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FOOD POISONING AND EATING HABIT: KNOWLEDGE, ATTITUDES AND PRACTICE OF MEDICAL STUDENTS

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Abstract

Background: Food safety is a major public health concern among university students. This study assessed the knowledge, attitudes, and practices (KAP) regarding food safety and food poisoning among medical students at Asia International University (AIU).

Methods: A cross-sectional study was conducted among 150 medical students aged 18–30 years from Asia International University using a structured online questionnaire. Data on food safety knowledge, attitudes, and practices were collected and analyzed using descriptive statistics.

Results: Most respondents were aged 18–20 years (53.3%), from India (70.7%), and living in university hostels (95.4%). Regarding their level of knowledge, street food (46.6%) was identified as the leading cause of food poisoning, while E. coli (56%) was the most recognized foodborne pathogen. Poor sanitation (46.6%) was considered the main cause of foodborne illness outbreaks. Most students believed food poisoning is a serious concern (85.3%), supported regular food safety inspections (89.3%), and agreed that proper hygiene can prevent such illness (94%). In practice, 52% checked food temperature before consumption, and most reported washing their hands and utensils before eating.

Conclusion: Medical students demonstrated positive attitudes toward food safety but showed gaps in knowledge and practices. Targeted educational programs are recommended to improve food safety awareness and behaviors.

Key words: Food poisoning, Eating habit, Knowledge, Attitudes , Practice

Introduction

Food poisoning is an illness caused by the ingestion of food or water contaminated with pathogens such as bacteria, viruses, parasites, or their toxins, as well as harmful chemicals. Contamination typically occurs through improper food handling, storage, or production, highlighting the importance of food hygiene and safety. The prevention of food poisoning is largely dependent on the implementation of proper food safety practices and educating consumers about the risks associated with unsafe food consumption. Knowledge refers to the ability to acquire, retain, and apply information regarding food safety practices, while attitudes pertain to individuals' perceptions and readiness to act in ways that influence food safety, and practices involve the consistent application of this knowledge in daily life (1,2).

Globally, foodborne illnesses are a significant public health issue, with the World Health Organization estimating that approximately 600 million people, or nearly 1 in 10 individuals, suffer from foodborne diseases annually, resulting in around 420,000 deaths worldwide and contributing to the loss of 33 million healthy life years (3). Vulnerable populations, including infants, young children, pregnant women, the elderly, and individuals with compromised health, are especially at risk (3,5). Unsafe food practices also contribute to a cycle of diarrhoea and malnutrition, particularly in vulnerable groups, further exacerbating public health challenges (3).

The prevalence of foodborne illness is particularly high in low- and middle-income countries, where unsafe water, poor hygiene practices, inadequate food storage and production conditions, and low literacy rates contribute significantly to disease burden (5). While common short-term symptoms include nausea, vomiting, and diarrhoea, long-term consequences such as liver damage, kidney failure, cancer, and neurological disorders may also occur (3). Research interventions have shown that behaviour-change strategies and food safety education can significantly improve hygiene practices such as handwashing and food handling (3,4,5).

Southeast Asia and similar developing regions continue to bear a substantial burden of foodborne diseases, although underreporting remains a major issue, particularly among university students who may not seek medical care (5). Unsafe practices in food outlets, including improper handling and poor sanitation, further contribute to the problem (5). Universities, where students rely heavily on campus food services, represent a critical setting for studying food safety risks. Previous studies indicate that students often demonstrate inadequate knowledge and unsafe food handling behaviours, increasing their vulnerability to foodborne illnesses (4,6).

Despite these risks, studies focusing on knowledge, attitudes, and practices (KAP) regarding food safety among university students remain limited. Evidence suggests that young adults frequently lack sufficient food safety awareness, leading to poor hygiene practices (1,2,6). These gaps highlight the need for targeted educational interventions to improve food safety behaviours and reduce the incidence of foodborne illness.

The objective of this study is to investigate the incidence, causes, and prevention of food poisoning among medical students, focusing on their knowledge, attitudes, and practices related to food safety, as well as their dietary habits and preventive behaviors.

