

The Study of Food Safety Awareness, Practices, and Perception Among CeDS Students in UTHM Pagoh

Norfadhilah Abd. Rahman, Nur Aleysha Shahira Abd Razak, Puteri Nazatul Nisha Amat Azman, Zul Afiq Sazeli*

*Department of Science and Mathematics, Centre for Diploma Studies,
Universiti Tun Hussein Onn Malaysia, Pagoh Higher Education Hub, 84600 Pagoh, Johor, MALAYSIA*

*Corresponding Author: zulafiq@uthm.edu.my

DOI: <https://doi.org/10.30880/mari.2025.06.01.026>

Article Info

Received: 01 October 2024

Accepted: 30 November 2024

Available online: 15 January 2025

Keywords

Krejcie and morgan, Quantitative Data, SPSS, Correlation

Abstract

This study aims to examine the level of awareness among students of Centre for Diploma Studies (CeDS) at UTHM Pagoh towards food safety. Next, to identify their perception about food safety and hygiene in daily life, and to analyse the practices of the students about food safety as part of their daily routine. Descriptive analysis was used to analyse the research questions, and correlation analysis using SPSS was used to interpret the research output. The Krejcie and Morgan sampling method was used, involving 300 students as the sample size. This study used a randomly selected student sample (N = 325) from various diploma majors, out of the 2482 diploma students at UTHM. Primary data on food safety awareness, perception, and practices were collected through online questionnaires and generated using Google Forms. The results of this research indicate that there is a significant relationship between student knowledge about food safety, with correlations of 0.573, 0.661, and 0.682 between the different sections, all significant at a level are below 0.05.

1. Introduction

In order to secure long-term health in this highly advanced period, there are some critical things that must be emphasized. Especially when it comes to food safety. One of the main problems in a public health system is food safety. The United Nations Children's Fund (UNICEF) estimates that about one million fatalities occur, because of combined foodborne and waterborne illnesses annually [1]. Student in a strong food safety culture is responsible, confident, and take good care in making safe food. They understand the necessity of producing safe food as well as the consequences of mistakes. Besides, student nowadays have the necessary knowledge and skills, as well as an honest motivation to make sure they aware about food safety. Apparently in 2021, there were approximately six thousands of food poisoning cases caused by food and water borne diseases reported in Malaysia. Half of the foodborne related diseases from the early 1990s until today were associated with outbreaks in institutions and schools, mostly due to unhygienic food handling procedures [2]. The food poisoning cases also had happened and were reported among students from Universiti Teknologi MARA (UiTM) Selangor. A student complained of having food poisoning after consuming food bought from food premises at UiTM Puncak Alam were listed among others complaint. Besides, food poisoning also had occurred at one of the cafés in College Jasmine at UiTM Puncak Perdana issue several years ago which resulted in the closure of the premise [3]. From the above cases, it can be seen that the issues of foodborne illness in the university are still happening. Referring to that, many teenagers particularly students in UTHM might not aware and do not have enough knowledge about the food safety awareness, perception and they might not practice the right way in handling food.

The respondent of the study is up to 300 students between the age of 18 and 25 that have been asked to complete some of the short questionnaire that provided via google form. The target of the population was all students in Centre of Diploma Studies (CeDS) at UTHM Campus Pagoh. Therefore, the scope of this study was limited to UTHM Campus Pagoh students and more specifically is to CeDS's students. This case study was conducted to prevent any issue regrading to food poisoning among UTHM students. This case study was also carried out to assess the community's awareness of food safety and perceptions on food safety in daily lives. The safety awareness of food safety gained needs to be applied in everyday life. Knowledge of food safety and the awareness that a person has will help make wise choices to take care of the internal and external health of the body.

2. Materials and method

2.1 Population and Sample

The accessible population for this study consisted of all 2,482 students in a diploma-level at UTHM. The sample was randomly selected from seven different diploma majors, which are Applied Science (DAU), Civil Engineering (DAA), Chemical Engineering (DAK), Mechanical Engineering (DAM), Electrical Engineering (DAE), Information Technology (DAT), and Animation Technology (DAG). The study was conducted for three months, from April to June 2024, and the sample taken was 300 students based on this population. This sample size was determined by Krejcie and Morgan Table without using any formula or equation before the study was conducted.

