



Food Safety Knowledge, Attitude, and Practices of Meat Handlers in Ghazni, Afghanistan

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Research Paper</p>	<p>Introduction: Food hygiene is vital in food safety, and meat is essential to food. On the other hand, different types of meat are consumed worldwide. In addition, food hygiene, knowledge, attitude, and practice can directly influence the quality and marketing of food. This study evaluated meat handlers' knowledge, attitude, and practices in Ghazni, Afghanistan.</p>
<p><i>Article History:</i> Received: 01 May 2023 Accepted: 19 Jul 2023 Published: 29 Nov 2023</p>	<p>Methods: This cross-sectional study was conducted on 30 meat handlers' food hygiene in Ghazni, Afghanistan. The data were collected through a face-to-face questionnaire. The respondents were selected randomly, and the data were analysed using the IBM SPSS Statistics software version 24.</p>
<p><i>Keywords:</i> Food safety Hygienic practices Meat handlers Ghazni Afghanistan</p>	<p>Results: The majority of respondents were middle-aged, 26–35 years (43.4%), most of them were married (83.3%) and had primary education (43.3%). Most respondents did not have health certificates or participate in food safety-related training (96.7%). Most respondents generally had a high level of food safety knowledge and attitude, with a lower score in meat hygiene practices.</p> <p>Conclusions: Lack of food safety and health training by meat handlers can be a risk for the consumer. Therefore, meat handler health certificates, food hygiene attitudes, and practices should be checked by governmental and non-governmental organizations for the health of consumers and better hygienic practices.</p>

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Introduction

Food safety lets consumers know that foods do not contain toxic, chemical, or microbial contaminants and prevent these hazards from occurring in foods. In addition, food safety knowledge (FSK) is understanding food from skills or schooling, food safety attitude (FSA) refers to sensation or belief about food safety, and food safety practice (FSP) indicates the act or use of food safety (1). Food safety concerns the food industry, consumers, and regulatory agencies worldwide. Millions of people die yearly, and many are hospitalized globally from foodborne diseases and illnesses due to contaminated food consumption (2). Low- and middle-income countries are much more affected by foodborne diseases due to poor food safety training, noncompliance with hygiene practices, insufficient potable water, and unhygienic storage (3). The food handler's knowledge,

attitude, and hygienic practices directly relate to food safety and security. Food safety training programs, workshops, and health certificates are essential for food handlers' working activities. The increasing food safety knowledge of meat handlers does not improve their knowledge, attitudes, and practices, but they remain essential for better performance (4).

The food processing area susceptible to food contamination and the spread of foodborne diseases is within the meat handling and slaughtering sectors. According to Nyamakwere et al. (5), the meat handling section in food processing plants is characterized by intensive handling and slaughtering of carcasses in a multi-step process. Therefore, poor hygienic practices (e.g., non-use of gloves, protective clothing, and disinfectants) in meat handling facilities can lead

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to food contamination and the spread of foodborne diseases (6).

Most food handlers in Afghanistan do not use gloves while processing food, apply poor hygienic practices in eating eggs and meat, and lack awareness of raw food eating in some cases of parasitic disease. Although most people dry meat in the fall season and use it in the winter because they cannot access electricity or refrigerators, these types of meat can also cause foodborne diseases. The cases mentioned above result from most food-borne disease outbreaks in Afghanistan. On the other hand, there are no formal and informal studies on meat handler assessment in Afghanistan to estimate their meat hygiene knowledge, attitude, and practice. Only some studies in food hygiene, safety, and security have been conducted in Afghanistan. This study aimed to estimate meat handler knowledge, attitude, and hygienic meat handling practices in Ghazni, Afghanistan.

Material and Methods

Study Area

The study was conducted in the municipal slaughterhouse of Ghazni, Afghanistan. Ghazni province is located in the southeast region of Afghanistan with a transitional climate change between semi-arid with a cold winter and a warm, dry summer (2). This cross-sectional study was conducted between Jun to September 2022. Questionnaires were used to estimate the meat handlers' food safety knowledge, attitude, and practice. All questionnaires were administered via face-to-face interviews, and their meat handling hygiene and practices were revised to ensure the precision of the respondents. The respondents were interviewed during their free working time to give enough time to answer written queries and avoid distraction from business. A total of 30 respondents were selected randomly based on the population and number of meat handlers in Ghazni, Afghanistan, who work in sheep, cattle, and chicken slaughterhouses in Ghazni.

