Original Article

Food Poisoning Knowledge, Attitudes, and Practice of Students in Majmaah University

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ABSTRACT

Background and Objectives: Food-borne illnesses commonly referred to as food poisoning are a rising public health issue affecting the population across the globe. The objective of this study is to determine the knowledge, attitude and practice of students in Majmaah University regarding the food poisoning.

Methods: A stratified random sample of 244 students (both male and female) participated in this cross-sectional study. Data regarding demographic characteristics, knowledge, attitude and practice regarding food poisoning were obtained using pre-tested, semi-structured and close-ended questionnaire.

Results: A total of 66% students lacked the knowledge that the raw white cheese processed from raw milk has a high risk of food poisoning. Approximately 88% of the participants had a negative attitude and belief that there is no risk of disease from eating unwashed vegetables and herbs picked up directly from the plant. With regard to practice, 93% of the students did not wash their hands with soap and water before eating meal.

Conclusion: This study showed the lacuna in knowledge, attitude and practice regarding food poisoning among the students of Majmaah University. Appropriate health promotion measures are advised to improve the knowledge, attitude and practice related healthy and hygienic food habits to reduce the risk of food-borne illness.

Key words: Knowledge, Attitude; Practice, Food poisoning, Food borne disease, Food poisoning.

الملخص

ملخص :تعد أمراض التسمم الغذائي مشكلة مهمة ومن المشاكل الصحية الشائعة والتي بدورها تهدد حياة الطالب بالمرحلة الجامعية في كل من الدول المتقدمة والنامية. أحد أهم أسباب الإصابة بأمراض التسمم الغذائي هي العدوى أو السمية التي تنتجها او تفرزها البكتيريا أو الفيروسات أو الطفيليات أو المواد الكيميائية التي تدخل الجسم عن طريق الأغذية أو المياه الملوثة.

الهدف: ا لهدف الرئيسي من هذه الدراسة هو التعرف على مستوى المعرفة والمواقف والسلوك على ماهية التسمم الغذائي لطلاب جامعة المجمعة، المملكة العربية السعودية.

منهج الدراسة: في هذه الدراسة المهمة سوف نستعرض عدد من الأسئلة ونشرها على أكبر شريحة بين طلاب وطالبات جامعة المجمعة بكل المراحل الأكاديمية وبكل أقسام وكليات الجامعة المترامية الأطراف حوالي ٢٤٤ طالب وطالبة شاركوا بهذه لاستبيانه وذلك لتقييم مستوى المعرفة والمواقف والسلوك الصحي والغير صحي بما يتعلق بالتسمم الغذائي.

النتائج: أكثر من ٦٥٪ من الطلاب والطالبات بجامعة المجمعة في مختلف المراحل الجامعية ليس لديهم المعلومات الكافية بأن الجبن الأبيض الخام المجهزة من الحليب الخام قد يتسبب بمخاطر التسمم الغذائي. حوالي ٨٨ ٪ من المشاركين من طلاب وطالبات جامعة المجمعة لديهم موقف سلبي وخطير باعتقادهم أنه لا يوجد خطر للتعرض للتسمم الغذائي جراء تناول الخضروات والأعشاب الغير مغسولة والتي التقطت مباشرة من المزرعة. فيما يتعلق بالممارسة، لم يغسل ٩٣٪ من الطلاب أيديهم بالصابون والماء قبل تناول وجبة الطعام.

الاستنتاج: نتجت هذه الدراسة بوجود نسبة كبيرة من طلاب وطالبات جامعة المجمعة يفتقرون الي أعلى مستويات المعرفة والمواقف والسلوك على ماهية التسمم الغذائي. وتبينت أيضا أن طلاب وطالبات جامعة المجمعة يحتاجون الى مزيد من الوعي الصحي حول كيفية تعاملهم في حياتهم الجامعية بما يضمن لهم حياة صحية مستديمة.