2.2 Questionnaire

Data for this study was collected through the form generation method, which is an online questionnaire developed using Google Forms. It is used to collect data on Year 1, Year 2 and Year 3 diploma students from various courses without the need for face-to-face interaction. The questionnaire was divided into four parts, each one questions intended to meet the goals of the research archiving the objectives of this project. Section 1 was the demographic which is multiple choice. For section 1, it was for the data of their age, course and year of study. While section 2 was the level of awareness about food safety. Section 3 was the perception of CeDS students towards food safety and hygiene in daily life. For the last section, which is part 4, the application of food safety practices. All 3 section was designed by using 5 Likert scale.

2.3 Data Analysis

After the completion of data collection, Statistical Package for Social Science (SPSS) version 26.0 was then used to process the questionnaire data. SPSS is an excellent aid to interpreting data, creating tables and reports about results and checking the reliability or validity of conclusions drawn from a study [4]. Descriptive analysis was used to analyze the mean, standard deviation to summaries demographic data and the sum of each section related to the research question. It is important to summarize a large set of data, make it easier to interpret and for hypothesis testing. Inferential statistics use to assess the effect of good food safety awareness, practices and perception among CeDS students in UTHM Campus Pagoh. Inferential statistics often used to compare the differences between the treatment group and generalize about the larger population of subjects. The larger the sample size, the more likely a statistic is to indicate that differences exist between the treatment groups. Thus, the larger the sample of subjects, the more powerful the statistic is said to be.

3. Results and Discussions

The table below displays the collected data, which it was be evaluated using the mean value and percentage for each Likert scale question. Tables 1, 2, and 3 allow us to verbally interpret the mean score within the following range: 1-1.8: very low score; 1.81-2.6: low score; 2.61-3.2: moderately high score; 3.21-4.20: high score; 4.21-5.00: very high score.

Table 1 *The mean of the level of Awareness about Food Safety*

| Statement | Mean | Very unaware % | Unaware % | Neutral % | Aware % | Very aware % |
|---|------|----------------------|--------------|--------------|------------|-----------------|
| (1) Understanding the importance of washing hands for 20 seconds before handling food is importantly. | 4.41 | 0 | 2.2 | 9.8 | 33.2 | 54.8 |
| (2) The expired date on each product should be checked before purchase to maintain the quality of the meal. | 4.64 | 0.3 | 1.8 | 4.0 | 20.9 | 72.9 |

| | | | | | | |
|---|------|-----|-----|------|------|------|
| (3) Before buying food, it's good to check for any unusual foaming or discoloration. | 4.41 | 0.3 | 1.2 | 12.3 | 29.2 | 56.9 |
| (4) I always make sure purchasing food that is clean and in fresh condition. | 4.58 | 0.3 | 0.9 | 6.2 | 25.5 | 67.1 |
| (5) Leaving meals at room temperature for extended periods of time can cause food contamination. | 4.16 | 0.6 | 3.4 | 20 | 31.7 | 44.3 |
| (6) I am aware of the risks associated with Salmonella (bacteria) contamination in poultry products. | 4.19 | 0.6 | 4.6 | 17.8 | 28.9 | 48 |
| (7) Practice cross-contamination prevention method like using separate cutting boards for raw meat and ready-to-eat foods, to ensure food safety. | 4.03 | 3.1 | 2.8 | 23.4 | 29.5 | 41.2 |

Table 1 shows the mean score of the (N = 325) diploma UTHM students who responded to every 7 statements given about the level of Awareness about Food safety in section 1 of the google form questionnaire. For question 1, there is 0% of students that very unaware. This also means that most of the students are very aware of washing hands for 20 seconds which is quite good because the World Health Organization (WHO) suggests washing hands for at least 20 seconds before and after specific activities. These include the five critical times during the day where washing hands with soap is important [5]. In the second question, students were obtained a mean score 4.64, which shows that 70.9% of students very aware the need of checking the expired date on each product before making a purchase. This also means that more than half of the students very aware for this awareness. This question also shows the highest score among the other question. Next, question 3 obtained the same mean as question 1 which is 4.41. For question 4, a mean that obtained was 4.58 with the 67.1% of students very aware of purchasing food that is clean and in fresh condition. Next, question 6 obtained the mean of 4.19 which, 48% of students very aware of the risk associated with bacteria contamination. For the last question, the mean is 4.03 and be the lowest score compared to other question. There is just 41.2% of students that very aware of this practice cross-contamination prevention method. Based on this table, most of the question have high level score, so most of the CeDS students in UTHM have high knowledge in food safety awareness.