Questionnaire Structure

The study questionnaire consisted of three parts. The first part of the questionnaire consisted of the socio-economic characteristics of the

respondent based on age, gender, education level, years of experience and food safety-related training, religion, monthly income, and marital status. The second part was about the respondent's information on meat hygiene knowledge and included 20 questions on personal hygiene, the risk of carcass contamination, the importance of refrigerators, and the risk of foodborne illness to humans. The respondents had three-answer of true, false, and not sure choice key. The attitude section included 18 questions about personal protection and slaughter hygiene that participants could answer with the two-choice answer key of agreeing or not sure. The last section on meat hygiene practices had 20 questions on personal and slaughter hygienic practices. In addition, the respondent had two yes or no choice answer keys. The questionnaire was read and distributed during the interview, and meat handlers had enough time to answer the questions.

Data Analytical Technique

The data was analysed by SPSS software version 24.

Results

The results are divided into different separate sections.

Socio-economic Profile

The socio-economic profile of the respondents is shown in Figures 1. a, b, c, d, e, f, g, and h. The respondents within the age range of 26–35 years were the majority (43.3%), followed by under 25 years (33.3%), 36–45 years (16.7%), and above 45 years (6.7%). On the other hand, most of the respondents were male, and only one was female. However, the education level of the respondents (43.3%) was primary, followed by bachelors and illiteracy (23.3%). In addition, most respondents were married (83.3%) and Sunni (76.7%). Although the monthly income of the majority of respondents (56.7%) is in the range of 10000 Afghanis, which is a little more than 100 dollars per month, among the respondents, only one of them earned 31000–50000 Afghanis per month. Most respondents did not have a health certificate or participate in any food safety training (96.7%) (Figure 1).

