

Students' Perceptions of Relationships and Attitudes About Food Safety

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Abstract: Safe food supplies are essential for the growth and stability of national economies, facilitating trade and tourism. The safe practices of handling, preparing, and storing can help to avoid food contamination and reduce foodborne illness. A study was carried out to identify the student's level of knowledge and attitudes about food safety practices used during online learning sessions. The study sample consisted of 92 students from Bachelor in Food Service Technology (BBS), from Year 1 and Year 2 programs who were randomly selected. Respondents from the Faculty of Technical and Vocational Education (FPTV), Universiti Tun Hussein Onn Malaysia (UTHM) as they have a basic knowledge of food preparation and attended online classes. A set of questionnaires was administered to assess students' basic knowledge and attitudes toward food safety as they were practiced throughout online learning sessions. The frequency, percentage, and mean score were calculated using the Statistical Package for Social Sciences version 26.0 software. The findings demonstrate that university students have a basic understanding of food safety ($m=4.16$). Not only that, a mean score of 4.25 shows that students have a positive attitude toward food safety principles practiced during the online learning sessions. Thus, we can conclude that having a solid foundation in food safety measures will affect positive attitudes toward food safety at home.

Keywords: Food Safety Practices, University Students, Online Learning Study

1. Introduction

Food is a basic human necessity that provides all the needs of substances for spiritual and physical formation. Food can be defined as a process where living things take a variety of foods to get the necessary nutrients to survive and carry out all the necessary activities from day to day. This clean, safe, and quality food can guarantee the health of an individual (Shanaz Mawji, 2000; Attrey, 2017) Education on safety in food preparation is important to adults as each individual has the potential to

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provide and handle food to the public who may be at risk for foodborne disease (Abbot et al., 2009, Mol et al., 2018) Adults and children who do not have exposure on clean and safe food handling practices may be the cause of food poisoning.

The Health Director-General of Malaysia (2020) said the total number of food poisoning in the country last year showed a decrease of 44.2 percent from 516 cases to 288 cases compared to the same period in 2019. Although the case is still under control, through the Food Safety and Quality Division, this issue related to food safety and hygiene is worrying. Health Directors in other words advise the public to always practice food safety by choosing clean food premises before buying food. The conceptual practice of "See, Smell and Taste" eating should be practiced before eating to avoid the issue of food poisoning or the damage of the damaged food. Thus, hygiene and training practices are the first steps proposed to prevent incorrect practices in food handling (Maria, Jose, Luis & Olga, 2008; FAO & WHO, 2023).

1.1 Objectives of the Study

The objectives of this study are:

1. To identify the level of food safety knowledge practiced by students.
2. To identify the level of students' attitudes towards food safety practiced by students.
3. To study the relationship between the level of knowledge and attitudes of students towards food safety practiced by students.

1.2 Literature Review

Hygiene is defined as conditions and practices that help maintain health and prevent the spread of disease (Water Aid, 2012). In a holistic aspect, cleanliness is an important part of life in living a healthy lifestyle. Thus, food safety can be defined as the level of confidence that a food will not cause disease or danger to consumers when it is prepared, served, and eaten in accordance with the purpose of its use (FAO & WHO, 2023). Based on this study, knowledge is information related to food safety obtained by food handlers covering the basics of personal hygiene, food preparation, food storage, use of personal protective equipment, and food serving. Attitude in this aspect refers to the way students handle their food, the usage of appropriate equipment, and how they take care of the cleanliness of the workplace.

Theoretically, food safety knowledge, attitudes, and practices can be improved provided all those involved in the food industry are given adequate knowledge about food safety (Griffith 2000; Islam et al., 2022). Therefore, having a basic knowledge of food safety practices will be able to produce a positive attitude toward a student. For example, if a person has a basic knowledge of food safety, they will show positive attitudes such as knowing how to take care of themselves before handling food, knowing how to store raw food at the right temperature, how to use appropriate kitchen utensils, and some other positive attitudes.

