Health Affairs in Universities' Cafeterias: A Case Study of Minia University

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Abstract

Health affairs are considered one of the most important factors to be considered in all establishments, especially those providing food and beverages such as cafeterias, because they have essential impact on the health of peoples, whether employees or customers, because these outlets provide food and beverages for them. The aim of this research is to evaluate the health affairs applied in Minia University cafeterias. This research was applied to Minia's University cafeterias as a case study of Universities' cafeterias. The sample of this research consisted of all Minia university cafeterias (21). The researchers designed an observation list to explore health affairs practices applied at all Minia's University cafeterias. The collected data were analyzed statistically using SPSS V 23. The results of this research showed that each of health affairs operations (personal hygiene, food storage, equipment and tools cleaning, food handling; cleaning and sanitizing practices) applied at all Minia's University cafeterias are weak, also there is no training program related to health affairs practices for employees in Minia's University cafeterias.
Keywords: Health Affairs, Cafeterias, Establishments, Minia.

Literature Review

Official Gazette, (2008) pointed out that the requirements of the Law no. 119 of 2008 applied to two types of public shops. The first type: restaurants, cafes, outlets and similar shops providing food or non-alcoholic beverages to the public and not considered tourist institutions. The second type: hotels, "benches", furnished spaces and similar shops intended for the establishment of the public, which is not considered a hotel establishment, whether these shops are constructed of construction, wood, metal panels or any other building material, or in rejecting space, Goldie's.

The NYC Health Code (New York City Health Code): Food Preparation and Food Establishments (2017) declares that the cafeteria is a small outdoor structure, often self-contained, open on one or more sides or with an open display window. Moreover, the cafeteria must be made of cement, wood, or any other approved materials as appropriate, and should be kept away from health hazards and sources of dirt/pollution.

According to the Australia New Zealand Food Standards Code (2018), the design and construction of food institutions must be suitable for their activities; provide adequate space for activities to be carried out on food and for the equipment used for such activities; permit the food premises to be effectively cleaned, and sanitized; to the extent practicable; eliminate dirt, dust, smoke and other contaminants; and not to permit the entry of pests.

Cafeteria environment policies may have the most important for these younger students; they may be dreamier by their environment and need more time and assistance to consume their meal than do older people (Susan et al., 2018).

Food handlers known as food vendors are vital components in the interface between the cooking environment and the food which is prepared or served (The NYC Health Code: Food Preparation and Food Establishments, 2017). WHO (1989) defined food handlers as those who, in the course of their regular routine work, handle food or items that may come into contact with food, such as eating and drinking utensils not meant for their personal use (Nasrolahei et al., 2017).

Guidelines Hygiene and Safety for Food Area (2013) stated that the basics for places that serve cold dishes or hot food (such as bar service, cafeteria, and snack-bar), with suitable to kitchen,

exhaust and ventilation, toilets, changing rooms, food storage, and waste disposal methods, must be equal to those described for restaurant activities.

Mark (2017) stated that universities and canteen operators must have adequate sanitation concerning food preparation and handling. Furthermore, good hygiene and safe drinking water are essential to ensure excellent and safe health for customers. Also, sanitation is critical in order to maintain good health. On the other hand, the lack of these essential components can cause many diseases and their spread (Mark, 2017). Drainage within the food industry, as George (2008) argues, means appropriate treatment of contact surfaces for food through an efficient process of destroying plant cells of microorganisms of public health importance, and significantly reducing the number of other unwanted microorganisms, but without adversely affecting food or its safety.

Tan et al. (2013) noted that foodborne disease outbreaks often result from poor hygiene of food handlers. Food borne diseases continue to be a public health problem in many countries despite many efforts to improve hygiene standards and practices, training and educating food handlers, as well as consumer awareness.

Rosemawati et al. (2014) agreed with Sheriff et al. (2013) that food-borne illnesses occur when somebody consumes food containing enough living bacteria or toxins that can harm human health. Also, the most bacterial agents in foodborne diseases are: - E. coli, Salmonella spp, Vibrio, Shigella, Listeria, and Campylobacter.

