

ORIGINAL ARTICLE

Knowledge Attitude and Practice of Food Handlers Regarding Food Safety Practices District Kohat Khyber Pakhtunkhwa PakistanMUHAMMAD JIBRAN KHAN¹, NAEEMULLAH², NADIA KHAN³, ANWAR KHAN WAZIR⁴, ARIF IQBAL⁵, MUHAMMAD ISHTIAQ⁶, SAID AKBAR KHAN⁷, JAWAD ALI⁸¹Department of Community Medicine, KIMS (KMU-Institute of Medical Sciences), Kohat²Department of Community Medicine, Saidu Medical College, Saidu Sharif, Swat³Department of Community Medicine, Northwest School of Medicine, Hayatabad, Peshawar⁴Department of Physiology, Nowshera Medical College, Nowshera⁵Specialist Family Physician, Hallonbergen Vardcentral, Stockholm, Sweden⁶Department of Community Medicine, Nowshera Medical College, Nowshera⁷Department of Earth & Environmental Sciences, Bahria University, Islamabad, Pakistan⁸Environmental Science, Faculty of Life Sciences & Informatics, BUITEMS, Quetta, Balochistan, PakistanCorrespondence author: Muhammad Ishtiaq, Email: drishtiaq250@yahoo.com, Cell: 0334-9121822**ABSTRACT****Objective:** To assess the knowledge, attitude and practice of food handlers regarding food safety and personnel hygiene practices among the local food handlers of District Kohat Khyber Pakhtunkhwa Pakistan.**Methodology:** The Department of Community Medicine at the KMU-Institute of Medical Sciences (KIMS), Kohat, conducted a cross-sectional study between December 2021 and May 2022. A cross-sectional study with a sample of n=265 adults was conducted, with a 95% confidence interval and a 5% margin of error. The respondents' food safety knowledge, attitudes, and behaviours were evaluated using a well-designed questionnaire. Data were entered and analysed using SPSS version 26.0. Final results were tabulated and presented.**Results:** Out of those surveyed, 39.25% were found to have a basic understanding of the written word; 82.648% earned less than 30,000 PKR per month; 58.87% had worked for at least four years; and 67.74% were in the service industry (mostly as cooks and wait staff). In addition, 32.83 percent of those who handled the food had adequate expertise, 90.94 percent had an upbeat mentality, and 47.92 percent followed adequate procedures to ensure the safety and cleanliness of the food they handled.**Conclusions:** It was concluded that knowledge of food handlers was not up to the standards of food safety and personnel hygiene practices. Moreover, the attitude of food handlers was satisfactory whereas the practice was below the average satisfactory level and thus needs strategies to enhance knowledge, and to improve practices of food handlers regarding food safety to reduce food borne diseases.**Keywords:** Knowledge, Food Contamination, Practice, Food Handlers, Attitude, Kohat.**INTRODUCTION**

Food is considered one of the most basic human needs, thus having access to safe food is critical [1] [2] [3]. Worldwide, food-related illnesses account for a significant percentage of all cases of sickness and death. [4] [5]. According to the WHO, up to 70% of diarrheal diseases are caused by eating contaminated food, and Diarrheal illnesses claim the lives of around 1.8 million people annually [6] [7]. Acute gastroenteritis is a type of food poisoning that causes abdominal aches, diarrhoea, vomiting, fever, and headache [8]. Food-borne infections have become more common, and are commonly associated with outbreaks, posing a threat to global public health and raising international concern [9] [10].

Contaminated water, poor food handling and food processing, and a lack of proper facilities of food storage have all been linked to the higher prevalence of these diseases in low-income nations [12, 13]. The sanitation habits of food handlers continue to be the most effective method for reducing foodborne disease outbreaks [6] [14]. Cases of food-related illness are a major global health issue [8]. Knowledge, attitude, and conduct of food handlers are critical determinants in preventing foodborne illness, according to a number of worldwide research [15] [16].

According to current evidence, food workers' poor food handling habits cause a significant proportion of foodborne illnesses. Pathogens can enter food through hazardous production, packing, or distribution procedures, as well as contamination in retailers [17]. Moreover, foodborne infections are caused by insufficient cooking, storage, cross-contamination, and poor personal hygiene and handling procedures [18] [19].

