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Original Research Article

COVID-19 appropriate health and hygiene practices among food handlers: an experience from therapeutic kitchen of a dedicated COVID hospital of Bhubaneswar, Odisha, India

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The health and hygiene practices of food handlers' are an indicator of the overall food hygiene and are indirectly linked with patients' safety. WHO recommends that staff working in food sector need to be aware of the symptoms of COVID -19 as well as the various COVID-appropriate behaviour. The study was undertaken with an aim to determine the health and hygiene practices of food-handlers involved in preparation of patient diet and to assess their knowledge of COVID-19 appropriate behavior. A cross-sectional study was done among 75 food-handlers, of a therapeutic kitchen, at a COVID Hospital; Using a study tool with 3 sections- socio-demographic details, food-handler's knowledge about COVID-19 and a checklist to assess their practices; data was entered and analyzed using Microsoft excel spreadsheet and Epi-Info software-version7.2.4.0.Of the 75 respondents 94.6%were males, mean age was 30.88 ± 10.3yrs SD.5.33% had suffered from COVID. 77.33% used masks properly, 70.67% practised hand-washing and 46.67% physical distancing. 96% said they were satisfied with measures taken for prevention at workplace. 93.33% had knowledge on COVID appropriate behaviour. It was concluded that the sampled population had a proper knowledge on COVID appropriate behaviour. The people not practising the same were identified and counselled, thus improving their hygiene and sanitation practices.

Keywords: Food-handler, food safety, COVID-19, hospital, therapeutic kitchen

INTRODUCTION

The world went through an unprecedented threat and uncertainty during COVID-19 pandemic, with almost all nations facing two waves, with phases of lockdown and shutdown. World Health Organisation (WHO), provided guidelines on nutrition and food safety during the COVID-19 pandemic for governments, food businesses, health workers and the general public, to maintain good health and prevent malnutrition in all its forms (Nutrition and Food Safety and COVID-19, 2020; World Health Organization: WHO, 2019;*WHO "Golden Rules" for Safe Food Preparation*, n.d.).

Food safety and access to safe and nutritious food is of key importance in a hospital, where patients are at greater risk of falling ill with food borne diseases. *A food handler is anyone who handles packaged or unpackaged food directly as well as the equipment and utensils used to prepare or*

serve food and/or surfaces that come into contact with food. The food handlers in a tertiary hospital are no different from this except that each handler has a specific role and responsibility which in a way determines their level of interaction with patients and exposure to contaminant(Hamed and Mohammed, 2020).This responsibility was multiplied many times at the time of the pandemic, where the food handlers employed in the therapeutic kitchens of hospitals had to continue with their work, inspite of the fact that most establishments were shutdown because of the pandemic scenario.

Even though COVID-19 is not food borne, improper food handling can lead to infection, and food handlers can spread the virus. COVID-19 genetic material has been isolated from stool samples of infected patients, but this as a potential route of transmission was still uncertain (Guo et al., 2021). Fortunately, the measures for preventing food contamination are very simple and may be applied by anyone who handles food, by following easy rules for hygienic food handling (WHO "Golden Rules" for Safe Food Preparation, n.d.; Habte et al., 2022) .

Food safety is of paramount importance in a hospital, where patients, who are already sick, carry greater risk of food borne illness. Proper hygiene and sanitation practices, is hence of paramount importance. The responsibility of a hospital food service department is to provide nutritious and safe food. The health and hygiene practices of food handlers being an indirect indicator of the overall management of food hygiene, is linked with the patients safety. In the times of a pandemics like COVID -19, the food department personnel, do not have an opportunity to work from home and are required to work in their usual workplaces no matter whether it is COVID care hospital or a tertiary care hospital. Keeping all workers in food production and supply chains healthy and safe is critical to surviving such pandemics (Australian Institute of Food Safety, 2023).

WHO recommended that staff working in food sector need to be aware of the symptoms of COVID -19 as well as the various COVID-appropriate behaviour (Nutrition and Food Safety and COVID-19, 2020). Although such guidelines were made, but whether such guidelines were implemented and the staff were aware was not researched. Keeping this in view the study was planned with the objectives to determine the health and hygiene practices of food handlers involved in preparation of patient diet and to assess their knowledge of COVID-19 appropriate behavior.