Introduction

Food-borne illnesses commonly referred to as food poisoning is usually caused by consuming contaminated food and water that contain infection or toxin produced by bacteria, viruses, parasites or poisonous chemical that are responsible for more than 200 diseases. Statistically, approximately 600 million people had food poisoning after consuming contaminated food and around 420.000 die, causing loss of 33 million healthy lives annually. Moreover, total of ~ 40% of victims affected by food poisoning diseases are children under 5 years with 125.000 deaths yearly [1, 2]. Food poisoning diseases include a broad spectrum of diseases and are responsible for the increase in mortality rate worldwide [3].

Food poisoning is a major and rising public health concern in both developing and developed countries. Food can become contaminated at any point during production, distribution and preparation [4, 5]. In developing countries, poor knowledge about food handling, safety, and hygiene may cause food-borne diseases. For example, diarrhea is the most common infection resulting from the consumption of contaminated food, resulting 550 million people to become ill and 230.000 deaths every year [6]. According to World Health Organization (WHO) every 1 out of 10 of people fall sick every year resulting consuming contamination food. Everyone involves in the production chain, starting from producer to consumer, all has an important role to play to ensure the food we eat does not get contaminated. Food can also be contaminated by heavy metals or naturally occurring toxins resulting in long-term health problems such as cancer and neurological disorder. This highlights the importance of making sure the food we eat is not contaminated with potentially harmful bacteria, parasites, viruses, toxins and chemicals. The great majority of young adults or college students from 18-29 years of age will experience a foodborne disease at some point in their college lives [7]. The most common symptoms of food borne diseases include stomach pain, diarrhea and vomiting [8].

Many studies were done around the world about knowledge, attitudes, and practice regarding food poisoning among university students for example, one study on college students at USA, showed that ~60% of the students had knowledge about food poisoning [9]. Similar percentage of knowledge score had been found in a study on college students of University of Missouri, USA [10]. In Turkey, a large-scale survey on students of Gazi University in Ankara, showed that approximately 37.3 % of the students had knowledge on food poisoning [11]. Another study from University of Turkey found that students have 54% knowledge for food poisoning[12]. In Lebanese American University, students had 53.6% knowledge on food poisoning and handler [13]. In comparison to other communities, the food safety knowledge of young adults in Jordan University students was as low as 33.9% [14]. Very few studies about knowledge, attitudes, and practice regarding food poisoning among university students were conducted in Saudi Arabia. A study from Taif University, Saudi

Arabia determined that the overall knowledge, attitudes, and practice mean score was 74.78% and almost 50% of the students lacked the knowledge on food poisoning. However, the mean score for knowledge, attitudes, and practice components were 74.95%, 67.26%, and 80.29%, respectively [15].

The most important factors that play major role in the prevention of food poisoning are knowledge, attitude and practice among university students. Hence, our aim is to determine the level of knowledge, attitudes, and practice of students of Majmaah University, Saudi Arabia on food poisoning.

Methods

Study Design & Setting

It is a Cross-sectional study; students from the constituent colleges under Majmaah University in Al-Majmaah, Saudi Arabia participated in this study. This study was conducted during academic year of 2017/2018.

Ethical consideration

The Ethical approval was obtained from Ethics committee of Majmaah University (Ethical approval No. MUREC-Feb.07/COM-2017/8). The details regarding objectives and benefits of this research were explained to participants and informed consent was obtained before filling the online research questionnaire. All information were kept confidential and used only for purpose of statistical analysis.

Structure questionnaire

The data regarding demographic characteristics, knowledge, attitude and practice regarding food poisoning were obtained using pre-tested, semi-structured and close-ended questionnaire. The questionnaire was structured and modified [9] (Figure1) as followed: It contained 46 core questions or statements divided into three parts: first part contain13 question about the knowledge. Second part was 14 questions about attitude, and last part is about 19 questions for practice on current food poisoning. Basic demographic data information was also included. The measurement scale of response was range, disagree 1-1.66, don't know 1.67-2.33, and agree response was between 2.33 to 3. For dichotomous classification the score less than 1.67 is considered a negative response (wrong answer), while the scores more than 1.67 is considered a positive response (right answer). The questionnaire was peer reviewed and underwent a pilot study before the final version distributed to students. All 46 core questions about knowledge, attitude and practice were scored on three-points scale with option yes, no, maybe. The questionnaire stated clearly to the participants that the information will be used only for scientific purposes and the participants signed a consent form. The questionnaire was in bilingual (Arabic and English). Instruction was included, for the participants to simplify the filling up of the questionnaire. Also, they are encouraged to respond back with any queries regarding the content of the questionnaire.