Methodology

A cross-sectional descriptive study was conducted among 150 medical students aged 18–30 years at Asia International University to assess their knowledge, attitudes, and practices (KAP) regarding food safety and food poisoning. Participants from different academic years were selected through simple random sampling and completed an online structured questionnaire on foodborne illness knowledge, food safety attitudes, and hygiene practices. The study was carried out from December 2025 to May 2026. Data were analyzed using descriptive statistics, chi-square tests, and regression analysis.

The study aimed to identify gaps in students' knowledge and behaviors related to food safety and foodborne illnesses. The findings were used to support the development of targeted educational interventions and awareness programs to reduce the risk of foodborne diseases among university students.

Result

Table 1: Socio-demographic information of the respondents

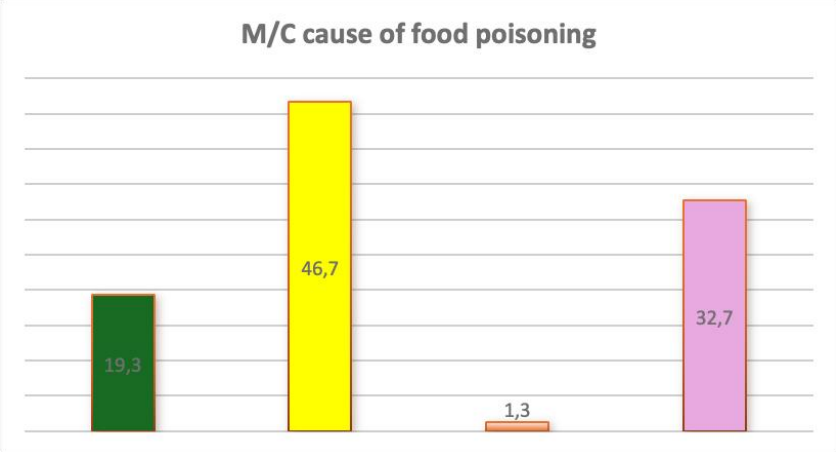
Characteristics	Frequency (n=150)	Percentage
Respondent Gender		

Male	80	53.3
Female	70	46.6
Respondent age		
18-20	88	58.7
21-23	35	23.3
24 and above	27	18
Respondent Nationality		
Indian	106	70.7
Bangladeshi	3	2
Nepalese	38	25.3
Pakistani	3	2
Respondent level of study		
1st year	114	76
2nd year	25	16.7
3rd year	4	2.7
4th year	4	2.7
5th year	3	2
Respondent living arrangement		
On-campus accommodation	143	95.4
Off-campus housing	7	4.6

A total respondent of 150 students participated in the study, among them most of were between the age of 18-20 (53.3%), followed by age between 21-23 (23.3%). Majority of the respondents were from India (70.7%), followed by Nepalese (25.3%). As per the observation, Most of the respondents were living on university, hostel (95.4%).

KNOWLEDGE SECTION

Table 2: Distribution of respondents according to their responses on most common cause of food poisoning among university students.



