Article

Knowledge, attitude, and practice of healthy eating among public school teachers in Kuwait

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Abstract

Background: Healthy food is essential for strengthening the body and protecting it from diseases. Conversely, unhealthy food can cause severe diseases in children and adolescents. The present study aimed to assess the level of knowledge, attitude, and practice among teachers about healthy food and to examine the associated factors.

Design and methods: A cross-sectional study was conducted using a questionnaire distributed to 300 teachers in the Hawalli and Al-Jahra educational areas in Kuwait over approximately six months in 2019.

Results: Those who participated in a course had significantly greater knowledge than those who did not (p=0.005). The respondents in Hawalli had a significantly lower mean attitude than Al-Jahrah teachers (7.9±1.5 *vs* 8.2±1.5, respectively; p=0.03).

Conclusions: Limited knowledge combined with a low level of positive attitude suggests an ongoing educational workshop should be established to promote healthy nutrition.

Introduction

Eating unhealthy food is problematic behavior, especially among children and adolescents. Several lines of evidence suggest that chronic conditions such as cardiovascular disease, obesity, hypertension, and diabetes can be traced back to eating unhealthy food during childhood and adolescence.[1-4] These findings suggest the need to spread awareness of healthy eating habits.[5]

Family and school have profound effects on children and adolescents. Teachers can contribute positively to the knowledge, attitude, and practices (KAP) of healthy eating and significantly impact children's and adolescents' health behaviors. KAP of healthy eating among teachers is transmitted by teachers to children and adolescents and affects school policies toward selecting types of available foods in school cafeterias. KAP of healthy eating among schoolteachers can be attributed to age, gender, experience, geographical area, nationality, type of school, and professional training.[6] According to the literature, a balanced diet contains essential nutrients in appropriate quantities required for growth or maintenance of health.[7] Nutritional interventions may alter students' eating behaviors, especially because they are growing.[8] Teachers' knowledge of good eating habits may transmit a favorable attitude toward healthy foods.[9]

Teachers' knowledge of healthy eating might improve their students' quality of healthy eating. In most cases, teachers must undertake interventions to promote healthy eating.[10] There is a growing body of evidence to suggest that unhealthy dietary choices resulting from a lack of knowledge and misconceptions about healthy foods cause some health problems such as obesity.[9] A study showed that a teacher's nutrition education gained greater acceptance among children than information transmitted by an outside nutrition expert.[10]

A study in 2013 assessed the nutrition-related knowledge among teachers and found that only 10% correctly identified food groups that should be consumed most often (grains), and 68% correctly identified groups that should be consumed least often (fats and oils). Only 39% correctly identified the recommended daily servings of fruits and vegetables, 8% of the teachers knew the recommended percentage of daily energy from fats, and 48% knew which macronutrient contained the most energy.[11] An exploratory study of teachers' perspectives on food and nutrition in kindergarteners analyzed teachers' discussions on seven internet message boards regarding various food and nutrition experiences in their classes, this study found a need to increase teachers' nutritional knowledge about such subjects as healthy snacks, food restrictions, and fast food brands, increasing knowledge alone will have little impact if the many other intervening factors are not addressed.[12]

The present study was the first in Kuwait to assess the level of knowledge, attitudes, and practice among teachers about healthy eating and to examine the associated factors.

Design and methods

This study was conducted between June 2019 and November 2019 in the Hawalli and Al-Jahra public school districts in Kuwait. These are male and female schools, divided into primary, preparatory, and secondary schools. The study used a cross-sectional design among teachers at these schools.

Sample size

For a confidence level of 95%, α is 0.05, and the critical value is 1.96; delta is the difference between the means of the two populations, which is 0.25; p is the underlying proportion in the group which is between 0 and 1, and 0.05 was chosen, and 300 subjects needed to achieve statistically significant results.

Instrument

The researcher visited the school, met with the headmaster, explained the purpose of the study, and provided 25 questionnaires to administer to teachers using a convenience sampling technique. The researcher gathered the completed questionnaires from the headmasters at a later visit. The first stage included Hawalli and Al-Jahra provinces (one urban and one rural). The second stage included a list of all schools in each of the two provinces. Schools were categorized into male and female schools, and each was categorized into primary, preparatory, or secondary schools. This self-administered survey was administered to teachers during regular working hours. Almost all completed the survey. There was no financial incentive to participate. The final sample size was 300 teachers.

