ORIGINAL ARTICLE

Knowledge, attitude, and practice (KAP) of food hygiene among schools students' in Majmaah city, Saudi Arabia

Mohammed Almansour,[1] Waqas Sami,[2] Oliyan Shoqer Al-Rashedy,[3] Rayan Saad Alsaab,[4] Abdulrahman Saad Alfayez,[5] Nawaf Rashed Almarri[6]

Abstract

Objectives: To determine the level of knowledge, attitude, and practice of food hygiene among primary, intermediate and high school students and explore association, if any, with socio-demographic differences.

Methods: The observational cross-sectional study was conducted at boy's schools in Majmaah, Kingdom of Saudi Arabia, from February to May 2014. Data was collected using stratified random sampling technique from students aged 8-25 year. Two schools from each level (primary, intermediate and high school) were randomly selected and data was collected from the selected schools using simple random sampling method. A self-administered modified Sharif and Al-Malki questionnaire for knowledge, attitude and practice of food hygiene was used with Arabic translation.

Results: The mean age of 377 male students in the study was 14.53±2.647 years. Knowledge levels was less in primary school students compared to high school students (p=0.026). Attitude level was high in primary school students compared to intermediate school students (p<0.001). No significant difference was observed between groups with regard to practice levels (p=0.152).

Conclusion: The students exhibited good practice levels, despite fair knowledge and attitude levels.

Keywords: Knowledge, Attitude, Practice, Food hygiene, School health. (JPMA 66: 442; 2016)

Introduction

Food hygiene is an important global public health issue since long. Consumption of unhealthy food is becoming more severe, especially among school children even though various efforts have been made by the authorities. Food hygiene is defined as 'the measures and conditions necessary to control hazards and to ensure fitness for human consumption of a foodstuff taking into account its intended use."[1] Food illnesses are defined as diseases, usually either infectious or toxic in nature, caused by agents that enter the body through the ingestion of food.[2] Global statistics on food-borne diseases showed that cases of food-borne illnesses are increasing year by year. Food poisoning cases are usually reported among school students frequenting school canteens, hostel kitchens and food prepared under the Supplementary Food Programme. The contributing factors in these outbreaks of food poisoning are improper storage or holding temperature and poor personal hygiene.[3] Thus, the prevention of food-borne illnesses requires educating food consumers on safe food handling practices.[4] Education must be provided to increase the level of knowledge. Schools are acknowledged as important places for developing health promotion and influencing health-related behaviours,[5-7] including hygiene-related behaviours. Once habits are established in adolescence, they tend to be long-lasting and difficult to alter in adulthood.[8] Thus, children educated in an effective way whilst at school may become adults who observe good hygiene practices. However, providing knowledge does not necessarily result in behaviour change, with many hygiene education programmes failing to deliver anticipated changes.[9] A variety of poor food hygiene practices have been observed when consumers prepare food at home[10,11] with 95.4% failing to implement one or more basic food hygiene practices as a result of inadequate knowledge or failing to carry out known food safety procedures[12] and that a significant proportion of the public frequently implement unsafe food-handling practices. Study done in Taif University, Saudi Arabia, showed the overall knowledge, attitude and practice (KAP) mean score was 74.78%. However, the mean score for KAP components were 74.95%, 67.26% and 80.29% for knowledge, attitude and practice, respectively.[13] Another study conducted in Ethiopia to assess KAP among school children in Angolela showed that approximately 52% of students were classified as having adequate knowledge of proper hygiene. Most students reported hand-washing before meals 99.0%, but only 36.2% reported using soap.

[1]Famly Medicine, [2]Biostatistics, Department of Public Health & Community Medicine, [3-6]Medical Students, College of Medicine, Majmaah University, Kingdom of Saudi Arabia.

Correspondence: Mohammed Almansour. Email: m.aalmansour@mu.edu.sa

Although 76.7% students reported that washing hands after defecation was important, only 14.8% reported actually following this practice.[14] Other studies have been conducted among school students in Seoul and Ulsan toward identifying food safety knowledge, and results exposed that 91.9% respondents did not know what unhygienic food is, and 67%did not know the proper method of hand-washing.

Although the students' level of knowledge and behaviour associated with food safety was low, but there was meaningful correlation (r=0.184, p<0.01) between knowledge and behaviour.[15] Therefore, the current study was planned to determine the level of KAP related to food hygiene among primary, intermediate and high school male students; to compare food hygiene between students studying in different levels, and to explore associations, if any, between KAP and socio-demographic differences.

Subjects and Methods

The observational cross-sectional study was conducted at boy's schools in Majmaah, Kingdom of Saudi Arabia, from February to May 2014. Data was collected using stratified random sampling technique from students aged 8-25 years. Those not willing to participate in the study were excluded.

