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HYGIENIC PRACTICE AND KNOWLEDGE OF FOOD BORNE DISEASES IN HOME KITCHEN HANDLERS

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ABSTRACT

Background: Food borne illness cases may occur due to improperly prepared or mishandled food, unhygienic sanitation and cleaning practice at home by home kitchen handlers.

Objective: Objectives of the study was to explore the knowledge and practice of literate female of Indore city who are dealing with Home kitchen every day.

Methodology: A Cross-Sectional study among 160 participants according to their profession (Health sector workers, Non-health sector workers, House Makers and Students) were selected randomly and interviewed using self administered questionnaire.

Result: It shows that the mean percentage score for the good knowledge and hygienic practice was 79.44% and 71.15%. Knowledge practice scores was significantly ($p < 0.0006$) different by the levels of education and for Hygienic practice a significant difference ($p < 0.05$) was observed between Health and Non-Health sector worker.

Conclusion: Knowledge and Practice among kitchen handlers was significantly ($p = 0.0202$) higher in Health sector workers than other sectors.

Keywords: Hygiene, food born disease, kitchen, knowledge, practice

INTRODUCTION

Food safety is a scientific discipline describing handling, preparation and storage of food in ways that prevent food borne illness[1].

Food borne illnesses are usually infectious or toxic in nature and caused by bacteria, viruses, parasites or chemical substances entering the body through contaminated food or water. Unsafe food poses global health threats, endangering everyone. Infants, young children, pregnant women, the elderly and those with an underlying illness are particularly vulnerable. Food borne diarrheal disease kills an estimated 2 million people annually, particularly in developing countries[2].

According to Food Net, the United States' food safety report card, significant progress had been made toward decreasing food borne illnesses caused by key pathogens, except Salmonella[3]. This decline is good news, but this rate is still higher than Healthy People 2020 goals[4].

Many food borne illness cases and their associated economic costs may occur due to the mistake held by home kitchen handlers[5] such as improperly prepared or mishandled food, unhygienic sanitation and cleaning practice at home[6]. Food Handlers play a major role in transmitting pathogens passively which leads to carry some human specific food borne pathogens such as Hepatitis A, nor viruses,

Salmonella typhi, Staphylococcus aureus and Shigella species in their hands, cuts or sores, mouth, skin and hair. Food handlers may also shed E. coli O157:H7 and non-typhoid Salmonella during the infectiousness period of a gastrointestinal sickness[7]. Not all food handlers understand the roles they must play, such as adopting basic hygienic practices when preparing food to protect their health and that of the wider community[2].

In this background an attempt was made to study knowledge associated with food borne diseases, personal hygiene and assessing practice associated with food safety and kitchen sanitation of literate female in Indore city who are dealing with Home kitchen every day. Home Kitchen Handlers were selected according to their education and professional sector.

MATERIAL AND METHOD

Research Design and Location

A Cross-Sectional Study was carried out over a period of 6 months from March to September 2015 on literate female who were home kitchen handlers.

Jawahar Marg, Indore the study area was selected randomly by lottery method from the chief electoral officer, Madhya Pradesh[9] list of areas of Indore city. A total of 160 literate female who were home kitchen handlers selected in four groups according to their current profession as Health sector workers, Non-health sector workers, House makers and Students in 40 equal numbers.

Participants who were directly associated with cooking (cooks), handling of cooked food (Stewards) and cleaning of kitchen utensils (Dishwasher) were only included from the study area. All Home kitchen handlers were asked to complete the questionnaire by themselves (Self completed questionnaire).

Targeted Population, Settings and Instruments for getting the Information

Home kitchen handlers of Jawahar Marg, Indore were the targeted population for this study. Modified L. Sharif et al[7] and World Health Day 2015 Quiz[8] questionnaire for knowledge and practice of the food handlers was used.

The questionnaire consisted of 23 questions in two parts. Part one included 10 questions about the knowledge; part two included 13 questions about their practice. All questions about knowledge and practice were scored on 4 point scale (0 to 3) with options of [Strongly Agree, Agree, Not Sure, Dis-Agree] options. Questions about practice were scored on a four point scale (0 to 3) with options of [Always, Sometimes, Rarely, Never]. The direction of scale was (3 to 0) and reversed to (0 to 3) for some questions to check the validity of the responses. For dichotomous classification the scores less than 2 was categorized as a negative response (Answering Incorrect) while the scores 2 and 3 were categorized as a positive response (Answering Correct).