Pakistan being a developing country with scarcity of resources and most of the people are uneducated. Due to the disease transition pattern; Pakistan is facing both the burden of communicable and non-communicable diseases. Food borne diseases are common due to socio-economic and significant determinants prevalent in the community. So, researchers in Kohat District, Khyber Pakhtunkhwa Province, Pakistan, set out to gauge

food handlers' general awareness of, and commitment to, food safety and hygiene through a cross-sectional survey with an aim to assess the current situation and to suggest the concerned sectors to plan, monitor and implement safe food practices so to reduce the food borne diseases among the community.

MATERIALS & METHODS

Between December 2021 and May 2022, researchers from the Department of Community Medicine at the KIMS (KMU-Institute of Medical Sciences) in Kohat, Khyber Pakhtunkhwa, conducted a descriptive cross-sectional study. The study was a cross-sectional survey with a 95% confidence interval and a 5% precision sample size of n=265 adult food handlers. A structured questionnaire was used to collect initial information regarding the important demographic variables of food handlers. Moreover, the structured questionnaire has questions for practice, attitude and knowledge of food handlers about personnel hygiene practices and food safety. Furthermore, 10 each questions were used to assess knowledge, attitude and practice separately. The data was entered and analysed using SPSS version 26.0.

RESULTS & DISCUSSIONS

Table 1: Knowledge Attitude & Practice Of Food Handlers N=265 Regarding Food Safety And Hygiene Status

Variable	Response	F	%
Knowledge	Good	87	32.83
	Poor	178	67.17
Attitude	Positive	241	90.94
	Negative	24	9.06
Practice	Yes	127	47.92
	No	158	59.62

Table 2: Demographics of Food Handlers n=265 Regarding Food Safety & Hygiene Status

Variable	Response	f	%
Age in years	18-27	23	8.68

	28-37	60	22.64
	38-47	111	41.89
	48 & above	71	26.79
Educational status	Literate	104	39.25
	Illiterate	161	60.75
Monthly Income	< 15000	147	55.47
	15000-30000	72	27.17
	30000-45000	31	11.70
	45000 & Above	15	5.66
Marital Status	Married	162	61.13
	Unmarried	103	38.87
Type of Job	Cook	35	13.21
	Server	118	44.53
	Manager	25	9.43
	Helper	68	25.66
	Owner	19	7.17
Job Experience	< Month	23	8.68
	1-2 Years	57	21.51
	3-4 Years	76	28.68
	> 4 Years	109	41.13
Snuff Addicted	Yes	172	64.91
	No	93	35.09
Tobacco Smoking	Yes	147	55.47
	No	118	44.53
Had Certificate of Food Training	Yes	61	23.02
	No	204	76.98
No of Duty hours per day	3 to 4	35	13.21
	4 to 6	77	29.06
	> 6	153	57.74

Table 3: Assessment of Food Safety Knowledge of Food Handlers n=265

Variable	Response	f	%
Do you know the major cause of food borne diseases?	Germes	149	56.23
	Chemicals	116	43.77
What is yours source of information about food borne diseases	Mass media	85	32.08
	Health center	28	10.57
	School	17	6.42
	Training	51	19.25
	Friend	39	14.72
	Family members	45	16.98
Do you know what the best method of washing hands is?	Water	127	47.92
	Water and soap	82	30.94
	Water and antiseptic	47	17.74
	None	9	3.40
Do you know the standard frequency of taking bath for food handlers?	Daily	188	70.94
	2-3 times/wk	47	17.74
	Weekly	23	8.68
	Monthly	7	2.64
Do you know that raw meat transmit diseases?	Yes	84	31.70
	No	181	68.30
Do you know that raw milk transmit diseases?	Yes	127	47.92
	No	138	52.08
Do you know that raw vegetables transmit diseases?	Yes	129	48.68
	No	136	51.32
Is there any relationship between food hygiene and food borne diseases?	Yes	196	73.96
	No	69	26.04
Does skin and nail diseases, cuts and abrasions affects food hygiene?	Yes	125	47.17
	No	140	52.83
Do you know that improper food handling can result in food borne diseases?	Yes	160	60.38
	No	105	39.62