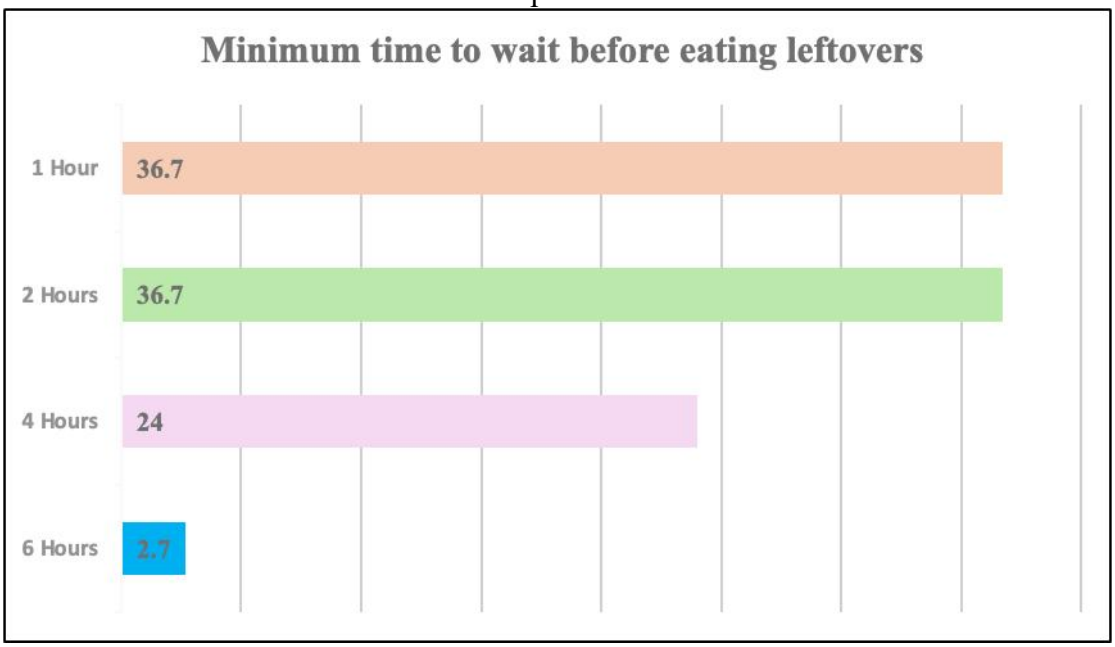
According to the study, many students (46.6%) believe that street food is the most common cause of food poisoning, followed by contaminated water (19.3%), improperly stored leftovers (32.7%) and Campus food outlets (1.3%).

Table 3: Distribution of respondents according to their responses on which foodborne pathogen do you think is the most common cause of foodborne illness?

Responses	Frequency(n=150)	Percentage
Salmonella	57	38
Escherichia coli (e. coli)	84	56
Listeria	2	1.3
Noro virus	7	4.7

Study indicates that E.coli (56%) is the most common cause of foodborne illness, followed by Salmonella (38%), Noro virus (4.7%), and Listeria (1.3%).

Table 4: Distribution of respondents according to their responses on minimum time we should wait to eat leftovers that were left at room temperature.



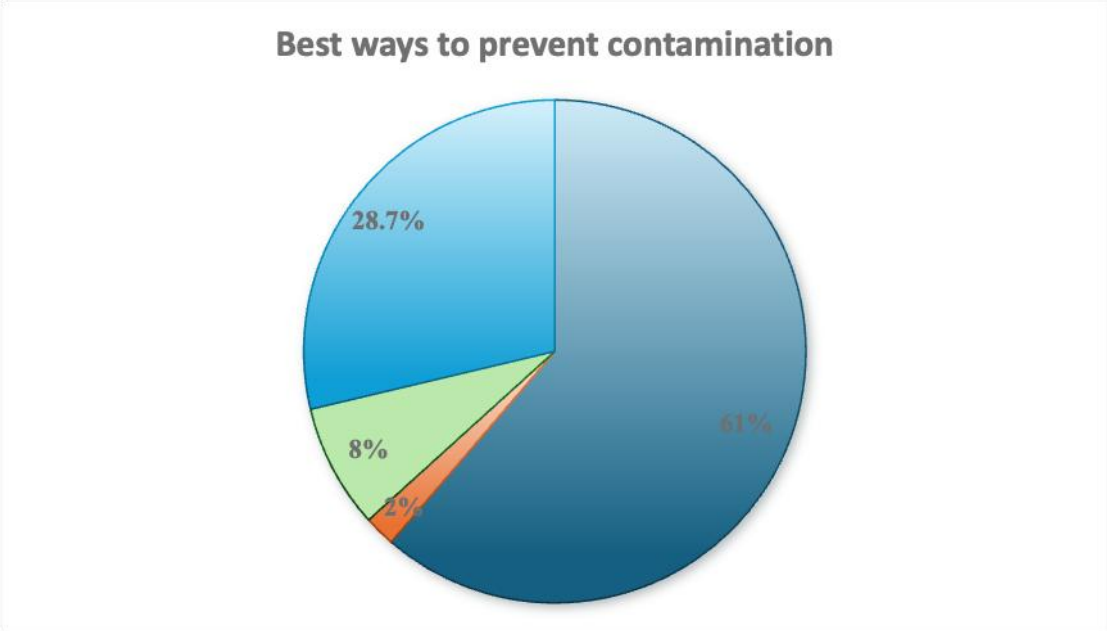
As per the observations, a majority of students (73.4%) think that 1-2 hours is minimum time we should wait to eat leftovers that were left at room temperature. Some students (24%) suggest we can wait up to 4 hour. While only a few (2.7%) opted to wait for 6 hours.