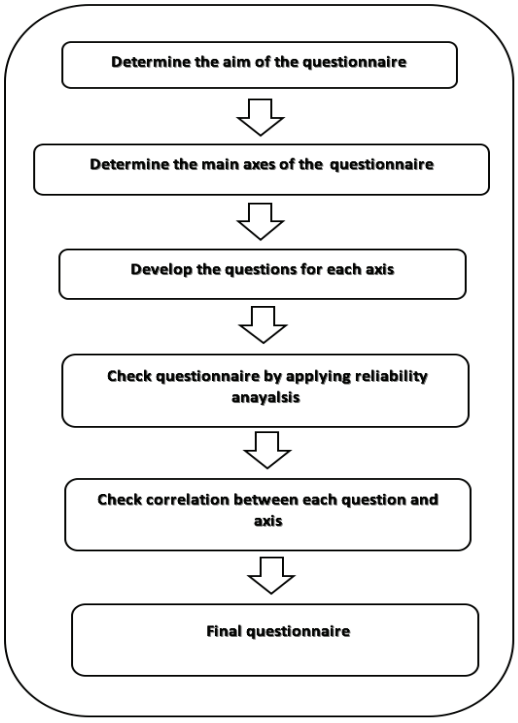


Figure 1. Food poisoning questionnaire creation flowchart

Data collection

The questionnaie was developed in Google forms and was mailed to all the students in different level and departments. A total of 244 students (Male and Female) were included by stratified random sampling method based on their educational level and department at the university: level 1-9 of preparatory year, Business administration, College of Education – Zulfi, College of Education – Majmaah, College of applied medical sciences, College of Engineering, College of Medicine, College of Dentistry, College of Community, College of Science and Human Studies Romah, College of Science and Human Studies Sudair, College of Science and Human Studies Alghat, College of Sciences (Table 1).

Table 1. Demographic characteristics of food handlers in students at Majmaah University.

Parameters		Frequency	Percent
Gender	Male	150	61.5
	female	94	38.5
Education Level	One	60	24.6
	Two	27	11.1
	Three	31	12.7
	Four	17	7.0
	Five	25	10.2
	Six	16	6.6
	Seven	35	14.3
	Eight	15	6.1
	nine	18	7.4
College	preparatory year	4	1.6
	Business administration	2	8.
	College of Education – Zulfi	14	5.7
	College of Education – Majmaah	12	4.9
	collage of applied medical sciences	113	46.3
	Engineering	7	2.9
	Medical	7	2.9
	Dental	10	4.1
	Community	4	1.6
	College of Science and Human Studies romah	33	13.5
	College of Science and Human Studies sudir	22	9.0
	College of Science and Human Studies AlGhat	10	4.1
	Collage of Sciences-Zulfi	6	2.5

Statistical analysis

The data was coded and analyzed by SPSS statistical computer program. The response was analyzed as categorical variable (yes or no answer). For knowledge questionnaire, right answer is considered as having knowledge and wrong answer as no knowledge. For attitude questionnaire right and wrong answers considered as positive or negative attitude respectively, and for the practice questionnaire, right answer is considered as hygienic, and wrong answer is considered unhygienic. The score of knowledge, attitude, and practice were analyzed as numerical variable. The percentage score for knowledge, attitude, and practice were analyzed as comparing between education level and departments. We used one way analysis of variance (ANOVA) to compare mean score of knowledge, attitude, and practice among the groups of males and females in colleges of Majmaah University, Saudi Arabia. Scheffe test were used after ANOVA to identify significant difference between groups.