Table 4: Assessment of Food Safety Attitude of Food Handlers n=265

Variable	Response	f	%
Raw food separate from cooked food	Yes	191	72.08
	No	74	27.92
The health condition of food handlers should be evaluated before joining job?	Yes	163	61.51
	No	102	38.49
Is it compulsory to wash hands with antibacterial?	Yes	208	78.49
	No	57	21.51
Employees have acute medical conditions should not be permitted for work	Yes	156	58.87
	No	109	41.13
Prepared food should be kept in refrigerator for storing	Yes	149	56.23
	No	116	43.77

Knowledge regarding food safety and hygiene is necessary	Yes	167	63.02
	No	98	36.98
Is it good to smoke in the working environment?	Yes	46	17.36
	No	219	82.64
Readymade food should be kept at 60°C	Yes	118	44.53
	No	147	55.47
Learning more about food safety training good for working	Yes	163	61.51
	No	102	38.49
Disinfectants and chemicals should be stored separately from food items environment	Yes	221	83.40
	No	44	16.60

Table 5: Assessment of Food Safety Practices of Food Handlers n=265

Variable	Response	f	%
Do you continue working when you are sick?	Yes	186	70.19
	No	79	29.81
Do you change or/and wash your working uniform regularly?	Yes	91	34.34
	No	174	65.66
Do you check expire dates on packed food items?	Yes	156	58.87
	No	109	41.13
Do you know status of your typhoid / enteric fever?	Yes	44	16.60
	No	221	83.40
Do you wash hands after using toilet?	Yes	151	56.98
	No	114	43.02
Do you wash your hands with antibacterial?	Yes	98	36.98
	No	167	63.02
Do you wash hands before handling food items?	Yes	93	35.09
	No	172	64.91
Do you cover your hair during working with food items?	Yes	73	27.55
	No	192	72.45
Do you cover your hands during working with food items?	Yes	107	40.38
	No	158	59.62
Do you change your clothes during working hours?	Yes	111	41.89
	No	154	58.11

Demographics of Food Handlers: In our study, 61.13% were married, while in study of Teferi et al., 2021, 12.7% were married and in study of Girmay et al., 2020; 62% were married [1] [11]. In our study, 13.21% were cooks, while in study of Teferi et al., 2021; 58% were cooks; and in study of Ahmad et al., 2021, 25.2% were cooks [1] [7]. Moreover, in our study, 44.53% were of food handlers were servers; while in study of Ahmad et al., 2021; 33.7% were food servers [7]. In study of Girmay et al., 2020, 66% of food handlers were addict to tobacco smoking while in our study had 55.47% [11]. According to our study, 23.02% had food training and food certificate regarding food hygiene and food safety while in studies of Girmay et al., 2020; Teferi et al., 2021; and Adane et al., 2018; had 21.1%, 36.6% and 30% certification respectively [1] [11] [25]. Moreover in a study of Has S.M.C. et al., 2018; has 75% training and certification [24].

Knowledge of Food Handlers Regarding Food Hygiene Practices: According to our study, 56.23% know the major cause of food borne diseases while in study of Ahmad et al., 2021 [7]; revealed 81.2%; and in study of Teferi et al., 2021; 95.7% knowledge regarding food borne diseases [1]. In our study, 48.68% washed hands with soap and or antiseptic while in study of Adane et al., 2018; revealed that 72% of food handlers used soap and antiseptic for hand washing [25].

In study of Teferi et al., 2021; 85.1% stated that raw meat, 96.9% raw milk and 75.8% raw vegetables transmits diseases whereas in our study; 31.70%, 47.92% and 48.68% knew that raw meat, vegetables and milk transmits diseases and thus our study findings were less as compared to international study of Teferi et al., 2021 [1]. Moreover, in a study of Ahmad et al., 2021 [7]; found that 86.6% knew that improper food handling results in food borne diseases and as was found in our study (60.38%). Furthermore, in our study, 47.17% knew that skin and hands problems and injuries affect the food hygiene status and as was found in study of Moghnia et al., 2021; which revealed that 7.4% of food borne infections showed strong significant relationship with skin and nail diseases [14].