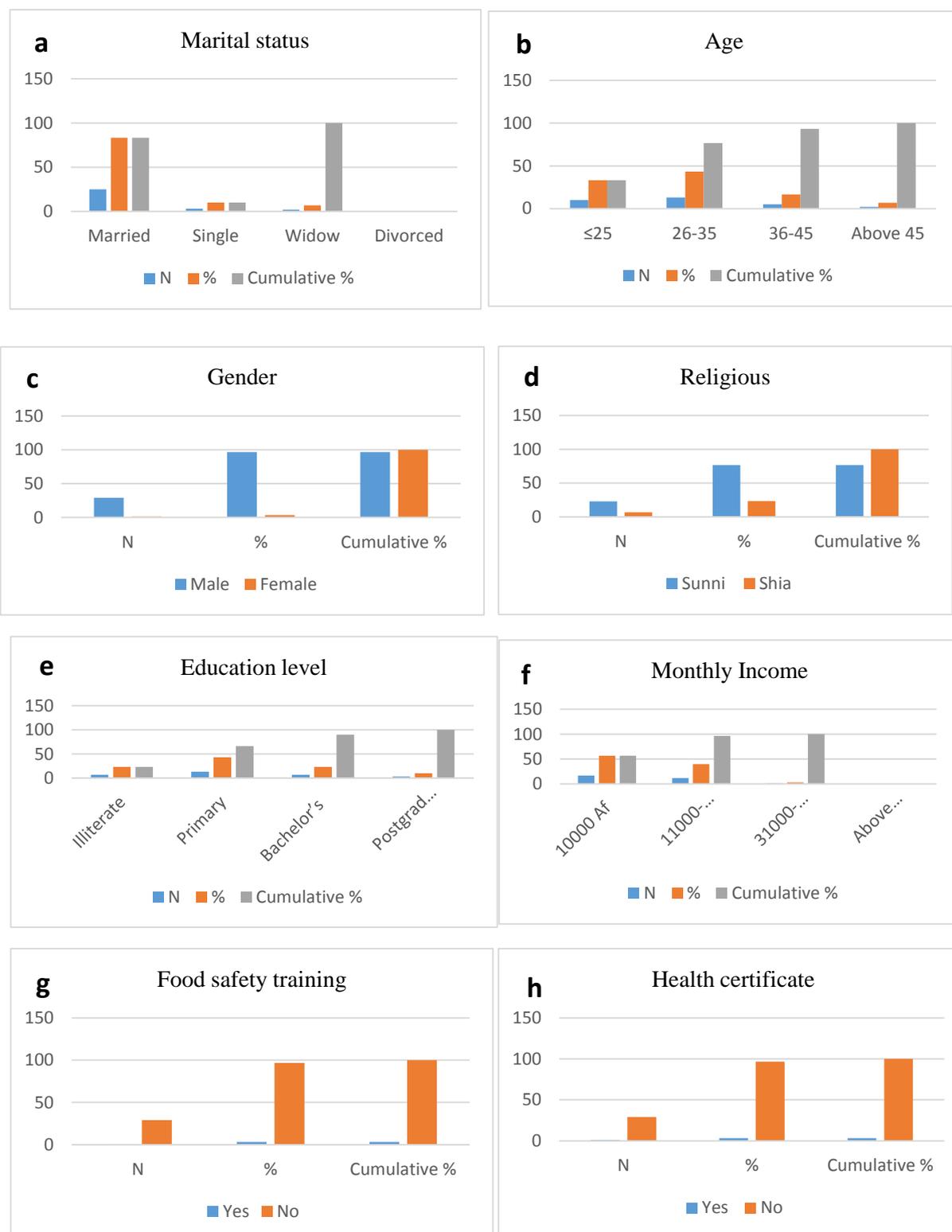


Figure 1. Meat handlers Socio-economic characteristics in Ghazni City (n = 30)
 AF: means Afghani, the local currency of Afghanistan.

Food Safety Knowledge

Table 1 presents respondents' overall knowledge level about personal hygiene, causes and transmission of foodborne diseases, cross-contamination, and refrigerator uses of meat handlers in Ghazni, Afghanistan, respectively. Most respondents were assured that food safety

knowledge is essential (96.7%) for meat handlers to better meat handling. Although the meat handlers were aware that insects and pests are the source of contamination (83.3%), some respondents believed that the agent of diarrhoea was transmitted by food to consumers (53.3%) (Table 1).

Table 1. Meat handlers food safety knowledge in Ghazni City (n = 30).

No	Statements	Respondents' n and %					
		True		False		Not sure	
		n	%	n	%	N	%
1	Regular hand washing during the meat processing can reduce the risk of meat contamination.	26	86.7	2	6.7	2	6.7
2	The use of gloves during meat handling can reduce the risk of meat contamination.	23	76.7	2	6.7	5	16.7
3	Meat inspection plays an important role in internalizing infection.	26	86.7	0	0.00	4	13.3
4	Refrigeration of meat is important for its preservation.	19	63.3	4	13.3	7	23.3
5	Cross-contamination from contaminated meat to meat transmitted by meat handlers.	16	53.3	7	23.3	7	23.3
6	Before slaughtering, it is important to wash the live animal.	6	20.0	19	63.3	5	16.7
7	The rotten and clean parts of the meat should be processed separately.	22	73.3	7	23.3	1	3.3
8	Knowledge about food safety is essential.	29	96.7	0	0.00	1	3.3
9	The carcass of an animal in a dirty environment causes it to rot.	28	93.2	2	6.7	0	0.00
10	Improper handling of meat can create risks for the consumer.	11	36.7	5	16.7	14	46.7
11	Improper handling of meat could pose a health hazard to consumers.	23	76.7	2	6.7	0	0.00
12	Proper cleaning and sanitization of knives and hooks can reduce the risk of meat contamination.	24	80.0	3	10.0	3	10.0
13	Eating and drinking in the workplace can increase the risk of meat contamination.	20	66.7	7	23.3	3	10.0
14	Washing and disinfection of working surfaces and tools are important for the safety of meat.	21	70.0	5	16.7	4	13.3
15	Insects and pests could be a source of raw meat contamination.	25	83.3	2	6.7	3	10.0
16	The agent of diarrhoea can be transmitted by food.	16	53.3	6	20.0	8	26.7
17	Contaminated meat always has some change in color, odor or taste.	19	63.3	6	20.0	5	16.7
18	People with open skin injuries, gastroenteritis and ear or throat diseases should not be allowed to handle meat.	21	70.0	8	26.7	1	3.3
19	The health status of a worker should be evaluated before employment.	20	66.7	6	20.0	4	13.3
20	The ideal place to store raw meat is the refrigerator.	16	53.3	11	36.7	3	10.0

Food Safety Attitudes

Table 2 shows meat handlers' attitudes, and about 78.3% of the respondents have a good attitude about food safety in Ghazni, Afghanistan. Most respondents were assured that meat hygiene training is necessary for their work, and 96.7% and 93.3% agreed that cleaning surfaces can reduce the risk of illness. However, 96.7% of the meat handlers agreed that proper handling is the job of meat handlers. In comparison, 43.3% of the respondents were uncertain that leaving meat for more than 2 hours outside the refrigerator is unsafe (Table 2).