2. Methodology

Hygiene is defined as conditions and practices that help maintain health and prevent the spread of disease (Water Aid, 2012). In a holistic aspect, cleanliness is an important part of life in living a healthy lifestyle. Thus, food safety can be defined as the level of confidence that a food will not cause disease or danger to consumers when it is prepared, served, and eaten in accordance with the purpose of its use (FAO & WHO, 2023). Based on this study, knowledge is information related to food safety obtained by food handlers covering the basics of personal hygiene, food preparation, food storage, use of personal protective equipment, and food serving. Attitude in this aspect refers to the way students

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3. Results and Discussion

Through the findings, the data were collected from students of Bachelor of Food Service Technology (BBS), on Year 1 and Year 2. It is based on respondents' feedback on the questionnaire instrument through the Google Form link. IBM SPSS Statistics Version 26.0 was used to analyse the data. The findings presented are to describe the answer to the question of research on food safety practices practiced by students during online learning sessions. The analysis of the data used are descriptive statistical method (min and standard deviation) and inferential statistics (Pearson correlations). Descriptive statistics such as the mean score is used to explain the level of knowledge and attitude of students on food safety practiced during online learning sessions, while the inferential statistical method (Pearson Correlation) is used to measure the level of relationship between student knowledge and attitude.

3.1 Results

In this study, the researcher has obtained information from 92 respondents about the background of the respondents to assist in the study conducted. Table 1 shows the overall demographic data of the respondents.

Table 1: Respondent Demographic

Subject	Frequency	Percentage (%)
Gender		
Male	28	30.4
Female	64	69.6
Races		
Malay	80	87.0
Chinese / Indian	-	-
Others	12	13.0
Year of Study		
Year 1	48	52.2
Year 2	44	47.8

Table 1 shown the findings of the analysis by gender in this study showed that the number of male respondents was 28 students (30.4%) while the number of female respondents was 64 students (69.6%). The results of the analysis clearly show that female students are most respondents involved in this study. Next, the table above also shows most of the respondents are Malays (87.0%), 0% from Chinese and Indian respondents and about 12 respondents (13.0%) are from other races. There were about 48 respondents (52.2%) from Year 1 and another 44 respondents (47.8%) from year 2 students from Bachelor of Food Service (BBS).

Table 2 below shows the analysis of students' level of knowledge on food safety practiced by BBS students. In Table 2, the results have been displayed as the analysis shows the level of students' knowledge about food safety.

Table 2: Mean score and standard deviation of students' level of knowledge of food safety

No.	Item	Mean Average	Std. Deviation	Mean Score Level
B1	I have a basic knowledge of food safety while at home	4.12	0.709	High
B2	I applied the basic knowledge of food safety learned during practical classes at home.	4.22	0.924	High
B3	I always care about self -care when preparing food at home	4.60	0.799	High
B4	I learned that raw foods should always be kept in the fridge	4.47	0.805	High
B5	I use separate kitchen utensils when preparing meals at home	4.42	0.715	High
B6	I wash my hands before preparing food while at home	4.21	0.908	High
B7	I wash my hands after preparing food while at home.	4.49	0.719	High
B8	I have the awareness to do typhoid injections despite learning food safety practices	3.78	0.719	High
B9	I learned that typhoid injections need to be taken every 3 years.	3.90	0.950	High
B10	I make sure food is always kept at the right temperature.	3.43	1.225	High
Average		4.16		High

Based on Table 2, we can see that the scale of 'Strongly Agree' (SS) on item B3 i.e. 'I always care about self -care when preparing food at home' has a high total frequency and percentage of 73.9% (68 people) while item B10 i.e. 'I make sure food is always kept at the right temperature' had the lowest frequency and percentage, only 20.7% (19 people). Next, the item for the 'Agree' scale on item B1 i.e. 'I have basic knowledge of food safety while at home' had the highest frequency and percentage, 48.9% (45 people) and for item B3, item 'I always caring about self-care when preparing food at home' had the lowest frequency and percentage of 17.4% (16 people).

Table 3 shows the findings of the study of mean scores for students' attitudes towards food safety practiced during online learning sessions. The results of the study, the average mean score value for students' attitudes towards food safety practiced during the online learning session is at a value of 4.25.

Table 3: Mean score and standard deviation of students' attitudes towards food safety practice

No.	Item	Mean Average	Std. Deviation	Mean Score Level
C1	I always make sure my nails are trimmed and always clean before preparing food.	4.75	0.527	High
C2	Typhoid injections help in boosting the body's immunity while preparing food	4.70	0.569	High
C3	I choose fresh wet ingredients when preparing food.	4.73	0.494	High
C4	I separate raw foods from cooked foods	4.79	0.407	High
C5	I cover the food that has been cooked to keep it away from pests.	4.82	0.417	High
C6	I store the wet material according to the correct temperature	4.61	0.628	High
C7	I store the dry ingredients according to the correct temperature.	4.62	0.677	High
C8	I use a sharp knife while preparing the raw material	4.73	0.537	High
C9	I use a clean cutting board when preparing the raw materials.	4.78	0.551	High
C10	I practice the concept of "clean as you go" after preparing food to ensure the kitchen stays clean	4.71	0.584	High
Average		4.25		High

In Table 3, the item on C5 'I cover cooked food to avoid pests' had the highest mean score value of 4.82, while for item C7 'I store wet ingredients at the correct temperature' had an average mean score value of the lowest, at 4.61.