Table 5: Distribution of respondents according to their responses on main reason foodborne illness outbreaks occur at university cafeterias.

Responses	Frequency (n=150)	Percentage
Inadequate storage	29	19.3
Untrained food handlers	12	8
Cross-contamination	39	26
Poor sanitation	70	46.7

Most of the respondents selected Poor sanitation (46.6%) as the main reason for foodborne illness outbreaks occur at university cafeterias, followed by Cross-contamination (26%), and Inadequate storage (19.4%).

Table 6: Distribution of respondents according to their responses on best ways to prevent contamination while eating at university food outlets.



Study indicates that asking for freshly prepared food (61.3%) is best ways to prevent contamination while eating at university food outlets. Ensuring utensils are sterilized (28.7%), choosing only hot foods (8%) and Avoiding salads and raw vegetables (2%) are some other ways as well.

Table 7: Distribution of respondents according to their responses on what is the correct action if you notice a food handler not washing their hands properly?

Responses	Frequency (n=150)	Percentage
Report it to management	47	31.3
Politely ask them to wash their hands	103	68.7

Study indicates that the correct action if you notice a food handler not washing their hands properly is Politely ask them to wash their hands (68.7) and Report it to management (31.3).

Table 8: Distribution of respondents according to their responses on effectiveness of university's food safety training programs for campus food outlets in preventing foodborne illness.

Responses	Frequency (n=150)	Percentage
Very effective	41	27.3
Somewhat effective	52	34.7
Not effective	23	15.3
I'm sure	34	22.7

According to Table 8: 34.7% respondents believe the effectiveness of university's food safety training programs for campus food outlets in preventing foodborne illness is somewhat effective. 27.3% agree it is very effective, while 15.3% suggest it is not effective.

ATTITUDE SECTION

Table 9: Distribution of respondents according to their attitude towards food poisoning and eating habit

Attitude Factors	**Responses**			
	Strongly agree	**Agree**	**Disagree**	**Neutral**
Food poisoning is a serious concern in University food outlets.	64	64	7	15
Necessity of regular audits and inspections to ensure food hygiene.	81	53	_	16
Confidence in identifying unsafe food handling.	32	75	_	43
Illness can be prevented if food is handled with proper hygiene.	80	61	_	9
Introduction of food safety courses as part of university curriculum.	41	94	10	5
Concern regarding eating from campus food outlets.	33	67	33	17
Discussion of food safety with peers.	42	64	_	44
How likely are you to take action if food safety is violated.	58	72	18	2

From the study it is concluded that respondents have variety of attitude towards food safety and management. It is described hereby:85.33 % people think food poisoning is a serious concern in university food outlets, whereas rest of them either stayed neutral or disagreed with the opinion. "Necessity of regular audits and inspections to ensure food hygiene" - regarding this statement, most of the study population strongly agreed (89.33%). Most of the participants (71.33%) claimed that they did not know how to identify unsafe food handling. 94 % of the study population thinks illness can be prevented if food is handled with proper hygiene.