Attitude of Food Handlers Regarding Food Hygiene Practices: In our study, 72.08% separate cooked from uncooked food; and 78.49% washed hands with antibacterial whereas in study of

Ahmad et al., 2021; found 93.6% and 89.7% respectively [7]. Moreover, in study of Al Banna et al., 2021; found that 46 to 48% of employees used to smoke tobacco at work place; whereas in our study the frequency was 17.36% among the food handlers [20]. Furthermore, in our study; no permission of food handlers, refrigerator for food storing, correct temperature for food keeping and separation of chemicals/disinfectants at workplace showed frequency of 58.67%, 56.23%, 44.53% and 83.40% whereas in study of Ahmad et al., 2021; found 76.21%, 71.3%, 76.2% and 98.5% respectively and thus had more good positive attitude as compared to our study [7].

Practices of Food Handlers Regarding Food Hygiene Practices: In our study, 70.19% continue work while they were sick, whereas in study of Ahmad et al., 2021; Ncube et al., 2020; and Al Banna et al., 2021; revealed 8.9%, 25.7% and 55% respectively [7] [20] [22]. Moreover, in our study, 58.87% used to check expiry dates of packed food items; whereas in study of Da Vitoria et al., 2021; and Ahmad et al., 2021; found 90.7% and 80.7% respectively, and thus showed higher prevalence as compared to our study [5] [7].

In study of Adane et al., 2018; Yesigat et al., 2020; and Yimam et al., 2020; revealed 96%, 57% and 54% prevalence of hand washing among food handlers after using toilet [23] [26] [25]; whereas in our study, it was 56.98%. Thus our study results were consistent with previous international studies of Yesigat et al., 2020; and Yimam et al., 2020; [23] [26]; and less as compared to Adane et al., 2018 [25]. Moreover, in our study, 35.09% frequency was revealed for washing hands before handling food items and was supported by international studies of Teferi et al., 2021; and Has S.M.C. et al., 2018; showing 59.7% and 98% respectively [1] [24]. Furthermore, in study of Teferi et al., 2021; and Insfran Rivarola et al., 2020; revealed 29.5% and 82.5% hair covering during working hours as was found in our study showing frequency of 27.55% [1] [15].

In our study, 40.38% cover their hands while in studies of Ncube et al., 2020; and Al Banna et al., 2021; showed 70% and 89.7% respectively and thus our study findings were less as compared to international studies [20] [22]. According to results of knowledge, attitude and practice food handlers regarding food hygiene; the overall knowledge was good in 32.83%; attitude was positive in 90.945 and practices were satisfactory among 47.92% (Table. No.1). Ncube et al., 2020; and Teferi et al., 2021; revealed 85% and 82% respectively [1] [22]. Furthermore, in study of Putri & Susanna, 2021; and Adane et al., in 2018; the good and satisfactory knowledge regarding food hygiene and safety practices was 70-85.9% and 37-46% respectively [4] [25]. In studies of Albgumi et al., in 2019; & Moghnia et al., in 2021; the positive attitude was found in 58.31% and 55.1% of food handlers respectively [14] [27]. In studies of Al Banna et al., 2021; Albgumi et al., 2019; and Teferi et al., 2021; the satisfactory food hygiene practices were found in 16.3%, 73.61% and 67.615 respectively [1] [20] [27].

CONCLUSIONS

From our study; it was concluded that the food handlers had less knowledge regarding food safety and personnel hygiene practices. In the current study, food handlers were unaware regarding the basic determinants affecting food safety and personnel hygiene practices. Moreover, the attitude of food handlers was found satisfactory whereas the practice was below the average satisfactory level; and thus suggest strategies and measures to enhance the knowledge of food handlers and to improve the food safety practices among the food handlers regarding food safety to reduce food borne diseases. Furthermore, our study recommends that food managers and food restaurant owners should plan and provide basic appropriate training to the food handlers along with periodic six monthly or yearly training. Moreover, the concerned departments and food handlers were suggested to implement strategies regarding food checking and to motivate satisfactory

food handling practices with an aim to reduce food borne diseases among the food handlers.

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