The questionnaire stated clearly to the participants that the information will be used only for scientific purposes and verbally consent was taken from all participants.

Data Analysis

A variable file was created on MS Office Excel 2010. The 4 point score for the variables were ranged from 3 to 0. The mean score of each question was transformed into percentage score (dividing that score by 3, the highest possible score then multiply by 100%) to simplify the presentation and interpretation of the results.

Descriptive statistics were performed for each question of knowledge and practice and overall knowledge practice mean percentage score.

One way ANOVA test was used to compare the Knowledge and Practice among Education level, Profession of the Home Kitchen Handlers (Health sector workers, Non-health sector workers, House Makers and Students) and Working hours in kitchen. Tukey HSD Post HOC test[10] was used after ANOVA to identify significant difference between the two populations.

The *t*-test was used to compare the mean score of knowledge and practice according to Family Status (nuclear and joint/extended) in which they belong.

The responses were also reclassified into two categorical responses yes and no (correct and incorrect response). The rate of correct responses for each question was then described.

RESULT

According to profession, four groups with 40 participants in each were selected who were kitchen handlers with Age ranged between 17 to 65 years with mean age of 30.38 ± 10.03. Where, 75 % were graduates/ post-graduates with 61.25% of participants were living in nuclear families. In which more than half of the participants were spending (<1 - 2) hours in kitchen.

Home kitchen handler's knowledge was high with the mean percentage score of 79.44% ± 13.29%. They demonstrated excellent knowledge in categories of unwashed hands causes food unhealthy to eat (95.6%); Microorganism cannot be seen by naked eye (93.75%) and some of them are useful as

preservatives (81.25%); food bourne diseases may occur due to negligence of food handlers (88.75%) and it causes severe health problems (89.4%). Participants show positive response regarding medical check-up should be done in every six months (78.75%). But, in categories like nature of occurrence of food bourne diseases (56.25%) they show satisfactory knowledge**.**

Participants have good hygienic practice with a mean percentage score of 71.15% ± 24.49%. They maintain good personal hygiene by washing hands before eating food (83.1%) and wipe hands just after with towel (91.25%). 81.25% participant wash salads and 80.6% boil milk before consuming it. They re-heat the kept food thoroughly before eating (83.75%). 98.1% of kitchen handlers clean their kitchen platform after cooking and eating food. 61.9% of kitchen handlers clean refrigerator within a week. 78.75% of participants avoid same piece of cloth for wiping both utensils and platform. 89.4% of participants wash and 81.25% dry their wiping cloth daily by giving heat or in presence of sunlight.

Table 1: Personal profile of the participants

Characteristics	Participants (n=160)(%)
Professions	
Health sector workers	40 (25.0)
Non-health sector workers	40 (25.0)
House makers	40 (25.0)
Students	40 (25.0)
Education	
Professional/Honors	10 (6.25)
Graduate/ Post-graduate	120 (75.0)
Intermediate/ Post high school diploma	30 (18.75)
Family Status	
Nuclear	98 (61.25)
Joint / Extended	62 (38.75)
Time Duration In Kitchen	
<1 - 2 hours	81 (50.62)
>2 - 3 hours	22 (13.75)
>3 - 4 hours	23 (14.37)
>4 - 5 hours	11 (6.89)
>5 hours	23 (14.37)

Table 2: Home Kitchen Handlers knowledge of Food Bourne Diseases and Food Safety

Home Kitchen Handler's Knowledge (n= 160)	Positive Answer (%)	Negative Answer (%)
FBD are naturally occurring event	90 (56.25)	70 (43.75)
Microorganism cannot be seen by naked eye	150 (93.75)	10 (6.25)
Some microorganisms are useful in preserving food	130 (81.25)	30 (18.75)
Food looks Ok smells Ok, always safe to eat	126 (78.75)	34 (21.25)
FBD causes complications which ends in hospital, death	143 (89.4)	17 (10.6)
FBD occurs due to negligence of kitchen handlers	142 (88.75)	18 (11.25)
HKH should get medical check-up in every 6 months	126 (78.75)	34 (21.25)
Washing hands is not enough to kill microorganisms	112 (70.0)	48 (30.0)
Unwashed hands causes food unhealthy to eat	153 (95.6)	7 (4.4)
Keeping food in refrigerator prevents FBD	99 (61.9)	61 (38.1)

FBD: food bourne diseases. HKH: home kitchen handlers.