Data were collected using a structured self-administered questionnaire, and mostly close-ended questions were used.[11] The questionnaire consisted of two sections. The first gathered data on demographic variables (age, gender, nationality, and years of experience). The second gathered data on KAP among teachers about healthy eating in public schools.

The following is a typical question: "Which food group should be consumed most? To correct for guesses, each item included an "I do not know" option. For each item, a score of 1 was given for correct answer. Attitudes toward healthy eating were assessed using six items using a three-point Likert scale. A typical statement was "learning the relationship between food and health is important" (agree or disagree, or "I do not know"). A score of 1–3 was given, with higher scores indicating more favorable attitudes. The coding for all attitude score items was similar (agree = 3, disagree =2, I do not know =1). The scores were then summed.

Teachers' practices regarding healthy eating were assessed using a 13-item sample. A typical question was, "how many times did you consume vegetables yesterday"? Scores of 1–3 (0 times, 1 time, ≥2 times) were given higher scores indicating more frequent practice. The Sharma survey instrument from which our items of KAP were taken was not validated for teachers; however, it has been validated in low-income, minority populations at the fourth-grade reading level.[11,12]

The questionnaire was translated from English into Arabic by an expert, and then two independent native Arabic speakers translated the questionnaire back to English to maintain the equivalence of the questionnaire in the target language.

Statistical analysis

Descriptive statistics were used for continuous and categorical variables. For categorical variables, frequency and percentage were calculated for age, gender, and location. For quantitative variables, arithmetic means, standard deviations, medians, minimum, and maximum values were used for attitude and knowledge scores. The Kolmogorov-Smirnov test of normality was applied, and bivariate analysis was used to determine the relationship between knowledge and attitude and each sociodemographic variable using the Student's t-test as required. Multivariate logistic regression analysis was used to assess the effect of each independent variable (gender, age, school location, nationality, years of experience, school type, and previous training course) on the dependent variables (knowledge and attitude) after controlling for the effect of other variables included in the model. The level of significance of the association between variables was set at $p<0.05$. All calculations and analyses were carried out using SPSS (Statistical Package of Social Sciences Demo Version 22.0, Chicago, IL, USA).

Results

Demographic characteristics

A total of 325 surveys were distributed in several schools in Kuwait in two areas. A total of 300 surveys were completed for a response rate of 92.3%. Most respondents were Kuwaiti (71.3%). The age of the enrolled sample was distributed into two categories; 72.3% were less than 40 years old, and 27.7% were ≥40 years old (Table 1). Most respondents had more than 5 years of experience (64.7%). There was a higher percentage of more than 5 years' experience in Hawalli (53.1%) compared to 46.9% in Al-Jahrah. A total of 14.7% of teachers reported previously participating in professional course training, of which 54.5% were in Al-Jahra, and 45.5% were in Hawalli.

Knowledge among the respondents

The knowledge of the respondents was assessed using five items. The first item assessed the foods recommended to consume most often (bread, cereal, and rice). More than half of the respondents responded correctly (57.7%). The second item concerned foods recommended to be consumed least often; 210 respondents responded correctly (70%). Regarding the number of servings of fruits/vegetables should eat daily, 54.3% responded correctly. Regarding the percentage of daily calories that should come from fat, 40.7% of the respondents answered the question correctly. Regarding the most caloric food, 43.3% of the respondents responded correctly (Table 2).

Table 1. Demographic characteristics of the respondents.

Characteristics	n	%
Gender		
Male	150	50
Female	150	50
Age		
<40	217	72.3
≥40	83	27.7
Nationality		
Kuwaiti	214	71.3
Other	86	28.7
Experience		
<5	106	35.3
≥5	194	64.7
Location		
Hawalli	150	50
Al-Jahra	150	50
Type of the school		
Primary and intermediate	200	66.7
Secondary	100	33.3
Participating in health professional course previously		
Yes	44	14.7
No	256	85.3
Total	300	100%

Attitudes and beliefs

Six items were used to assess attitudes and beliefs related to healthy nutrition. Regarding the relationship between food and health, 96.7% of the respondents agreed, while 2% answer disagreed, and 1.3% responded that they did not know. Only 89% believed that there was a relationship between food and heart disease. Around half of the respondents (44%) disagreed that it is difficult to obtain accurate nutrition information. Regarding the relationship between overweight and health problems, 91.3% agreed,

6.0% disagreed, and 5.0% responded that they did not know. Regarding whether they needed to change eating habits, 39% of the respondents agreed, 52% disagreed, and 9%responded that they did not know. Regarding the adverse effect of skipping meals, 79.3% agreed, 13.7% disagreed, and 7% responded that they did not know (Table 3).