A person can continue to carry the harmful bacteria in the intestinal area and faeces for a long time without symptoms. Hence, faecal-oral transmission can become the main way of infection if good personal hygiene is not practiced (Rodríguez-Caturla et al., 2011 and Simonne et al., 2010). According Jarmila, (2010) typical microbiological infection of food occurs in food and drink facilities due to surfaces touching sebaceus food, poor hygiene practices and inappropriate warehouses temperature. Also, Catering establishments in hospitals, universities, schools, and restaurants offer meal service to a large number of clients from the same source. In addition, food prepared in large quantities is susceptible to contamination and may lead to outbreaks of foodborne diseases unless basic health practices are well maintained. Therefore, a food establishment serving a large number of individuals is responsible for providing safe and healthy food to consumers (Laura and Carroll, 2005).

The Ministry of Health and Long-Term Care (2018) stated that each year, a total of about four million (1 in 8) Canadians are affected through disease transmitted by food. In addition, The Public Health Agency of Canada (2016) stated that foodborne diseases would not be a severe problem for most people, because most people would recover in a short time without becoming extremely ill.

Level of food hygiene is established on HACCP (Hazard Analysis Critical Control Point) status instead of kind and size of food establishment (Djekic et al, 2013) in addition, when dining out; customers anticipate having good food at a satisfactory level of food hygiene, which decreases the risk of foodborne diseases. Also, customers often depend on local authorities and inspection services to check restaurants to ensure that hygiene requirements are faced. Moreover, providing safe food to customers is the responsibility of workers at all levels of the food production chain (Djekic et al, 2013).

Thus, the role of food operators is critical in preventing foodborne diseases by maintaining and improving food handling practices and hygiene, where mechanical factors may contaminate food (Campos et al., 2009). Nevertheless, direct screening of personal hygiene and sanitation is still unsatisfactory and emphasises the need for improvement (Legnani et al, 2004). Food operators

tend to evaluate their food safety practices and to make sanitation more essential than the actual practices (Park et al, 2010).

Okojie et al, (2005) reported that the food regulations require all food workers to wear clean outerwear when handling food. Also, thay added that it is recommended to wear light-coloured clothing because it is effortless to see when the clothing gets dirty. Furthermore, dirty clothes may carry germs. On the other hand, clean appearance creates a pleasant and valuable impression of the business. Nasrolahei et al, (2017) mentioned that food handlers with poor personal hygiene could be potential sources of infection due to pathogenic bacteria.

Aksoydan (2007) declared that all kitchen staff should wash their hands regularly. Their hands should be washed in the hand basin and not in the sinks used to prepare food. All kitchen surfaces must be cleaned regularly; dishes must be washed and dried after use. Trash bins should be emptied and cleaned regularly. Of course, waste must be sorted (food in one bin, general garbage in another, and packaging in a third).

Gibson et al. (2002) stated that hands should be washed before handling food; Hands should always be washed after visiting the toilet; after handling raw food; using a tissue or coughing or sneezing; handling garbage; changing diapers; dealing with pets; smoking; and touching hair or other parts of the body. Besides, hands should be washed thoroughly, including the back of the hands, the wrist, between the fingers and under the nails, using soap and warm water. Hands should be dried with a paper towel. Food naturally contains bacteria, and some food may contain food poisoning bacteria.

Dzwolak et al. (2014) stated that foods need to be handled appropriately to ensure they do not become contaminated, and that bacteria already present in food have no chance of growth. When raw food is cooked well, most of these bacteria are killed. However, attention should be paid to mutual contamination, i.e., if the raw food comes into contact with other foods that have already been cooked, or ready to eat, the bacteria can pass into this food. Therefore, it is important to keep raw food completely separate from cooked or ready-to-eat foods.