Table 4: The relationship between the level of knowledge and students' attitudes towards food safety practice

Item	Total (N)	Pearson Correlation (r)	Significant (p)	Relationship Level
Knowledge of food safety practiced by students	92	1	0.000	Perfect
Attitudes towards food safety practiced by students	92	0.599	0.057	Strong

Based on the analysis in the table, the level of knowledge on food safety is practiced during the highest R value learning session of 1.000. This value shows a strong and significant relationship ($p < 0.01$). Meanwhile, for student attitude items on food safety practiced during an online learning session, R value is $r = 0.599$ ($p < 0.01$) and is at a significant level. Overall, there is a strong relationship between the level of knowledge and attitude of students on food safety practiced when they handle food at home. Students can be said to have basic knowledge of food safety practices and have a positive attitude when handling food while at home.

Table 1, as are all tables, should be referenced in the text. Items in the table can be aligned to the cell-centre, the right, or the left whenever appropriate. All tables must have a caption that is aligned left. Only horizontal lines should be used within a table, to distinguish the column headings from the body of the table, and immediately above and below the table. Tables must be embedded in the text and not supplied separately.

3.2 Discussions

The results of the study in chapter four showed that the overall mean score for the level of food safety knowledge of students during the online learning session was 4.16. This score indicates that the level of knowledge of students is at a high level. This explains that students from the Bachelor of Food Service Technology (BBS) program have a basic knowledge of food safety during the online learning sessions.

In item B3 shows a mean score of 4.60 where most respondents to this questionnaire are always concerned about self-care when preparing food at home. Next, on item B7 which is 'I wash my hands after preparing food while at home' has the second highest mean score value of 4.49. This is in line with the evidence of many past studies that it is important to practice personal hygiene especially hand hygiene because hands are the main agents that transmit intestinal microorganisms and parasites to food (Aarnisalo et al. 2016). Poor personal hygiene is one of the causes of food poisoning where cross-contamination can occur between food handlers and food.

As in item C5 which is 'I cover cooked food to avoid pests' has the highest mean score value, of 4.82. The second highest item was on item C4 which was 'I separate raw food from cooked food' which had a mean score value of 4.79. This indicates that even though the students are at home, they still practice as what has been taught in the kitchen practical class. Not only that, but the respondents also knew that every food that had been cooked should be covered to avoid pest interference. As stated by (Coleman & Roberts 2015; Powell et al. 2017), education on food safety should be given to food handlers to bring about behavior change in addition to adopting a positive attitude.

According to the Pearson correlation analysis that has been conducted, the level of knowledge on food safety practiced by students during the learning session is the highest r value of 1.000. This value indicates a strong and significant relationship ($p < 0.01$). Meanwhile, for the item of students' attitudes towards food safety practiced during the online learning session, the value of r was $r = 0.199$ ($p < 0.01$) and was at a significant level. Thus, we can conclude that the higher a person's level of knowledge, the more positive the attitude practiced towards food safety. Our finding concerning the level of knowledge and food safety practices complement and extent the study of Islam et al., (2022) and Muhammad et al., (2018). Where knowledge on the food safety must be increase and more programs to be conducted so the students more aware and practicing good hygiene and sanitation in their daily routines.

4. Conclusion

Overall, the results show that the students' knowledge insists on good practice attitudes about food safety even during the online learning session. The result shows there is a positive relationship between the amount of knowledge and attitude of students on food safety practiced during their online learning studies, as evidenced by Pearson's correlation test. We can say that students from the Bachelor of Food Service Technology (BBS) have a solid understanding of food safety practices. The results of this study reveal that respondents' understanding of cleanliness and food safety is influenced by their personal experiences. For example, students would wash their hands before and after handling the food. Not only that, but they are also aware that typhoid injection must be taken although they are learning the kitchen class online and from the findings, we can witness that they are particularly concerned with food

preservation, raw material selection, and proper kitchen tool use. Students with good self-concepts, on the other hand, are more likely to seek to improve their professionalism in food safety measures (Idawati & Wan Azlinda, 2018; Islam et al., 2022; Mol et al., 2018; Muhammad et al., 2018). A recommendation of further study using systematic sampling during the physical practical class may refine the understanding of students' knowledge and their attitudes where this study only focus on students that have undergo online class during the covid-19 outbreak.

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