Meat Handler Practices Of Meat Hygiene

Table 3 represents meat handlers' meat processing practices in Ghazni, Afghanistan. The respondents washed their clothes daily, and only two had a yes answer (6.7%). About 86.7% did not wash animals after slaughtering, and 93.3% did not touch meat with blood for freshness. Most respondents use water for meat processing (96.7%). There was an inspection of animals after slaughtering in 96.7% of cases, slaughtering area. Wearing a mask, washing hands after the toilet, and taking out equipment occurred when going to the toilet in 96.7 cases. The majority of the respondents failed the smoking inside meat

processing areas (76.7%), wear nail polish during meat processing of meat in the duration of illness (60%), and take out equipment when going to the toilet (96.7%).

As shown in Table 3, most of the ill meat handlers handle meat (56.7%); on the other hand, meat

handlers with cuts, injuries, and bruises handle meat (66.7%). This result can impact the consumers negatively, and some gastrointestinal diseases can be transferred to consumers through meat.

Table 2. Respondents attitudes toward meat hygiene in Ghazni City (n = 30).

No	Statements	Respondents n and %					
		Agree		Uncertain		Disagree	
		N	%	n	%	N	%
1	Meat hygiene training provides the necessary material for meat handlers.	29	96.7	1	3.3	0	0.00
2	Wearing of protective clothing and shoes can improve food hygiene.	26	86.7	4	13.3	0	0.00
3	Using watches, earrings and rings will increase the risk of meat contamination.	23	76.7	2	6.7	5	16.7
4	Inspection of meat before and after slaughtering can produce healthy meat.	24	80.0	5	16.7	1	3.3
5	Regular training could improve meat safety and hygienic practices.	30	100	0	0.00	0	0.00
6	Keeping the working surfaces and utensils clean, can reduces the risk of illness.	28	93.3	2	6.7	0	0.00
7	Meat handlers containing zoonotic diseases can contaminate meat.	19	63.3	8	26.7	3	10.0
8	It is necessary to sanitize or change knives after the meat process.	24	80.0	4	13.3	2	6.7
9	Improper storage of meat is dangerous for human health.	27	90.0	3	10.0	0	0.00
10	Using different knives and cutting boards for meat and offal is assets it.	25	83.3	4	13.3	1	3.3
11	It is unsafe to leave meat out of the refrigerator for more than 2 hours.	14	46.7	13	43.3	3	10.0
12	Raw meat is healthier and more nutritious than cooked meat.	7	23.3	5	16.7	18	60.0
13	Knives, hooks and cutting boards can be the sources of meat contamination.	19	63.3	6	20.0	5	16.7
14	Sneezing or coughing without covering nose and mouth could contaminate meat.	14	46.7	3	10.0	13	43.3
15	It is important to wash working surfaces and cutting tools after disinfection.	25	83.3	2	6.7	3	10.0
16	Putting on a head covering is a good practice in meat processing.	22	73.3	6	20.0	2	6.7
17	Inspection of meat for freshness and wholesomeness is valuable.	27	90.0	3	10.0	0	0.00
18	Handling of meat in a proper way is one of the meat handler's jobs.	29	96.7	1	3.3	0	0.00

Table 3. Respondents hygienic practices of meat assessment in Ghazni City (n = 30)

No	Statements	Respondents % n			
		Yes (n %)		No (n %)	
1	Do you wash your clothes after every working day?	2	6.7	28	93.3
2	Do you process animal carcasses and by-products in the same place?	1	3.3	29	96.7
3	Do you wash your hands while working?	28	93.3	2	6.7
4	Do you use enough water for meat processing?	29	96.7	1	3.3
5	Do you wash animals before slaughtering?	4	13.3	26	86.7
6	Do you touch meat with blood after processing for freshness?	2	6.7	28	93.3
7	Do you refrigerate meat after processing?	18	60.0	12	40.0
8	Do you inspect animals before slaughtering?	29	96.7	1	3.3
9	Do you smoke inside the meat processing area?	16	53.3	14	46.7
10	Do you wear mask while working?	29	96.7	1	3.3
11	Do you wear an apron while working?	28	93.3	2	6.7
12	Do you wash your apron at the end of every working day?	23	76.7	7	23.3
13	Do you wash your hands after product processing?	25	83.3	5	16.7
14	Do you wash your hands after using the toilet?	29	96.7	1	3.3
15	Do you wash your hands after sneezing, coughing and smoking?	7	23.3	23	76.7
16	Do you wear cap or protective clothes while working?	20	66.7	10	33.3
17	Do you wear nail polish during meat handling?	12	40.0	18	60.0
18	Do you handle or process meat when you are ill?	17	56.7	13	43.3
19	Do you handle or process meat when your hand has cuts, injuries and bruises?	20	66.7	10	33.3
20	Do you take out your equipment when you go to the toilet?	29	96.7	1	3.3