Morris, (2005) state that food naturally contains bacteria, and some nutrients may contain food poisoning bacteria. If the food is not stored, displayed, or transported correctly, the bacteria can multiply to dangerous levels. Also, he added that, temperature is one of the most critical factors for the growth of bacteria. In addition, the temperature danger zone is the temperature range between 5ºC and 60ºC. That is why; high-risk foods should only spend the minimum amount of time possible in this area. Also, the places that work well need efficient, frequent, and systematic cleaning to remove the residues of food. Moreover, these may contain food poisoning and spoilage organisms which attract birds, rodents and insects, and act as a source of food contamination. In addition to, the risk of food contamination and food poisoning is reduced by adequate cleaning and sterilisation (Moriss, 2005).

Atia and Abdelgwad (2016) stated that appropriate storage procedures should include the stocking only the correct food types and amounts can store correctly, as clean refrigerator and freezer, avoiding overcapacity the refrigerator, organize items, reduction loss of dehydration and quality, use freezer cover, the plastic stacks of the freezer quality or aluminium foil for food items that will be stored more than two months. In addition, all the previous actions use to retain the quality of nutritive value.

Research Problem

According to The NYC Health Code: Food Preparation and Food Establishments (2017) cafeteria must have solid, water-resistant and washable floors, washable walls, a system for the supply of drinking water, a system for the collection of solid waste and a system for directing and clearing

sewage with an appropriate trap. It must be connected to the electricity net or equipped with an independent renewable energy system, and it must have a suitable dishwashing system. From the pilot study achieved by researchers (the survey was piloted on a sample of 10 universities' cafeterias at Minia University) during March 2019, it concluded that the degree of personal hygiene at those cafeterias have been weak (0.0.40 for mean), food handling procedures has been weak (0.60 for mean) and the degree of food storage practices also has been weak (0.510 for mean). Therefore, the problem of the study emerged from this perspective on how to explore the health affairs applied in universities' cafeterias.

Research Objectives

1. To determine the gap between theory and actual practices related to health affairs practices at universities' cafeterias.
2. To analyse the actual practices related to health affairs practices at universities' cafeterias.
3. To provide proposed recommendations to enhance health affairs practices at universities' cafeterias.

Research Hypotheses

H1: The universities' cafeterias have high levels of personal hygiene with a 95% confidence interval for means

H2: The universities' cafeterias have high levels of food storing procedures with a 95% confidence interval for means

H3: There are no statistically significant differences between equipment and tools cleaning procedures applied at universities' cafeterias and the standard level.

H4: There are no statistically significant differences between food handling procedures applied at universities' cafeterias and the standard level.

H5: There are no statistically significant differences between cleaning and sanitising procedures applied at universities' cafeterias and the standard level.

H6: There is no statistically significant correlation between training level and the level of health affairs applied at universities' cafeterias.

Methodology

To check the validation of the research hypothesis, the researchers design an observation checklist to explore the health affairs applied at universities' cafeterias. The research scale has been judged by experts in hospitality and food and nutrition field, thus the scale was adopted in terms of reliability and validity. Also, the experts' committee recommended the standard level of health affairs (2) as a measure of health affairs should be in universities' cafeterias; this level has been relied upon to test the five hypothesis validation. A complete enumeration for the data collection method was adopted to collect the research data, where the researchers checked all the cafeterias in Minia University (21 cafeterias).

Validity and Reliability

For the content validity of the observation list, a panel of experts in the field of hospitality and nutrition were consulted as a way to collect opinions and suggestions on the research tools. Then the observation list was modified according to respondents' comments. For structure validity of the observation list, factor analysis test was used as shown in table (1)

Table 1: Factor analysis of the research variables

The Axis	Loadings
Personal hygiene practices	0.829
Food storage practices	0.722

The Axis	Loadings
Equipment and tools cleaning	0.703
Food handling practices	0.73
Cleaning and sanitising practices	0.775
Training level	0.76

Beshere (2003) clarified that a suitable level of loading value is (o.6) for the axis. Factor analysis in the previous table showed that all five items were loaded on a single factor and explained 75% of the variance in the underlying variable of the research. For the reliability of observation list statements, Cronbach's alpha coefficient was calculated, and exceeded 0.7 (0.732) for all items; this means that all items are reliable (Henson, 2001).