PRACTICE SECTION

Table 10: Distribution of respoindents according to their eating habit

Attitude Factors	**Responses**			
	Always	**Sometimes**	**Rarely**	**Never**
How often do you ensure	108	35	7	_

kitchen is clean before cooking.				
Checking temperature of food to ensure it is cooked properly.	52	23	62	13
Experienced food poisoning from meal prepared at university outlets.	14	28	87	21
Washing of hands and plates before eating.	129	14	_	7
Noticing how often food handles wear protective gear.	59	51	31	9
Do you think food is prepared with adequate hygiene at University cafeterias?	54	67	8	21

Above table shows that (52%) of the respondents check the temperature of food to ensure it is cooked properly. (129%) Wash hands and plates before eating. (54%) believe food is prepared with adequate hygiene at University cafeterias.

Discussion:

A total respondent of 150 students participated in the study, among them most of were between the age of 18-20 (53.3%), followed by age between 21-23 (23.3%). Majority of the respondents were from India (70.7%), followed by Nepalese (25.3%). As per the observation, Most of the respondents were living on university, hostel (95.4%).

The findings show that almost half of the students (46.6%) consider street food the most common cause of food poisoning, likely reflecting concerns about hygiene and food handling practices. A notable proportion also identified improperly stored leftovers (32.7%), indicating some awareness of risks related to food storage and bacterial growth. However, fewer students recognized contaminated water (19.3%) as a cause, despite its well-known role in foodborne illnesses, and very few (1.3%) pointed to campus food outlets, possibly reflecting trust in institutional food safety or underestimation of risks. Overall, this suggests that while students are aware of some common sources, their understanding is incomplete and influenced by perception rather than comprehensive knowledge (7,8).

The findings show that more than half of the respondents (56%) identified E. coli as the most common cause of foodborne illness, followed by Salmonella (38%), while very few recognized norovirus (4.7%) and Listeria (1.3%). This pattern suggests that students tend to associate foodborne illness mainly with bacterial pathogens, likely reflecting emphasis in academic learning and public awareness. However, the low recognition of norovirus is notable, as it is one of the leading global causes of foodborne disease outbreaks, indicating a gap in comprehensive understanding. Similarly, the minimal identification of Listeria may reflect limited awareness of its importance in high-risk groups. Overall, these findings highlight partial but skewed knowledge, where commonly taught bacteria are overemphasized while other significant pathogens are underrecognized, consistent with previous studies (7,9)

The findings indicate that a majority of students (73.4%) correctly identified 1–2 hours as the safe time limit for consuming leftovers kept at room temperature, reflecting a reasonable level of awareness of basic food safety guidelines. However, a notable proportion (24%) believed that food can be safely consumed after 4 hours, and a small fraction (2.7%) even after 6 hours, which suggests gaps in understanding and potential risk for food borne illness due to bacterial growth.

These misconceptions are important, as improper storage time is a well-known contributor to food poisoning. Overall, while most students demonstrate appropriate knowledge, the presence of incorrect responses highlights the need for clearer and more consistent food safety education (10,11).

The findings indicate that nearly half of the respondents (46.6%) identified poor sanitation as the main cause of foodborne illness outbreaks in university cafeterias, reflecting strong awareness of hygiene-related risks in food preparation areas. Cross-contamination (26%) and inadequate storage (19.4%) were also recognized, showing a moderate understanding of key food safety hazards beyond cleanliness alone. However, the dominance of sanitation in responses suggests that students may prioritize visible hygiene issues while underestimating other important factors such as temperature control and improper food handling. This pattern reflects partial but not fully comprehensive knowledge of outbreak determinants in institutional food settings. Similar evidence from food safety research highlights that poor hygiene, cross-contamination, and improper storage practices are major contributors to foodborne outbreaks in institutional cafeterias, emphasizing the need for continuous education and enforcement of food safety standards (12,13).