METHODOLOGY

Using a cross-sectional study design, the study was carried out in a Dedicated COVID Hospital (DCH) of Bhubaneswar between October 2020 to December 2020 to assess the food safety and handling of food in the kitchen. After receiving due ethical clearance from the institutional ethics committee, the food handlers of the therapeutic kitchen of the DCH, were invited for a health checkup and assessment camp as part of the routine health checkup during the pandemic. A total sample of 75 staff participated. An attempt was made to include various level of food handlers associated with the management of the kitchen. The study population sampled was as follows: Service Boy (n=40), Cook (n=11), Assistant Cook (n=10), Manager (n=7), others (n=7).

Study setting/Area: was a therapeutic kitchen of a dedicated COVID Hospital (DCH)

Study design: cross-sectional study

Study population and participants: Food handlers of the therapeutic kitchen of DCH

Inclusion criteria- Food handlers willing to participate in the study, those present on the day of health and hygiene check-up camp, and giving informed written consent

Exclusion criteria- none

Sample Size Determination: in view of the ongoing pandemic situation, all staff involved in food handling in the therapeutic kitchen were invited for a free health check-up camp. A total of 75 people came and gave consent and comprised the sample size**.**

Sampling Procedure: Convenience sampling

Instrument: was a researcher-made interview schedule with 3 sections - socio-demographic details, food-handler's knowledge about COVID-19 and a checklist to assess their practices (Australian Institute of Food Safety, 2023; *Food and Agriculture Organisation*, n.d.; Oteri and Ekanem, 1989;Singh et al., 2015; Shahbaz et al., 2020).

Data collection method

The food handlers of the therapeutic kitchen of the DCH were invited for a health checkup and assessment camp as part of the routine health checkup during the pandemic. A total sample of 75 staff participated. An attempt was made to include various level of food handlers associated with the management of the kitchen. The participants were informed about the study, consent taken and then interviewed. They were given health education followed by their regular check-up. All queries were cleared one to one during the interview.

Data analysis

Data were entered and analyzed using Microsoft excel spreadsheet and Epi-Info software-version7.2.4.0. Descriptive statistics of mean, standard deviation, frequency and percentage was used.

Ethical considerations with study approval number indicated:

The study was approved by the Institutional Ethics Committee of the institute, vide letter number

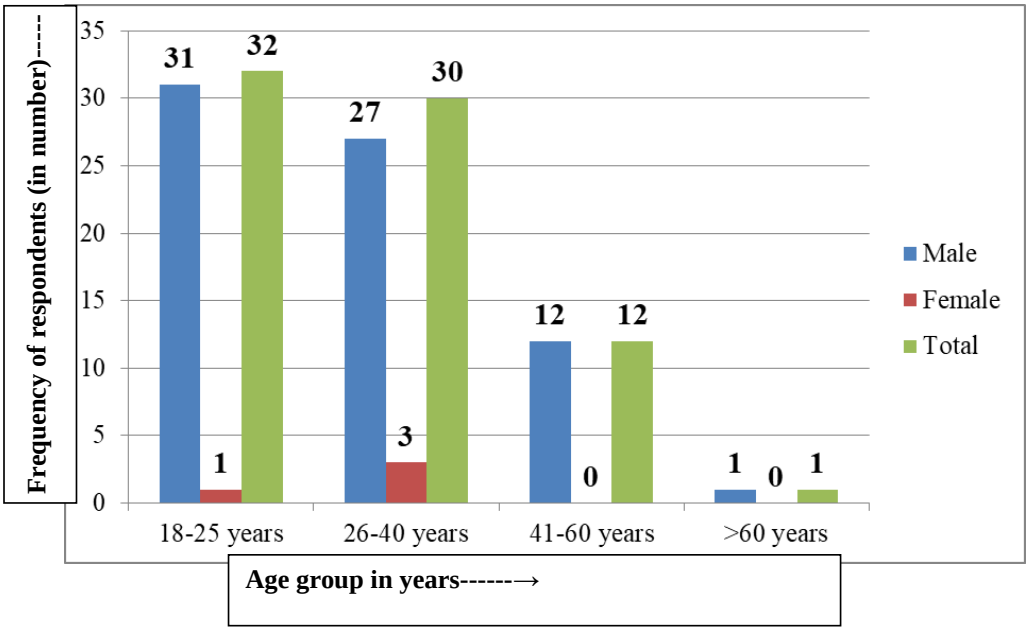

Figure 1: Age and gender characteristics of study respondents [N= 75]