Results

The student`s responses to the knowledge questionnaire on food poisoning is showed in Table 2. More than 80% of the students responded had excellent knowledge (answering right) on almost all statements. Question number 1 "Some toxins produced by microbes and cause food poisoning are resistant to heating temperature of food", 50.81%. Questions 3"Eating raw eggs is highly risky for food poisoning ", 56.6%. Question number 4 "Eating raw or half-cooked meat is highly risky for food poisoning", 77.5%. Questions 5 "Eating raw unwashed vegetables is highly risky for food poisoning", ~ 85.7% of the students in all deferent levels and departments had knowledge. Question number 6 "Eating unwashed and not pealed fruits is highly risky for food poisoning" students were responding right ~ 84%. Question number 7" Food handlers with unhygienic practice could be the source of microbial contamination of the food which causes food poisoning", 79.1%. Question number 8 "Well cooked food is free from microbes which cause food poisoning", 64.8%. Question number 9 "Eating uncovered leftover cooked food, kept at room temperature for 12–24 h, is at high risk to cause food poisoning", 72.5%. Question number 12 "Keeping food at refrigerator temperature will slow down the microbial growth and multiplication, thus prevent food spoilage and food poisoning", 59.4%. In comparison, it seems that students have lack of knowledge (answering wrong) on almost all statements having more than 50%. For example, one statement number 2 "Drinking raw milk is highly risky for food poisoning", 52.9%. Question number 13 "There is no risk of food poisoning from eating left-over cooked food kept in refrigerator for 2–3 day" students' response was wrong ~65.6 % on this statement.

Table 2. Response of the students of Majmaah University to knowledge questionnaire on food poisoning.

	Questionnaire Statements	Having Knowledge n (%)	No Knowledge n (%)
Q1	Some toxins produced by microbes and cause food poisoning are resistant to heating temperature of food	124(50.81%)	120(49.1%)
Q2	Drinking raw milk is highly risky for food poisoning	115(47.1%)	129(52.9%)
Q3	Eating raw eggs is highly risky for food poisoning	138(56.6%)	106(43.4%)
Q4	Eating raw or half-cooked meat is highly risky for food poisoning	189(77.5%)	55(22.6%)
Q5	Eating raw unwashed vegetables is highly risky for food poisoning	209(85.7%)	35 (14.4%)
Q6	Eating unwashed and not pealed fruits is highly risky for food poisoning.	205(84 %)	39 (16%)
Q7	Food handlers with unhygienic practice could be the source of microbial contamination of the food which causes food poisoning	193(79.1%)	49(20.9%)
Q8	Well cooked food is free from microbes which cause food poisoning	158(64.8%)	86(35.3%)
Q9	Eating uncovered leftover cooked food, kept at room temperature for 12–24 h, is at high risk to cause food poisoning	177(72.5%)	67(27.4%)
Q10	Raw white cheese processed from raw milk has a high risk of food poisoning	83(34%)	161(66%)
Q11	Pasteurized milk can be drunk directly with no risk of food poisoning	113(46.31%)	131(53.7%)
Q12	Pasteurized milk can be drunk directly with no risk of food poisoning	145(59.4%)	99(40.5%)
Q13	Drinking surface water like rivers, streams and rain water reservoirs without any treatment as boiling or adding chlorine, is at high risk to cause food poisoning	84(34.4%)	160(65.6%)

The percentage score of the knowledge questionnaire is 81.22%

Responses for the attitude question on food poisoning are presented in Table 3. More than 50 % of students have a positive attitude (answering right) on each of 4 statements out of 14. These are question number 24 "Food handlers without clinical symptoms can contaminate food with pathogenic microbes which cause food poisoning", 82%. Question number 25 "Washing hands with soap and water prior to eating food is necessary to prevent food poisoning", 83.2%. Question number 26 "Thorough washing of vegetables and fruits in tap water is necessary to prevent food poisoning", 85.2%. Question number 27 "Washing hands with soap and water before preparing food is necessary to prevent food poisoning", 86.1%. On the other hand, more than 60 % of the students have negative attitude (answering wrong) and agreed in different 10 statements related to food poisoning. Questions are as follows: Question number 14 "Raw milk is more healthy and nutritious than pasteurized or boiled milk", ~ 65%; Question number 15 "There is no risk of disease from drinking raw goat or cow milk right after milking", ~ 67%. Question number 17 "Raw eggs are healthier and more nutritious than cooked ones", ~ 73%. Question number 18 "There is