Findings and Discussion
Personal hygiene practices

Table 2: Personal hygiene practices at universities' cafeterias

Statements	Mean	SD	Rank
1. workers wear proper uniform including proper shoes	0.52	0.750	7
2. Hair restraint is worn	0.33	0.483	10
3. Fingernails are short, unpolished, and clean	0.92	0.301	3
4. Jewellery is limited to watch, simple earrings, and plain ring	1.06	0.384	1
5. Staff hands are washed, or their gloves are changed at dangerous points	0.53	0.483	5
6. Open cuts, wounds, or splints and stupes on hands are wholly covered while dealing food	0.331	0.359	9
7. Hands are washed carefully using appropriate hand-washing procedures at dangerous points	0.90	0.602	4
8. Smoking is detected only in selected areas away from preparation, service, storage, and stewarding areas	1.05	0.548	2
9. Eating food, drinking beverage, or chewing gum are detected only in selected places away from work areas	0.525	0.507	6
10. staff take suitable action when coughing or having in flu	0.332	0.218	8
Total	0.766	0.142	

The previous table showed that the highest mean score of the personal hygiene procedures applied at universities' cafeterias was "Jewellery is limited to watch, simple earrings, and plain ring" at 1.06, followed by "Smoking is detected only in selected areas away from preparation, service, storage, and stewarding areas" at 1.05. The lowest mean score was "Hair restraint is worn" at 0.33. It is noted that all mean values of all personal hygiene practices are weak. The lack of these practices can cause many diseases and their spread (Mark, 2017).

Food Storage practices

Table 3: Food Storage practices at universities' cafeterias

Statements	Mean	SD	Rank
1. All food materials and paper materials are 30 cm off the floor	0.86	0.655	6
2. The food is labeled with name and receiving date	0.24	0.436	7
3. The First In, First Out methods of soring is being accomplished	1.10	0.436	3
4. Food is safe from infection	1.12	0.301	2
5. All floors and surfaces are cleaned	1.05	0.498	4
6. Chemicals substances are stored away from food materials and additional food-related supplies	1.19	0.512	1
7. Appropriate procedures have been accomplished	1.00	0.000	5
Total	0.91	0.2	

Table 3 stated that the highest mean score of the food storage practices applied at universities' cafeterias was "Chemicals substances are stored away from food materials and additional food-related supplies "at 1.19, followed by "Food is safe from infection "at 1.12. The lowest mean score was "The food is labeled with name and receiving date" at 0.24. It is noted that all mean values of all food storage practices are weak; these results do not agree with Atia and Abdelgwad (2016).

Equipment and tools cleaning

Table 4: Equipment and tools cleaning at universities' cafeterias

Statements	Mean	SD	Rank
The food slicer is clean to sight and touch	1.05	0.218	1
The food slicer is sanitised between uses when used with potentially hazardous foods	0.96	0.478	2
All other tools of equipment are clean to eyesight and touch – tools on serving positions, storage shelves, cupboards, ovens, ranges, fryers … etc.	0.95	0.498	3
Exhaust hood and filters are clean	0.10	0.301	4
Total	0.76	0.23	

Table 4 showed that the highest mean score of the equipment and tools cleaning practices applied at universities' cafeterias was "The food slicer is clean to sight, and touch" at 1.o5, followed by "The food slicer is sanitised between uses when used with potentially hazardous foods "at 0.96. The lowest mean score was "Exhaust hood and filters are clean" at 0.1. It is noted that all mean values of all equipment and tools cleaning practices are weak; these results do not agree with the Australia New Zealand Food Standards Code (2018).