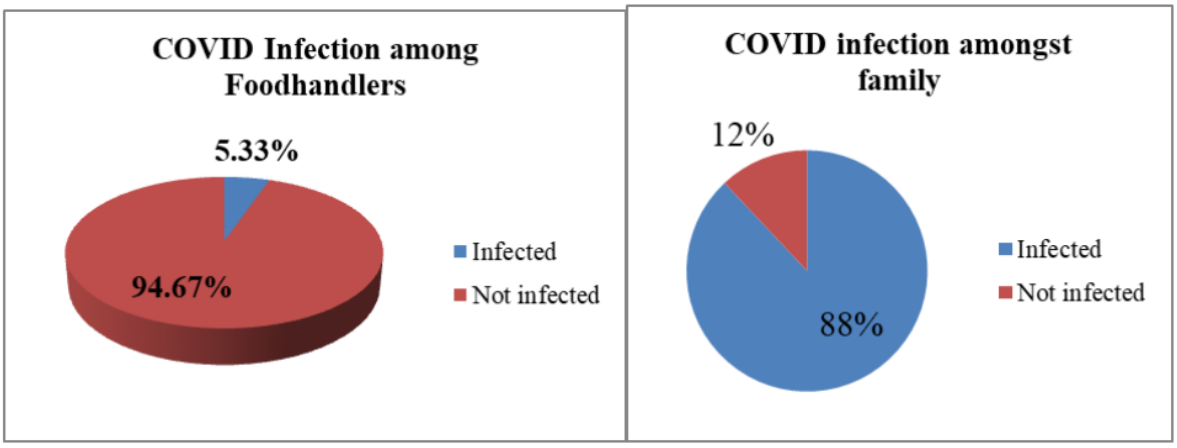

Figure 2: COVID-19 infection Status of Food Handlers' and family

. KIIT/KIMS/EC/685/2021.

RESULTS

The mean age of the study participants was 30.88 ± 10.3yrs SD, [range 18 to 73 years]; majority (94.6%) were male(Figure 1).

In Figure 2 about 5.33% of the staff had suffered from COVID-19 and around 88% of them reported that atleast one of their family members had suffered from COVID. As few as 8 (10.67%) were staying with their family, while the rest stayed in the staff quarters; but they too, due to the uncertainty of the prevailing pandemic, preferred not to go home, with a fear to infect their families.

The sampled population had a varied presentation on the knowledge about COVID- 19 and its manifestations (Table 1).

Table 2 depicts the knowledge of the respondents about food safety during COVID-19. As high as 96% food handlers felt that using alcohol based sanitizers could effectively reduce the risk of infection.

Table 3 describes the practices of food handlers during COVID-19 pandemic. Around 70.67% food handlers washed and sanitized their hands more frequently than before. 96 % food handlers reported that they were updated with the information regarding COVID appropriate practices at workplace. 88.1% did not use gloves during food distribution and 61.7% did not use mask or apron when necessary. All respondents affirmed no-use of masks while washing food items or utensils (61.7%).

On probing the participants about how satisfied they

Table 1. Knowledge of respondents regarding COVID-19 [N=75]

Knowledge of COVID-19	Frequency (n, %)
COVID-19 is a disease caused by virus	72 (96.00)
Fever, cough, sore throat, breathing problems are common symptoms of this disease	71(94.67)
COVID-19 can be fatal	72 (96.00)
COVID-19 virus can spread by close contact with infected persons	66 (88.00)
COVID-19 can spread via respiratory droplets	52 (69.33)
Patient with diabetes, cardiovascular disease, and asthma are at a higher risk of infection	51 (68.00)

Table 2. Knowledge of respondents about food safety during COVID-19[N= 75]

Knowledge on food safety# [#Correct responses]	Frequency n(%)
The virus can stay on the packaging material for long time	67(89.33)
This virus can survive at freezing temperature	55(73.33)
Heating foods (70ºC for 2 minutes or equivalent) is required to kill pathogens.	66 (88.00)
Alcohol-based disinfectants can effectively reduce infectivity of the virus	72 (96.00)
Ultraviolet rays is effective against COVID-19	52 (69.33)
Pasteurization can kill the virus	63 (84.00)

