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

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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)
Although 76.7% students reported that washing hands after defecation was important, only 14.8% reported actually following this practice. 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. 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 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

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

<table>
<thead>
<tr>
<th>Question</th>
<th>Correct Answer n(%)</th>
<th>Incorrect Answer n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food poisoning is caused by pathogenic microbes</td>
<td>261 (69.1)</td>
<td>116 (30.9)</td>
</tr>
<tr>
<td>Eating raw or half-cooked meat is highly risky for food poisoning</td>
<td>255 (67.6)</td>
<td>122 (32.4)</td>
</tr>
<tr>
<td>Eating raw unwashed vegetables is highly risky for food poisoning</td>
<td>268 (71.0)</td>
<td>109 (29.0)</td>
</tr>
<tr>
<td>Food handlers with unhygienic practice could be the source for food contamination with food poisoning pathogens</td>
<td>239 (63.4)</td>
<td>138 (36.6)</td>
</tr>
<tr>
<td>Food poisoning could cause severe diseases that end in hospitalization and sometimes death</td>
<td>267 (70.7)</td>
<td>110 (29.3)</td>
</tr>
<tr>
<td>Apparently healthy food handlers might carry foodborne pathogens</td>
<td>173 (45.9)</td>
<td>204 (54.1)</td>
</tr>
<tr>
<td>Harmful bacteria multiply quickly at room temperature</td>
<td>213 (56.3)</td>
<td>164 (43.7)</td>
</tr>
<tr>
<td>The hands should be washed before eating</td>
<td>334 (88.4)</td>
<td>43 (11.6)</td>
</tr>
<tr>
<td>When flies land on food they make it dirty</td>
<td>224 (59.3)</td>
<td>153 (40.7)</td>
</tr>
<tr>
<td>Unwashed hand does not contain microbes</td>
<td>181 (47.9)</td>
<td>196 (52.1)</td>
</tr>
</tbody>
</table>
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 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 differ from our findings, showing high levels of knowledge among students in the University of Taif (74.95%) but it was done among university students. Low levels were shown by students in Seoul and Ulsan, South Korea. Attitude levels in our study also showed fair level, but, again, Taif University students were found to have higher levels regarding attitude (67.26%). Regarding practice, our students exhibited good levels, but Taif University students scored much higher (80.29%), 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.

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.

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.

References