Two schools from each level (primary, intermediate and high school) were randomly selected and the data was collected from the selected schools using simple random sampling method. A self-administered modified Sharif and Al-Malki questionnaire[16] was used with Arabic translation containing 10 demographic questions, 10 questions for the knowledge part, 11 questions for the attitude part and 16 questions for the practice part. Verbal consent from the students was taken, and they were briefed about the questionnaire. Approval from the ethical committee of Al-Majmaah University and from the General Administration for Education in Al-Majmaah Governorate was taken.

Descriptive statistics were worked out for each question and the overall KAP mean percentage score. One way analysis of variance (ANOVA) was used to compare the mean score of knowledge, attitude, and practice among the three educational levels of the students. Tukey's and honest significant difference (HSD) tests were used after ANOVA to identify significant difference between the groups. The mean score of knowledge, attitude, and practice were compared by t-test according to the demographic data.

Results

The mean age of the 377 students in the study was 14.53+2.647 years (range: 8-25 years). Of the total, 124(33%) were in primary schools, 127(33.6%) were in intermediate schools and 126(33.4%) were in high schools. Overall, 343(90.7%) students were Saudis, and 349(93%) belonged to Majmaah city. There were 290(76.9%) students living in villas, and 30(8%) were living in traditional houses. Regarding the level of education of students' parents, 155(41.3%) had a university degree, while 25(6.7%) were illiterate. Overall, students had fair knowledge (56.69±9.91%), attitude (58.69±10.74%) and practice levels (61.23±9.91%).

Food hygiene was studied separately in terms of knowledge, attitude and practice. The mean knowledge level (Table-1) of food hygiene in primary school students was 55.44±13.53%, in intermediate school students it was 55.08±11.8%, and for high school students it was 59.48±11.04% (p=0.007).

The mean attitude (Table-2) level of food hygiene in primary school students was 60.84±11.49%, for intermediate school students it was 55.62±10.34%, and for high school students it was 59.76±9.75% (p<0.001).

The mean practice level (Table-3) of food hygiene in

Table-1: Response of students to knowledge questions on food hygiene.

Question	Correct Answer n(%)	Incorrect Answer n(%)
Food poisoning is caused by pathogenic microbes	261 (69.1)	116 (30.9)
Eating raw or half - cooked meat is highly risky for food poisoning	255 (67.6)	122 (32.4)
Eating raw unwashed vegetables is highly risky for food poisoning	268 (71.0)	109 (29.0)
Food handlers with unhygienic practice could be the source for food contamination with food poisoning pathogens	239 (63.4)	138 (36.6)
Food poisoning could cause severe diseases that end in hospitalization and sometimes death	267 (70.7)	110 (29.3)
Apparently healthy food handlers might carry foodborne pathogens	173 (45.9)	204 (54.1)
Harmful bacteria multiply quickly at room temperature	213 (56.3)	164 (43.7)
The hands should be washed before eating.	334 (88.4)	43 (11.6)
When flies land on food they make it dirty	224 (59.3)	153 (40.7)
Unwashed hand does not contain microbes	181 (47.9)	196 (52.1)

Table-2: Response of students to attitude questions on food hygiene.

Question	Correct Answer n(%)	Incorrect Answer n(%)
Learning more about food safety through training courses is important to me	293 (77.7)	84 (22.3)
Food handlers can be a source of foodborne outbreaks	240 (63.5)	137 (36.5)
Wiping vegetables or fruits make them safe to be eaten	225 (59.5)	152 (40.5)
We don't need to wash our hands when there is no visible dirt	231 (61.3)	146 (38.7)
Thorough washing of vegetables and fruits in tap water is necessary to prevent food poisoning	297 (78.6)	80 (21.4)
Long fingernails could contaminate food with foodborne pathogens	296 (78.5)	81 (21.5)
Foodborne outbreaks are natural life event	153 (40.6)	224 (59.4)
When you are cooking a food, your nail must be cut	267 (70.8)	110 (29.2)
When the cooker had injury in his hand , no problem to continue his work	238 (63.0)	139 (37.0)
You should avoid sneeze and cough near the food	314 (83.1)	63 (16.9)
When you buy food you should check the validation of the food	335 (88.9)	42 (11.1)

Table-3: Response of students to practice questions on food hygiene.