no risk of disease from drinking raw eggs", ~ 72%. Question number 19" There is no risk of disease from eating raw meat of young animals", ~ 84%. Question number 20" Wiping vegetables or fruits make them safe to be eaten", ~ 67%. Question number 21 "There is no risk of disease from eating cooked food kept at room temperature for one day if covered", ~ 62%. Question number 22" There is no risk of disease from eating unwashed vegetables and herbs picked up directly from the plant", ~ 88%. Question number 23 was about "Rain water collected in reservoir is safe to drink without any treatment", ~ 77%.

Table 3. Response of the students of Majmaah University to attitude questionnaire on food poisoning.

	Questionnaire statements	**Positive Attitude n (%)**	**Negative Attitude n (%)**
Q14	Raw milk is healthier and more nutritious than pasteurized or boiled milk	86(35.2%)	158(64.7%)
Q15	There is no risk of disease from drinking raw goat or cow milk right after milking	79(32.4%)	165 (67.7%)
Q16	There is no risk of disease from drinking the milk of camel right after milking	102(41.8%)	142(58.2%)
Q17	Raw eggs are healthier and more nutritious than cooked ones	66(27%)	178(72.9%)
Q18	There is no risk of disease from drinking raw eggs	68(27.9%)	176(72.1%)
Q19	There is no risk of disease from eating raw meat of young animals	38(15.6%)	206(84.4%)
Q20	Wiping vegetables or fruits make them safe to be eaten	79(32.4%)	165(67.6%)
Q21	There is no risk of disease from eating cooked food kept at room temperature for one day if covered	94(38.52%)	150(61.5%)
Q22	There is no risk of disease from eating unwashed vegetables and herbs picked up directly from the plant	30(12.3%)	214(87.7%)
Q23	Rain water collected in reservoir is safe to drink without any treatment	56(23%)	188(77%)
Q24	Food handlers without clinical symptoms, can contaminate food with pathogenic microbes which cause food poisoning	200(82%)	44(18.1%)
Q25	Washing hands with soap and water prior to eating food is necessary to prevent food poisoning	203(83.2%)	41(16.8%)
Q26	Thorough washing of vegetables and fruits in tap water is necessary to prevent food poisoning	208(85.2%)	48(14.8%)
Q27	Washing hands with soap and water before preparing food is necessary to prevent food poisoning	210(86.1%)	34(14%)

The percentage score of the attitude questionnaire is 67.5%

The student`s responses to the practice questionnaire on food poisoning is showed in Table 4. More than 50 % of the students had excellent practice (answering right) on almost all statements. Questions number 28" Do you wash fresh vegetables and fruits in tap water before eating?" ~ 79 %. Questions number 30"Do you wash your hands with water and soap before preparing food?" ~ 64%. Questions number 31"Do you wash your hands with water and soap after handling raw unwashed vegetables?" ~ 87%. Questions number 32 "Do you wash your hands with soap and water after using the toilet?" ~87%. Questions number33 "Do you wash your hands after contact with animals?" ~62%. Questions number 34 "Do you eat fresh vegetables and fruits without washing?" ~51%. Questions number 35 "Do you just wipe fresh vegetables and fruits before you eat them?" 60.2%. Questions number 36 "When you make a field trip, do you pick up vegetables or herbs from the plants and eat them without washing?" 65.2%. Questions number 37 "Do you eat raw eggs?" ~52%. Questions number 38 "Do you eat half-cooked eggs (egg yolk is soft)?" 67.2%. Questions number 39 "Do you eat raw meat?" 58.4%. Questions number 44 "Do you eat cooked food left at room temperature for over 6 h without sufficient heating?", ~58%. Questions number 45 "Do you eat food from a restaurant/cafeteria looks not clean?" ~55%. In compare, significant number of students from Majmaah University has negative practice. Questions number 29 "Do you wash your hands with soap and water before eating your meal?" ~94%. Questions number 42" Do you drink raw milk of camel?" ~ 81%. Questions number 43 "Do you eat raw white cheese prepared from raw unpasteurized milk?" ~ 83%. Questions number 46 "Do you drink from rain water collected in reservoir or surface stream water without any treatment?" ~ 74%.