The findings show that most respondents (61.3%) believe that requesting freshly prepared food is the best way to prevent contamination when eating at university food outlets, indicating good awareness of the importance of food freshness in reducing microbial risk. A considerable proportion also emphasized ensuring sterilized utensils (28.7%), reflecting understanding of cross-contamination through improper handling tools. However, fewer students selected choosing only hot foods (8%) and avoiding salads or raw vegetables (2%), suggesting limited awareness of risks associated with temperature abuse and raw food contamination. Overall, the responses demonstrate a generally good but uneven understanding of preventive practices, with stronger emphasis on preparation freshness rather than a broader range of food safety behaviors. Similar studies have shown that food safety practices among young adults often focus on visible indicators of hygiene, while less attention is given to temperature control and raw food risks, highlighting the need for more comprehensive food safety education in university settings (14,15).

The results indicate that a majority of respondents preferred a direct and constructive approach, with 68.7% stating they would politely ask the food handler to wash their hands, reflecting a proactive attitude toward immediate risk reduction. Meanwhile, 31.3% preferred reporting the issue to management, indicating awareness of formal accountability mechanisms but a comparatively less immediate response. This distribution highlights a tendency toward interpersonal intervention over institutional reporting, which may be influenced by social comfort, perceived responsibility, or situational urgency. Encouraging both prompt action and structured reporting is essential for maintaining effective food safety practices (10).

The findings reveal a moderate perception of effectiveness regarding university food safety training programs, with 34.7% of respondents considering them somewhat effective and 27.3% rating them as very effective. However, a notable 15.3% perceived these programs as not effective, suggesting gaps in training quality, implementation, or compliance. This distribution reflects that while training initiatives are generally viewed positively, their impact may be inconsistent, highlighting the need for more practical, regularly reinforced, and monitored food safety education to ensure better prevention of food borne illnesses (16,17).

The attitude data suggest a generally strong awareness and positive orientation toward food safety among respondents, though with some practical gaps. High agreement that food poisoning is a serious concern and that hygiene can prevent illness reflects good foundational knowledge, while strong support for regular audits and inclusion of food safety courses indicates recognition of

systemic solutions. At the same time, moderate confidence in identifying unsafe practices and mixed levels of concern about eating at campus outlets point to variability in personal vigilance. Encouragingly, most respondents expressed willingness to take action when violations occur, yet the relatively lower engagement in peer discussions suggests missed opportunities for collective awareness-building. Overall, the findings imply that while attitudes are largely favorable, strengthening practical skills, communication, and consistent behavioral reinforcement is essential to translate awareness into safer practices (16,17).

The practice-related findings show a mixed but generally encouraging pattern of food safety behaviors among respondents. A large proportion reported always washing hands and plates (86.0%) and ensuring kitchen cleanliness (72.0%), indicating strong adherence to basic hygiene practices. Similarly, consistent use of cutting boards (61.3%) and regular observation of food hygiene (58.0%) reflect good routine awareness. However, important gaps are evident in technical practices, as many respondents reported rarely (41.3%) or never (8.7%) checking food temperature, which may increase the risk of improper cooking. Additionally, although some respondents experienced food poisoning, reporting to university health services was inconsistent, suggesting underuse of formal safety systems. Overall, while basic hygiene practices are well followed, there is a clear need to improve technical food safety skills and reporting behaviors for more effective prevention (16,19).

Conclusion

Overall, the study shows that students have a reasonable understanding of food safety and generally maintain positive attitudes, especially toward basic hygiene practices. However, their knowledge is somewhat uneven, with noticeable gaps in areas like temperature control, less visible pathogens, and proper reporting systems. While many students are willing to take action when they notice unsafe practices, this is often informal rather than through proper channels. In practice, basic habits are followed well, but more technical aspects are often overlooked. This suggests that although awareness exists, it is not fully translated into consistent and comprehensive food safety behavior.

Recommendation:

It is recommended that universities implement structured, practical, and regularly reinforced food safety training programs that go beyond theoretical knowledge to include hands-on demonstrations and real-life scenarios. Strengthening awareness about less recognized risks, such as viral pathogens and temperature control, is essential. Additionally, promoting a culture of responsibility through clear reporting systems, regular audits, and peer-led awareness initiatives can enhance compliance and accountability. Integrating food safety education into the academic curriculum and improving monitoring of campus food outlets will further support safer food practices among students

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