Table 3. Practices for enhancement of food-safety measures during COVID-19 [N-=75]

Questions on Practices for enhancement of food-safety measures during COVID-19 (correct responses)	Desirable practices n (%)
Do you wash and sanitize your hands more frequently than before?[Yes]	53 (70.67)
Are you updated with the information regarding COVID appropriate practices at workplace? [Yes]	72 (96.00)
Do you touch your eyes, nose or mouth while handling food and food packages?[No]	70 (93.33)
Do you observe physical distancing? [Yes]	35 (46.67)
Do you wear mask outside the kitchen?[Yes]	58 (77.33)
Do you touch foods in empty hands in the production line?[No]	56 (74.67)
Do you change your mask after coughing and sneezing inside the kitchen?[Yes]	39 (52.00)

were with their current job, during this prevailing pandemic, most of (48.5%) wanted to change their profession, as they felt that while the whole world was safe at home, they had to come for work. Around 95.3% wanted to change their current job if given better option, with the on-going pandemic. However 64.3 % affirmed that the employer provided facilities to ensure food safety and they shared their problems with their heads of department.

DISCUSSION

In the current study, done amongst the food-handlers working in a therapeutic kitchen of a dedicated COVID hospital, the mean age of the study participants was 30.88± 10.3yrs SD (range 18yrs-73years). However in a study done by Akabanda et al. (2017), the mean age was found to be 41.5 ± 9.5yrs (41-50years). The reason for this difference in the mean age of the two groups may be due to the fact that the former study had included all staffs working irrespective of age while the later study had only respondents between the age group of 41-50 years.

Majority(94.6%) of the food handlers were males in the present study; while in a study done by Akabanda et al. (2017), of the 235 food-handlers who participated in this study, 76.6% (n = 180) were females. This difference can be attributed to the geographical differences and the sex-preferential occupational practices as both studies were done in different countries.

In this study 96% of the respondents knew that COVID-19 was caused by a virus, while 88% knew that it spread by close contact with infected persons. In a study done by Habte et al., (2022), as high as 98.3% reported the same. These differences could be due to the differences in the set-up where the studies were carried out. While the former study was done in a dedicated COVID hospital, the latter was done in multiple licensed quarantine centers, later during the pandemic time.

In the present study 89.33% of the respondents knew that the virus would remain alive on the packaging material for a long time; In a study done by Osaili et al. (2022), only 75.5% believed the same. This difference could be due to the reason that while the former staff were working in a dedicated COVID hospital their awareness and knowledge could be better in comparison to the later where the food handlers worked in a home based online food business.

In this study 70.67% believed that sanitizing more frequently and hand washing could prevent transmission of COVID-19. In the study done by Habte et al. (2022), 86.3% practiced high level of cleaning and sanitization of food and contact surfaces. This difference could be due to the difference in their previous practices too. While the former

food handlers worked in a therapeutic kitchen attached with a hospital, their previous and current practices wouldn't be of much difference.

Being a single center study done in a dedicated COVID hospital attached to a tertiary care center the knowledge and practices of the food handlers could be better in comparison to the general food handlers working in various other levels of healthcare and categories of hospitals. Based on self-reporting of knowledge and practices, there may have been chances of respondent bias.

CONCLUSION

The sampled population had a proper knowledge on COVID appropriate behaviour. The practice of COVID-19 appropriate behaviour was satisfactory in comparison to the appropriate knowledge of the same. The people not practising the same were identified and counselled, thus improving the hygiene and sanitation practices of the food handlers of the therapeutic kitchen.

The prevailing pandemic, posed a growing work dissatisfaction, which although was not a part of the study objective, but still came into light. The management was informed and stress relieving sessions were later arranged, to take care of the mental health of the food-handlers.

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Author's contribution

Dr Ansuman Kar **–** concept, design, definition of intellectual content, literature search, data collection, data analysis, manuscript preparation, editing and review.

Dr Ipsa Mohaptara **-** concept, design, definition of intellectual content, literature search, data collection, data analysis, manuscript preparation, editing and review.

Dr. Smruti Ranjan Nayak- concept, design, definition of intellectual content, manuscript preparation, editing and review.

Dr Basanta Kumar Behera- concept, design, definition of intellectual content, manuscript preparation, editing and review.

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