We targeted two groups of students: Group one, male in all colleges (n=150), group two females (n=94) in all colleges. Interestingly, we found that there is no significant difference ($p > 0.05$ by Scheffe test after ANOVA) in mean score of knowledge and attitude between male and female students at Majmaah University. While regarding practice there is significant difference ($p < 0.05$ by Scheffe test after ANOVA) in the mean score between male group and the female group and this could be because the male students are more concerns about personal hygiene and are more modern in their life style. (Table. 5).

Table 4. Response of the students of Majmaah University to practice questions on food poisoning.

	Questionnaire statements	Hygienic Practice n (%)	Unhygienic Practice n (%)
Q28	Do you wash fresh vegetables and fruits in tap water before eating?	192(78.7%)	52(21.3%)
Q29	Do you wash your hands with soap and water before eating your meal?	16(6.6%)	228(93.56%)
Q30	Do you wash your hands with water and soap before preparing food?	156(63.9%)	88(36%)
Q31	Do you wash your hands with water and soap after handling raw unwashed vegetables?	212(86.9%)	33 (13.1%)
Q32	Do you wash your hands with soap and water after using the toilet?	212(86.9%)	31(13.1%)
Q33	Do you wash your hands after contact with animals?	151(61.9%)	93(38.1%)
Q34	Do you eat fresh vegetables and fruits without washing?	124(50.8%)	120(49.2%)
Q35	Do you just wipe fresh vegetables and fruits before you eat them?	147(60.2%)	97(39.7%)
Q36	When you make a field trip, do you pick up vegetables or herbs from the plants and eat them without washing?	159(65.2%)	85(34.9%)
Q37	Do you eat raw eggs?	126(51.6%)	118(48.4%)
Q38	Do you eat half-cooked eggs (egg yolk is soft)?	164(67.2%)	80(32.8%)
Q39	Do you eat raw meat?	145(59.4%)	99(40.6%)
Q40	Do you eat half-cooked meat (inside is red)?	117(48%)	127(52.1%)
Q41	Do you drink raw cow or goat milk?	110(45.1%)	134(54.9%)
Q42	Do you drink raw milk of camel?	47(19.3%)	206(80.7%)
Q43	Do you eat raw white cheese prepared from raw un-pasteurized milk?	41(16.8%)	203(83.2%)
Q44	Do you eat cooked food left at room temperature for over 6 h without sufficient heating?	141(57.8%)	103(42.2%)
Q45	Do you eat food from a restaurant/cafeteria looks not clean?	134(54.9%)	110(45.1%)
Q46	Do you drink from rain water collected in reservoir or surface stream water without any treatment?	63(25.8%)	181(74.2%)

The percentage score of the practice questionnaire is 65.71%

Table 5. Mean score for knowledge, attitude, practice (KAP) regarding food poisoning according to gender

Students gender and education	Knowledge Mean score ±SD	Attitude Mean score ±SD	Practice Mean score ±SD
Male and collage	2.4650.3483±	1.7110.492±	1.8570.448±*
Female and collage	2.435± 0.279	1.6850.417±	1.5060.337±
All student	2.480 ±0.3329	1.7180.483±	1.7580.458±

Significant difference between the means ($p < 0.05$) by ANOVA *

The descriptive statistical on a scale of three points for the knowledge of Majmaah University students on food poisoning (data not shown). The highest mean score is 2.79 and was recorded in answer of question 5 "Eating raw unwashed vegetables is highly risky for food poisoning". In compare, the lowest mean score was recorded for question No. 13 "Drinking surface water like rivers, streams and rain water reservoirs without any treatment as boiling or adding chlorine, is at high risk to cause food poisoning" and score was about 2.02. In general, the overall score mean of knowledge part is 2.48 (data not shown).