Question	Correct Answer n(%)	Incorrect Answer n(%)
Do you wash your hands with water and soap before eating food?	315 (83.5)	62 (16.5)
Do you wash your hand with water and soap after using the bathroom (urination)?	332(88.3)	44(11.7)
Do you allow your finger nails to grow?	205 (54.4)	172(45.6)
Do you wash vegetables and fruits before eating them?	320 (84.9)	57(15.1)
Do you clean food contact surfaces before eating food?	287 (75.9)	90(24.1)
Do you wash fresh vegetables and fruits in tap water before eating?	294 (77.8)	83(22.2)
Do you wash your hands with water and soap before eating your meal?	312 (82.7)	65(17.3)
Do you wash your hands with water and soap after handling raw meat?	336 (89.0)	41(11.0)
Do you wash your hands with water and soap after using the toilet (defecation)?	343 (90.8)	34(9.2)
Do you dry your hands after washing them with towel?	284 (75.1)	93(24.9)
Do you eat half-cooked eggs (Egg yolk is soft)?	267 (70.7)	110(29.3)
Do you separate raw meat from ready to eat foods?	274 (72.5)	103(27.5)
Do you drink raw (unpasteurized) milk?	238(63.6)	139(36.4)
Do you eat half cooked meat (inside is pink)?	297 (78.6)	80(21.4)
Do you taste the food by your finger during the cooking	231 (61.1)	146(38.9)
Do you use the same spoon for cooking and eating	248 (65.6)	129(34.4)

Table-4: Comparison of knowledge, attitude and practice among different study levels.

	Primary Level Mean±S.D n=124	Intermediate Level Mean±S.D n=127	High Level Mean±S.D n=126	p-value
Knowledge	55.44%±13.53%**	55.08%±11.80%	59.48%±11.04%**	0.007*
Attitude	60.84%±11.49%**	55.62%±10.34%**	59.67%±9.75%	<0.001*
Practice	61.07%±8.42%	60.07%±10.10%	62.54%±10.79%	0.152

*statistically significant at 5% level of significance
**Tukey's test significant multiple comparisons
SD: Standard deviation.

primary school students was 61.075±8.42%, for intermediate school students it was 60.075±10.10%, and for high school students it was 62.5±10.79% (p=0.152).

Knowledge level was less in primary school students compared to high school students (p=0.026) and attitude level was high in primary school students compared to intermediate school students (p<0.001) (Table-4).

As for personal hygiene, 334 (88.4%) students responded

that hands should be washed before eating; 336(89%) washed their hands after eating raw meat; 312(82.7%) washed their hands with soap after eating meals; 335 (88.9%) responded that expiry date of packaged food should be checked while purchasing.

Discussion

The aim of the current study was to investigate the KAP level among general education male school students. With regard to knowledge, students expressed fair level. When comparing our results with other studies, one conducted in Ethiopia[17] to assess KAP among school children in Angolela showed that approximately 52%students were classified as having adequate knowledge of proper hygiene, which is consistent with our findings. On the other hand, other studies conducted in Taif, Seoul and Ulsan for assessing KAP levels in students differ from our findings, showing high levels of knowledge among students in the University of Taif (74.95%)[13] but it was done among university students. Low levels were shown by students in Seoul and Ulsan, South Korea.[18,19] Attitude levels in our study also showed fair level, but, again, Taif University students were found to have higher levels regarding attitude (67.26%).[13] Regarding practice, our students exhibited good levels, but Taif University students scored much higher (80.29%),[13] and that can be explained by the fact that university students had higher chances than general education school students to get educated more about food safety. On the other hand, the study of Seoul and Ulsan students showed lower behaviour levels than our students' levels.[20]

A surprising finding in our study was that the knowledge level of food hygiene in primary school students was higher than intermediate, but high school students had the highest level (p=0.007). Similarly, the attitude level of food hygiene in primary school students was higher than intermediate school students, but high school students had the highest level (p<0.001). This could be attributed to the fact that most of intermediate school students were teenagers, so it may affect their interest in concentrating on the questionnaire. Another possible cause may be that they did not fully understand the questionnaire.

The practice level of food hygiene in primary school students was almost at the same level as in intermediate school students and high school students (p=0.152). However, earlier studies on adults have indicated that food safety knowledge tends to increase with age and practice; younger respondents show the greatest need for additional food safety education.[21]

Many studies have been done among university students, young, adult and others. Students are consumers and also future food-handlers, so they need to make improvement on their own self towards food safety knowledge because knowledge is associated with practices.

We recommend that educational material should be included in the curriculum of schools to enhance students' perception toward food hygiene; awareness campaigns should be conducted for teachers, students and the public in general; and media and social network applications should be used actively for enhancing people and students' knowledge about food hygiene.

Conclusion

The study provides valuable information about the level of knowledge, attitude and practice related to food hygiene of general education school male students in Majmaah, Saudi Arabia. The students exhibited good practice levels, despite fair knowledge and attitude levels.

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