Table 2 *The student perception towards Food safety and Hygiene*

| Statement | Mean | Not important (%) | Slightly important (%) | Neutral (%) | Important (%) | Very important (%) |
|---|------|-------------------|------------------------|-------------|---------------|--------------------|
| (8) Dry your hands with a clean paper towel or tissue after washing them. | 4.01 | .6 | 4.6 | 23.7 | 35.1 | 36.0 |
| (9) Use canned food such as milk that is not rusted and has not passed the expiration date. | 4.38 | .6 | 2.2 | 13.5 | 25.5 | 58.2 |
| (10) Clean the kitchen counter and utensils after food preparation. | 4.63 | 0 | 1.2 | 4.6 | 23.7 | 70.5 |
| (11) I am concerned when food handler areas and activities look unhygienic. | 4.51 | 0 | 1.5 | 6.5 | 31.1 | 60.9 |
| (12) Long hair must be neatly tied when handling unpackaged food to prevent food contamination. | 4.47 | 0.6 | 1.5 | 9.2 | 27.1 | 61.5 |

| | | | | | | |
|---|------|------|-----|------|------|------|
| (13) It is important not to use a spoon or fork that has fallen while eating? | 4.40 | 1.2 | 2.2 | 10.5 | 28.0 | 58.2 |
| (14) Use the same knife and cutting board for raw food and vegetables. | 3.39 | 11.1 | 8.0 | 35.7 | 21.2 | 24.0 |

Table 2 shows the mean of the diploma students in UTHM Campus Pagoh who responded to every 7 questions was given about the student perception toward food safety and hygiene in the second part. Based on questions 8 and 14, the mean score that students get is between 3.41 - 4.20. This shows that students have a high level of perception and potentially shows that the mean score is at a high level. For questions 9 to 13, the mean score obtained by students is in range of 4.21-5.00. This shows that students managed to get a very high score level. For the question 8, there are 36.0 % of students think dry hands with a clean towel or tissue after washing hand is very important. Besides, question 9 got the mean score of 4.38 with the percentage of very important value is 58.2%. Question 10 has the highest mean score for this section with mean value 4.63, therefore there are 70.5% of students thought that clean kitchen was very important for food preparation. Kitchen is primary location where foodborne outbreaks occur. We must concern on the food handler areas and activities as question 11 and the mean value got were 4.51 with very important percentage is 60.9 %. Next, the results of questions 12 and 13 are in the middle of the section with mean values of 4.47 and 4.40, percentage students the very important for this section is 61.5% of tied long hair and 58.2% not use fallen spoon and fork. Lastly, question 14 got the lowest mean value with 3.39 for this section and only 24% of students agreed to use the same knife and cutting board is very important. This action can may risk the microbiological cross-contamination if use the cutting board thoroughly [6].

Table 3 *The application of food safety practices among diploma student*

| Statement | Mean | Never (%) | Almost Never (%) | Sometimes (%) | Often (%) | Always (%) |
|--|------|-----------|------------------|---------------|-----------|------------|
| (15) I wash my hands with soap before eating food in the collage cafe. | 4.17 | .6 | 3.4 | 20.0 | 30.5 | 45.5 |
| (16) I don't eat bread that has expired even if it is still not moldy. | 3.76 | 3.1 | 8.9 | 32.3 | 20.3 | 35.4 |
| (17) I store raw chicken and meat separately from cooked food. | 4.22 | 2.2 | 3.1 | 17.5 | 24.9 | 52.3 |
| (18) I always cover and keep food from being exposed. | 4.53 | 0 | 1.2 | 7.4 | 28.3 | 63.1 |
| (19) I tied long hair even when handling unpackaged food. | 4.18 | 4.0 | 2.8 | 18.2 | 21.2 | 53.8 |
| (20) I like to reheat leftovers in the microwave or over the fire to keep food from going stale quickly. | 4.17 | 1.2 | 3.7 | 17.5 | 32.0 | 45.5 |
| (21) If I have a cut or sore on my hand, I cover it before preparing food. | 4.26 | 1.2 | 3.4 | 14.8 | 28.9 | 51.7 |

On the food safety practices adopted by respondents (N = 325) as shown in Table 3 above, the mean and percentage of Diploma students in UTHM, who answered each of the 7 statements in section 3. For questions 15 and 20, the mean is 4.17, which is considered a high score. In addition, 45.5% of students answered that they always wash their hands before and after eating and reheat leftovers in the microwave. It is important to wash hands with soap under running water before eating to be sure that the food is not contaminated with dirt on the hand before eating [7]. Next, question 16 has the lowest mean value of all the questions. A score of 3.76 is the mean. The expiration dates of food usually ignored by the students. Also, not even half of the students checked the expiration date every time —35.4%. Question 17 and 18 got mean scores of 4.22 and 4.53, which is very high. This means that 52.3% of students always store raw food separately and 63.1% always keep their food from getting dirty. Finally, the average score for question 19 was 4.18, with 53.8% of students saying "always." The average score also high for question 21, which is 4.26, with up to 51.7% of students answering "always" when handling injuries such as hand cuts before preparing food.