Table 3: Home Kitchen Handler's routine practice on consumption, preparing of food and cleaning of kitchen

Home Kitchen Handler's Practice (n=160)	Hygienic (%)	Unhygienic (%)
Before eating food do you wash your hands with soap?	133 (83.1)	27 (16.9)
Do you dry hands after washing with towel?	146 (91.25)	14 (8.75)
Do you boil milk before drinking?	129 (80.6)	31 (19.4)
Do you wash salads before eating?	130 (81.25)	30 (18.75)
Do you eat covered cooked food, kept (>6 hrs)?	76 (47.5)	84 (52.5)
Do you re-heat kept food thoroughly before Use?	134 (83.75)	26 (16.25)
Do you wipe salads and utensils before use?	37 (23.1)	123 (76.9)
Do you clean kitchen platform after cooking food?	157 (98.1)	3 (1.9)
Do you wipe utensils and platform by same piece of cloth?	126 (78.75)	34 (21.25)
Do you wash wiping cloth with soap daily?	143 (89.4)	17 (10.6)
Do you dry wiping cloth by giving heat or in sunlight?	130 (81.25)	30 (18.75)
Do you clean refrigerator within a week?	99 (61.9)	61 (38.1)
Do you work in kitchen when suffering from contagious disease?	40 (25.0)	120 (75.0)

Table 4: Mean Percentage score for Knowledge, Practice and Overall (knowledge, practice) according to Education, Profession, Duration of Working Hours in Kitchen and Family Status of Kitchen Handlers.

Category	Knowledge %	*p*-Valve	Practice %	*p*-Valve	Overall KP %	*p*-Valve
Profession						
House Maker (n=40)	73.99±12.68	0.168	68.78±12.72	0.020*	71.05±9.02	0.005*
Health sector worker (n=40)	77.74±10.65		75.25±10.97		76.34±7.88	
Non-Health Sector worker (n=40)	72.91±14.75		67.75±9.45		69.99±8.83	
Students (n=40)	71.24±15.1		69.16±13.28		70.07±10.52	
Education						
Professional/Honors (n=10)	77.33±9.78	<0.001**	73.33±8.47	0.491	75.07±5.32	<0.001**
Graduate/Post-Graduate (n=120)	76.41±10.63		70.44±12.5		73.04±8.23	
Intermediate/Post High-school diploma (n=30)	63.1±18.62		68.37±10.67		66.08±12.38	

**: Highly Significant, *: Significant, KP: Knowledge & Practice

According to profession there was no significant difference in knowledge among the study participants (despite of their average mean score differences as health sector workers had higher mean score (77.74 ± 10.65) then house makers (73.99 ± 12.68), non-health sector workers (72.91 ± 14.52) and students (71.24 ± 15.10). While, due to hygienic practice habits in kitchen, there was a Significant difference (p= 0.020). Significant difference (p=0.024) was seen between health sector workers V/s non-health sector workers and marginal difference between health sector workers V/s house makers (p = 0.0681) and students (p = 0.096). The overall (knowledge and practice) score was significantly (p= 0.005) affected by the type of profession they belong. There was statistical significant difference (p = 0.050), (p = 0.011) and (p = 0.013) between the health sector workers and others (non-health sector workers, house makers and student).

According to education, in study area the overall (knowledge practice) scores was significantly (p < 0.001) affected by the levels of education where the average scores increased with the education level. There was highly significant (p < 0.001) difference in knowledge among the participants. Graduate/Post-Graduate V/s Intermediate/ Post High School Diploma holder had highly significant difference (p < 0.001) and similarly (p=0.005) significant difference seen between Professional/Honors V/s Intermediate/ Post High School Diploma holder. But there was no significant difference between Professional/Honors V/s Graduates/Post Graduates, both groups had statistically similar mean of 75.072 ± 5.327 and 73.043 ± 8.239 respectively.