Food handling practices

Table (5) Food handling practices at universities' cafeterias

Statements	Mean	SD	Rank
1. Cold food is thawed in refrigeration or in cold running water	0.24	0.436	7
2. The food is not permitted to be in the "food danger zone" more than four hours	0.57	0.507	6
3. Food is tasted using the proper method	0.71	0.644	5
4. Food is not allowed to become cross-contaminated	0.86	0.359	4
5. The food is moved with tools, hygienic gloved hands, or hygienic hands	0.95	0.498	2
6. Tools are handled to avoid touching shares that will be in direct touch with food	0.90	0.301	3
7. Food is protected from contamination	1.00	0.000	1
Total	0.78	0.23	

The previous table showed that the highest mean score of food handling practices applied at universities' cafeterias was 'food is protected from contamination' at 1, followed by "The food is moved with tools, hygienic gloved hands, or hygienic hands" at 0.95. The lowest mean score was "Cold food is thawed in refrigeration or in cold running water" at 0.24. It is noted that all mean values of all food handling practices are weak; these results do not agree with Dzwolak et al. (2014).

Cleaning and sanitising practices

Table (6) Cleaning and sanitising practices at universities' cafeterias

Statements	Mean	SD	Rank
1. The water temperatures are accurate	0.88	0.573	4
2. The water is hygienic and free of grease and food	0.86	0.655	5

	Mean	SD	Rank
elements			
3. Kitchen trash cans are hygienic	1.10	0.301	2
4. Garbage cans are emptied as necessary	1.19	0.402	1
5. Containers and vessels are removed from the site	1.00	0.000	3
6. No evidence of pests is present	0.71	0.463	6
Total	0.95	0.19	

Table 6 showed that the highest mean score of cleaning and sanitising practices applied at universities' cafeterias was "Garbage cans are emptied as necessary" at 1.19 followed by "Kitchen trash cans are hygienic" at 1.10. The lowest mean score was "No evidence of pests is present" at 0.71. It is noted that all mean values of all cleaning and sanitising practices are weak; these results do not agree with Mark (2017).

Training level

Table 7: Training level at universities' cafeterias

Statements	Mean	SD	Rank
Training on personal hygiene is directed occasionally	.72	0.22	2
Training on food storage practices is conducted periodically	0.66	0.35	3
Training on equipment and tools cleaning is conducted periodically	0.58	0.21	4
Training on food handling practices is conducted periodically	0.49	0.101	5
Training on cleaning and sanitising practices is conducted periodically	0.89	0.201	1
Total	0.66	0.21	

Table 7 showed that the highest mean score of the training practices applied at universities' cafeterias was "Training on cleaning and sanitising practices is conducted periodically" at 0.89, followed by "Training on personal hygiene is conducted periodically" at 0.72. The lowest mean score was "Training on personal hygiene is directed occasionally" at 0.49. It is noted that all mean values of all training practices are weak; these results do not agree with Tan et al. (2013).

Descriptive Statistics

Table 8: Descriptive Statistics for study variables

The Axis	Mean	95% Confidence (Interval for Mean*)	Sig.
Personal hygiene practices	0,766	0.701 - 0.83	0.000
Food storage practices	0.91	0.8 - 1	0.000
Equipment and tools cleaning	0.76	0.65 - 0.86	0.000
Food handling practices	0,78	0.67 - 0.89	0.000
Cleaning and sanitizing practices	0.95	0.86 - 1	0.000
Training level	0.66	0.60 – 0.72	0.000

95% Confidence Interval for Mean of the study population = $\overline{X} \mp t_{.0.025,55} * Std.Error$

The results of table 8 showed that 95% confidence interval for mean of personal hygiene practices is between 0.701 as a lower bound and 0.83 as a higher pound, 95% confidence interval for mean of food storage practices is between 0. 8 as a lower bound and 1 as a higher pound, 95% confidence interval for mean of equipment and tools cleaning is between 0.65 as a lower bound and 0.86 as a higher pound , 95% confidence interval for mean of food handling practices is between 0.67 as a lower bound and 0.89 as a higher pound, 95% confidence interval for mean of cleaning and sanitizing practices is between 0.86 as a lower bound and 1 as a higher pound and 95% confidence interval for mean of Training level is between 0.60 as a lower bound and 0.72 as a higher pound. One-Sample T-test (with test value (2)), this value was selected because it was a suitable value that referred to a degree of "high level of practices". All p-values were less than .05 (so, the null hypothesis was rejected). In the other word, the applying of health affairs