Discussion

The socioeconomic results showed that most of the meat handlers were male. The results were consistent with Jianu and Goleţ (6) and Kamal et

al. (8), but not consistent with (7). In addition, females were not allowed to work outside the home in Afghanistan. On the other hand, the slaughtering work is very heavy and complex, the

women cannot work in slaughterhouses, but they can work in some poultry slaughterhouses, especially in rural areas (8, 9). In addition, most respondents were in the 26–35 age range because most middle-aged people in Afghanistan are responsible for preparing food and other family requirements because women and children do not work outside the home. In our study, literacy levels were higher than other findings (7, 10). In Afghanistan, many literate people are jobless because there are no work opportunities in governmental and non-governmental organizations, and they also face private working opportunities. The lack of food handler training and health certificates negatively affected their hygienic activities. Only one meat handler participated in food safety training. However, previous studies have shown that food safety training should be provided to improve food safety knowledge, attitude, and hygienic practices (9). The reasons for the development in food safety are related to food safety education and health training. On the other hand, education has many social benefits, like better hygiene and sanitation facilities, the availability of quality food, food hygiene, higher economic returns, and better access to technology and sources of information (8).

The meat handlers' food safety knowledge showed that food contamination is transmitted to the consumers. The transmission is due to the lack of food safety training offered in the study (4), which showed a higher percentage (93.41%). The respondents had a high level of knowledge in washing and cleaning, but few consumers knew about health risks and the importance of refrigeration. Most meat handlers did not use refrigerators because of a lack of electricity. Metal rings were used in front of their shops for meat for better marketing and consumer attention. According to Todd et al., most of the foodborne outbreaks globally are caused by food handlers (11). In addition, Sharif and Al-Malki reported that food handlers' knowledge, attitude, and practice play an essential role in food poisoning outbreaks (12).

According to the meat handler's food safety attitude in the current study, the respondents in Ghazni had a low percentage, and 46.7% of the respondents said that sneezing or coughing without covering their noses or mouths could contaminate the meat. This result was not in line with (13). The low attitude is also related to the

lack of meat handlers' health certificates, food safety training, and formal and informal education.

According to the meat handler's food safety hygienic practices, all food safety practices were related to the economy. On the other hand, poverty is one of the leading causes for the consumption of unsafe food, attributable to lack of access to adequate food and clean water, poor arrangements in government structures, perpetuating infectious diseases in the community, unsafe environmental situations to ensure food safety, and poor food handling and sanitation practices (14). According to previous studies, Afghanistan is one of the least economically developed countries in the world. There are many problems with sanitation and other hygienic practices because all hygienic practices require consumers' awareness, a better economic situation, and day-to-day hygienic practices. Furthermore, food-borne diseases happen in the food chain, from production to consumer (Table 2). Several studies worldwide have shown that food handlers' educational status impacts food-handling practices (15, 16). Other studies have indicated that the knowledge of food handlers affects their food-handling practices (17, 18). In addition, most foodborne diseases resulted from poor meat processing by meat handlers, while meat handlers were responsible for foodborne outbreaks (4). In this study, most of the meat handlers in Ghazni had a high level of meat handling knowledge, but some of them lacked knowledge of refrigeration and improper handling of diseases of some meat. Most respondents had a high food safety attitude, meat handling, and hygienic practices. According to all past research, the respondents have positive knowledge of food safety, but low food safety practices are due to the lack of food safety training and health certificates of food handlers (17, 19, 20, 21, 22, 23).

Conclusion

Based on the results, the respondents had poor percentages in meat hygienic practice and refrigeration despite the meat handlers' high food safety knowledge and attitude. In addition, the respondents did not participate in any food safety training and did not have health certificates. Food safety training can affect their food safety and attitude positively. The present study reveals that only one food handler has a

health certificate, and most foodborne diseases are transmitted through food. The Afghanistan government should control all meat handlers due to their health certificates and other essential training and hygienic aspects.

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Conflict of Interest

The authors declare no conflict of interest.

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