statistically significant ($\chi2=0.0329$, $p=0.84$), but anaemia was significantly higher among female food handlers ($\chi2=6.30$, $p=0.01$). Poor hygienic practices were significantly associated with presence of infectious diseases like ARI, diarrhoea / dysentery and skin infections. ($\chi2=5.71$, $p=0.017$). In relation to length of service and presence of morbidity difference was not statistically significant ($\chi2=0.47$, $p=0.94$).

Table 4: Health status of food handlers

Health Status among food handlers	Total no.	Percentages
Dental caries	29	38.66
Anemia	25	33.33
Febrile illness	14	18.66
Acute respiratory infections (A.R.I.)	11	14.66
Diarrhea/Dysentery	09	12.00
Hypertension	07	9.33
Diabetes mellitus	01	2.66
Injuries (Mechanical / Burns)	08	10.66
Skin infections	09	12.00
Pain in abdomen / Acidity	14	18.66
Health examination		
Pre employment examination	8	10.67
No Pre employment examination	67	89.33
Periodic examination	7	9.33

DISCUSSION

An adequate supply of safe, wholesome and health humans. The consumption of contaminated or unsafe foods may result in illness, also referred to as food borne disease.[4] In recent years, due to changing lifestyle, breakdown of joint family system and increase in number of working women has led to consumption of *ready to eat* foods. The individuals may be able to satisfy their taste and nutrition needs, but pays little attention to hygiene and food safety.[5] This dictates the need to ensure hygienic food handling and preparation practices in such public food establishments to safeguard the health and well being of consumers. The poor standard of food hygiene practice in soiled dish and glass washing facilities was significant and comparable with similar studies done elsewhere.[1, 6,7] Unfortunately, the premises of mass catering do not have all the necessary basic sanitary amenities required for production of safe food. Studies conducted in Zeway and Addis Ababa revealed that poor repair condition of premises, inadequate sanitary facility, improper waste management and inadequate client's hand washing basin and utensil washing sinks were common features of catering establishments. [1, 7] In The present study, maximum number (45.33% %) of food handlers was below 30 years of age and majority (70.66%) of food handlers were males. In a similar study from Karnataka, it was observed that only 9 (2.72%) respondents were above 50 years and there were 93.68% of males working in the hotels.[8] The high level of morbidity in food handlers could probably be due to poor environmental conditions, poor personal hygiene and low socio-economic status. Rathore observed that 25.33% of food handlers suffered one or the other illness in the past six months.[9] Another study done in Zeway and Awassa showed that the prevalence of intestinal parasitic infection and some obvious form of active skin and respiratory infection among food handlers were 14.8% and 63% respectively.[1,10] In our study, majority of the food handlers were having one or other habit. The common habits among the food handlers were tobacco chewing and mixed habit. The findings in

the study at Bijapur done by Udgiri, et al.showed that 44.58% had no habits, 25.30% had mixed habits, 16.87% chewed tobacco and 07.23% smoked.[8] In a study conducted in Amritsar, it was observed that 53.74% food handlers were smokers, 24.30% consumed alcohol daily, 11.20% had habit of chewing tobacco, 10.74% were chewing betal leaves and 31.72% had double habituation.[2] Keep hands clean, fingernails short, wear clean working garment and hair cover are some of the precautions that a food handler must maintain. But in the present study food handler's practice towards personal hygiene and sanitary food handling is found unsatisfactory. Only few Food handlers had practices of hand washing after touching dirty materials and different body parts between handling of food items. These reflected that food handlers lack awareness about food contamination with poor hygienic practices. Present study showed that only 8 (10.67%) had undergone a pre-employment medical examination while none of them had such an examination done in a study done by Abera et. al.[11]

LIMITATIONS

Present study is having some limitations as laboratory investigations and assessment of carrier status of food handlers was not done. Although the sample size seems to be smaller, it could be generally concluded from this study that there exist gross insanitary practices in food hygiene among the study units.

CONCLUSION

Food establishments in the study area were found to have poor sanitation and were not maintained well. The health status and the level of personal hygiene of the food handlers in the eating establishments were found to be unsatisfactory**.** There is need of enforcement of sanitary provisions and educating the food handlers about personal hygiene. Food handlers should receive medical check ups and awareness with regard to food and personal hygiene needs to be created among the workers and the management of the eating establishments.

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