According to time duration there was no significant difference in knowledge, practice and overall (knowledge and practice) among the participants, but there was an overall high mean difference among participants who spend >3 – 4 Hrs (75.86 ± 7.2) in kitchen then other participants who spend time in kitchen daily.

According to family status the mean score for knowledge and practice of participants living in nuclear families were 72.81 ± 14.63, 70.14 ± 11.49 and 75.80 ± 11.17, 70.38 ± 12.76 for Joint/Extended families were statistically similar.

DISCUSSION

Similarly to our study some studies were found where participants had overall good knowledge of food borne diseases with the mean score of 84.83%[7] and 73.85%[11]. Another study was performed in small and micro enterprises, to assess food handlers knowledge on food hygiene (n= 159) in South Africa, the average percentage of correct answer was 46.0%[12].

In our study, 93.75% kitchen handlers correctly answered that food borne pathogens cannot be seen by naked eye. Similar study was done on food handlers of military hospital; Jordan where 88.0% of participants answered correctly[7].

Food looks Ok and smells Ok; is not always safe to eat, correctly answered by 78.75% of participants it means 21.25% still think it is safe to eat. Similar study was done on (n=444) food handlers, employed in 104 small food businesses where 57.0% food handlers wrongly believed that they can tell by sight, smell and taste weather the food is ok or contaminated with food poisoning bacteria[13].

Our study showed satisfactory knowledge 61.9% of refrigerator's control, but there are studies with both good knowledge[7] and lack of knowledge[13, 14] regarding temperature control measure to reduce the risk of food poisoning.

Our study showed that the kitchen handlers have high knowledge with good hygienic practice. Similar results were found in other studies with similar types of questions[7, 16]. But, a study from India, Andhra Pradesh at tertiary care teaching hospital at Eluru shows poor food hygienic and handling practice[15].

In our study 83.75% kitchen handlers Re-Heat the kept food thoroughly until food is piping hot throughout and 98.1% participants clean their

kitchen platform after cooking and eating food, while, study from Dubai shows only 30.1% participants re-heat and whereas 41.9% food handlers clean work surfaces immediately after food handling[16]. These are crucial step to prevent cross contamination of food.

Dishcloths and sponges quickly become heavily contaminated with a diverse array of microbes, harboring and spreading contamination to hands, kitchen equipment, and contact surfaces. High numbers of E. coli survive in dishcloths for at least 48 hours. Consumers who use them, just 9% report changing dishcloths or sponges daily, 44% change them at least weekly, the remainder changes them less often, with 5% waiting until they fall apart[5]. While in our study 89.4% participants Wash and 81.25% dry their wiping Cloth Daily by giving heat or in presence of sunlight.

Kitchen utensils and food products prior to consumption and preparation are the key cross contamination routes, researches suggested that 14% of all food borne illnesses may be due to inadequately cleaned cutting boards and knife[5]. Our study shows (76.9%) of participants were wiping both salads and utensils to make them use with the misperception that their wiping cloth is sterile.

But in some categories study participants were lacking such as (52.5%) participants consuming cooked food which was kept on kitchen platform for > 6 hrs. A study from USA shows lunch box taken by children may pose food safety problems it shows that less than 2% of lunches which contains perishable items were not at danger zone temperature and it remains all the day[5].

Even in presence of contagious diseases (75.0%) of Kitchen handlers are working in current study. Whereas the study from Brazil, (98.2%) of the food handlers recognized that it is necessary to take leave from work during cases of infectious skin disease and (80.1%) knew that microbes can be found in the skin, mouth and nose of healthy food handlers[17].

According to the education level of participant our finding were similar to the study of Ankara (Turkey) to determine Employee's (n= 400) perception of hygiene in the catering industry[18]. They found a significant difference among the level of education, where participants with the university education had better perception.

CONCLUSIONS

Tremendous legislative, agricultural, industrial, and public health efforts have been devoted to improving the safety of the food supply, but these efforts are in vain if not matched by safe food handling at home[5]. This study provides valuable information about the level of knowledge and practice of Kitchen handlers at home. Result from this study show that Overall Knowledge Practice study was significantly (p= 0.020) higher in Health sector workers than other sectors.

RECOMMENDATION

Thus, educating, training, and promoting positive attitude among home kitchen handlers of other sectors would also improve their knowledge and hygienic practice in their day to day life.

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