(personal hygiene practices, food storage practices, equipment and tools cleaning, food handling practices and cleaning and sanitising practices) at Universities' Cafeterias are less than the standard level. Thus, the first five hypotheses of the research are not valid

To assess the strength of the correlation between training level and the level of health affairs applied at universities' cafeterias, the Pearson correlation was used as shown in table 9:

Table 9: Correlation between training level and the level of health affairs applied at universities' cafeterias

	Variables	**Health affairs**
Training level	Pearson Correlation	0.81**
	Sig. (2-tailed)	0.000
	N	211

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

The correlation coefficients showed that there is a statistically significant strong positive relationship between training level and the level of health affaires applied at universities' cafeterias: - this result suggested that the six[th] hypotheses of the research are not valid.

Conclusion

This research aims to determine the gap between theory and actual practices related to health affairs practices at universities' cafeterias; also, to analyse the actual practices related to health affairs practices at universities' cafeterias. An observation checklist designed to explore the health affairs applied at universities' cafeterias. The research scale has been judged by experts in hospitality and nutrition field, thus the scale was adopted in terms of reliability and validity. For the structure validity of the observation list, factor analysis test was used. For reliability of the observation checklist statements, Cronbach's alpha coefficient was calculated. The main results of the study were, the universities' cafeterias have low levels of personal hygiene with 95% confidence interval for means, the universities' cafeterias have low levels of food storing procedures with 95% confidence interval for means, there are statistically significant differences between equipment and tools cleaning procedures applied at universities' cafeterias and the standard level, there are statistically significant differences between food handling procedures applied at universities' cafeterias and the standard level, there are statistically significant differences between cleaning and sanitizing procedures applied at universities' cafeterias and the standard level, there is statistically significant correlation between training level and the level of health affairs applied at universities' cafeterias.

Recommendations
First: Recommendations for managers of universities cafeterias:
1. The quality and quantity of food must be monitored well
2. The prices of the meals must be monitored well.
3. Hot and cold beverages must be sold depending on the season to safeguard the health condition of the customer.
4. The mangers of universities cafeterias shall ensure that all staffs are who come into interaction with food are free from any signs of illness or infectious disease that are communicable through food.
5. Hand-washing facilities must be accessible for all staff.
6. Regular training for cafeteria staff shall be held to further their skills in food handling and interpersonal skills.

7. A training and development program for the cafeteria personnel shall be prioritized.

8. The monitoring of cafeteria staff shall be done regularly using monitoring tools.

9. The cafeteria staff should be accustomed to the several aspects to consider in implementing the cafeteria guidelines such as washing, storing of utensils, and display of food for sale.

10. Specifying goals and giving employees all the tools, they need to perform to the best of their abilities.

11. The cafeteria management team should lead by example and demonstrate excellent communication to listen carefully to their staff and solicit honest feedback.

12. Building camaraderie in the cafeteria workplace through gives formal recognition for employee achievements.

Second: Recommendation for the staff of universities cafeterias:

1. Food staff should be trained in harmless food handling methods.

2. Food handlers should be using all of the equipment and utensils in a clean and sanitized condition.

3. All staff in food kitchen should wear hygienic uniforms.

4. Staff complicated in kitchen, preparation place and any worker entering a food preparation or storage area should wear hair covers.

5. Food handlers should wash their hands before commencing work.

6. Food staff should remove their watches, necklaces and jewellery before preparing food.

7. Personnel with open wounds, cuts, or spores should not participate in food handling activities.

8. Products must be stored on shelves or stands 30 cm from the floor to assurance satisfactory cleaning of the larder floor.

9. Food handlers should be store raw food in sealed or covered containers at the bottom of the fridge.

10. Food handlers should be making food storage containers are clean and in good condition.

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