Table 4 *The Pearson Correlation*

| | | Mean S1 | Mean S2 | Mean S3 |
|----------------|---------------------|---------|---------|---------|
| Mean Section 1 | Pearson Correlation | 1 | .573** | .661** |
| | Sig. (2-tailed) | | .000 | .000 |
| | N | 325 | 325 | 325 |
| Mean Section 2 | Pearson Correlation | .573** | 1 | .682** |
| | Sig. (2-tailed) | .000 | | .000 |
| | N | 325 | 325 | 325 |
| Mean Section 3 | Pearson Correlation | .661** | .682** | 1 |
| | Sig. (2-tailed) | .000 | .000 | |
| | N | 325 | 325 | 325 |

** . Correlation is significant at the 0.01 level (2-tailed).

Based on Table 4, Pearson correlation is measured using a set value, which is 0.0–0.1 for no correlation relationship, 0.1–0.3 for low correlation relationship, 0.3–0.5 for medium correlation relationship, 0.5–0.7 for high correlation relationship, and 0.7–1 for very high correlation relationship [8]. The Pearson correlation between the mean of the section 1 as the level of awareness about food safety and section 2 as the mean of the student perception towards food and hygiene is 0.573 and indicates a high correlation between these two variables. The significant value of these two variables is 0.000, where its level value is less than the significant level value which is 0.01. Next, the Pearson correlation between section 1 as the level of awareness about food safety and section 3 as mean the application of food safety practices is 0.661 and indicates a high correlation between these two variables. The p-value is 0.000 indicates that it less than the significant level value of 0.01. Besides that, the Pearson correlation between the mean of the section 2 as the mean of the student perception towards food safety and hygiene and the mean of the section 3 as the mean of the application of food safety practices among diploma student in UTHM Campus Pagoh is 0.682 and indicates a high correlation between these two variables. The p-value of these two variables is 0.000 where it is less than the significant level which is 0.01.

4. Conclusion

This study can be concluded that diploma students at UTHM have significant level between the awareness, practices and perception about food safety based on mean of each section from the analysis. Almost all diploma students have knowledge or awareness of food safety. Basic knowledge is determined to identify whether students focus on food safety in daily life. In addition, the perceptions of diploma students were also obtained and indicated that they all had basic awareness and a view of the importance of food safety and hygiene. Finally, the application of food safety is related to awareness and a person's view of applying it in the daily routine of students. Therefore, students must apply food safety continuously to avoid deteriorating body health. The more awareness towards food safety, the more application in daily activities diploma students. This proves that the three objectives of the study were achieved from diploma faculty students.

Acknowledgement

The authors would like to thank the Centre for Diploma Studies, Universiti Tun Hussein Onn Malaysia for its support.

Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Nur Aleysha Shahira Abd Razak, Puteri Nazatul Nisha Amat Azman; **data collection:** Puteri Nazatul Nisha Amat Azman; **analysis and interpretation of results:** Norfadhilah Abd.Rahman, Nur Aleysha Shahira Abd Razak, Puteri Nazatul Nisha Amat Azman, Zul Afiq Sazeli; **draft manuscript preparation:** Norfadhilah Abd.Rahman. All authors reviewed the results and approved the final version of the manuscript.

Appendix A: Demographic Information

Table 5 Demographic characteristic of respondents

| Demographic characteristics | Number of respondents | % |
|-----------------------------|-----------------------|---|
|-----------------------------|-----------------------|---|

| Gender (N=325) | | |
|------------------------------|-----|------|
| Male | 142 | 43.7 |
| Female | 183 | 56.3 |
| Course | | |
| Applied Science - DAU | 39 | 12.0 |
| Civil Engineering – DAA | 64 | 19.7 |
| Chemical Engineering - DAK | 29 | 8.9 |
| Mechanical Engineering - DAM | 58 | 17.8 |
| Electrical Engineering - DAE | 45 | 13.8 |
| Information Technology - DAT | 59 | 18.2 |
| Animation Technology - DAG | 31 | 9.5 |
| Year of study | | |
| 1 | 80 | 24.6 |
| 2 | 231 | 71.1 |
| 3 | 14 | 4.3 |

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