The descriptive statistical on a scale of three points for the attitude of Majmaah University students on food poisoning (data not shown).The highest mean score is 2.79 and was recorded in answer of question 27"Washing hands with soap and water before preparing food is necessary to prevent food poisoning". In the other hands, the lowest mean score was recorded for question No. 22 "There is no risk of disease from eating unwashed vegetables and herbs picked up directly from the plant" and score was about 1.38. In general, the overall score mean of attitude part is 1.72(data not shown).

The descriptive statistical on a scale of three points for the practice of Majmaah University students on food poisoning (data not shown). The highest mean score is 2.81 and was recorded in answer of question 31 "Do you wash your hands with water and soap after handling raw unwashed vegetables?" and question 32 "Do you wash your hands with soap and water after using the toilet?". However, the lowest mean score was recorded for question No. 36 "When you make a field trip, do you pick up vegetables or herbs from the plants and eat them without washing?" and score was about 1.45. In general, the overall score mean of practice part is 1.76 (data not shown).

Discussion

Students from Majmaah University had shown in general a good level of knowledge in most of core statements that reflect their level of education. The overall mean percentage score of all Majmaah University students in knowledge is about 81.22% and it was the highest score among Knowledge, attitude and practice (KAP) components. In comparing with previous studies, we found Majmaah University student`s percentage level of knowledge about food poisoning was higher than Taif, Ulsan, Turkey, and Seaul Universities students [2, 9, 13, 16, 17]. However, studies on high school students in Majmaah and Ethiopia found that student`s percentage level of knowledge was 54% which is lower compared to Majmaah University students [18, 19]. It is revealed that as the student's education level is increased there is increase in knowledge on food borne diseases [20]. In some of important factors for knowledge on food poisoning, we found students of Majmaah University have low knowledge on that particular issue. Over 50% of the students lack the knowledge on several statements, such as drinking raw milk is highly risky for food poisoning, pasteur-

ized milk can be drunk directly with no risk of food poisoning, and raw white cheese processed from raw milk has a high risk of food poisoning. This result is in agreement with the findings of the similar study among Taif university students. [9]. It is found more than 50% of students had low knowledge in statement of raw white cheese and egg processed from raw milk has a high risk of food poisoning. There are no significant differences in mean score of knowledge between male and female students in different colleges at Majmaah University.

The results reveal low attitude of Majmaah University students on food poisoning reflected by their percentage mean score (67.5%). 11 out of 15 (73%) of questions on attitude had low right answer and most of wrong answer were mostly disagree and they don't know the right answer. Five negative attitude response out of 11 were had more than 30% belief that drinking or eating raw camel, goat, and egg are safer and health. These results were to the findings of study carried out at Taif University. This kind of attitude of eating and drinking raw food are common in Saudi Arabia. As desert and farmer community are quite around and people in these areas are raising animal and find a way to eat organic food as much as they can. Study in USA found that around 50% of farmers in general eat raw egg and drink raw milk and strongly believe they are very safe from any risk [21-23]. There are no significant differences in mean score of attitude between male and female students in different colleges at Majmaah University.

The practice has the lowest percentage mean score (65.71%) of KAP components. Obviously, drinking raw camel milk and eating raw cheese were the most unhygienic practices with more than 80% by students of Majmaah University. This unhygienic practice may lead to food borne illnesses caused by drinking raw milk from animal such as Camels, Goats, Cows, or sheep. These sources of raw milk can carry very dangerous bacteria, for example E. coli, Salmonella, Brucella, and listeria which are causing major foodborne diseases [24-26]. Results from mean score for KAP according to gender for food poisoning in students at Majmaah University were close especially in practice.

Conclusion

This study exposed the lacuna in knowledge, attitude and practice regarding food poisoning among the students of Majmaah University. Appropriate health promotion measures should be implemented to improve the knowledge, attitude and practice related healthy and hygienic food habits to reduce the risks of food-borne illness. Future multicentre studies addressing the issues related to food poisoning among the university students are recommended to add more information to this topic.

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