There was no significant difference in knowledge and attitude scores concerning gender, age, experience, type of school, or nationality (Table 4). Respondents in Hawalli had a significantly

Table 2. Frequencies distribution of responses on the items of the knowledge scale (n=300).

Nutrition knowledge question	Correct		Incorrect		Total	
	n	%	n	%	n	%
Which food group should be consumed most? (bread, cereal, rice, etc.)	173	57.7	127	42.3	300	100
Which food group should be consumed fewest? (fats, oils, sweets)	210	70.0	90	30.0	300	100
How many servings of fruits/vegetables should you eat per day? (at least five)	163	54.3	137	45.7	300	100
What percent of your daily calories should come from fat? (30%)	122	40.7	178	59.3	300	100
What has the most calories: protein, carbohydrate, or fat? (1 g fat)	130	43.3	170	56.7	300	100

Table 3. Frequencies distribution of responses on the items of the attitude scale (n=300).

Nutrition attitudes and beliefs	Agree/ true		Disagree/ false		Total	
	n	%	n	%	n	%
Learning the relationship between food and health is important	290	96.7	10	3.3	300	100
What you eat can affect your chances of getting heart disease	267	89.0	33	11.0	300	100
People who are overweight have a higher risk of health problems	274	91.3	26	8.7	300	100
Itis hard to know what nutrition information to believe.	125	41.7	175	58.3	300	100
The foods I eat/drink are healthy, so I do not need to change	117	39.0	183	61.0	300	100
Skipping meals affects my ability to do well in the day	238	79.3	62	20.7	300	100

Table 4. Student's *t*-test distribution of means of attitude and knowledge scores with respect to specific demographic characteristics (n=300).

	Total attitude score			Total knowledge score		
	Mean* ± SD	95% CI	p	Mean^ ± SD	95% CI	p
Gender						
Male	8.2±1.8	7.9-8.5	0. 18	2.2±1.4	2.5-3.0	0.39
Female	7.8±1.1	7.6-8.0		2.6±1.3	2.4-2.8	
Age						
<40	8.0±1.6	7.8-8.2	0.58	2.6±1.4	2.4-2.8	0.15
≥ 40	7.9±1.2	7.7-8.2		2.8±1.4	2.5-3.1	
Experience						
<5	8.1±1.8	7.8-8.5	0.30	2.5±1.4	2.2-2.7	0.08
≥5	7.9±1.3	7.8-8.1		2.8±1.4	2.6-3.0	
Nationality						
Kuwaiti	8.0±1.6	7.8-8.3	0.53	2.5±1.4	2.4-2.8	0.14
Other	7.9±1.2	7.7-8.2		2.8±1.4	2.5-3.1	
Type of school						
Primary and intermediate	8.1±1.5	7.9 - 8.3	0.60	2.7±1.3	2.5-2.9	0.95
High school	7.8±1.4	7.5-8.1		2.7±1.4	2.4- 2.9	
Location						
Hawalli	7.9±1.5	7.6-8.1	0.03	2.6±1.4	2.4-2.9	0.95
Al–Jahra	8.1±1.5	7.9-8.4		2.7±1.4	2.4-2.9	
Professional training						
Yes	7.8±1.1	7.4-8.1	0.23	3.2±1.4	2.8-3.6	0.005
No	8.0±1.6	7.9-8.2		2.6±1.4	2.4-2.7	

*Student's t-test was applied; CI, confidence interval.

lower mean of attitude than Al-Jahrah teachers (7.9±1.5 *vs* 8.2±1.5, respectively, p=0.03).

Dietary behaviors

Regarding foods that they consumed the previous day, fruits and vegetables were reported to be the most consumed (Table 5). Eating in restaurants and eating soda and white bread on the day before the survey were reported by 54.3%, 51.0%, and 76.3%, respectively. Frozen desserts were not commonly eaten by the majority (62%). About half the sample reportedly consumed doughnuts and candy, 53.3% and 54.3%, respectively.

Multivariate logistic regression analysis was performed to measure the effect of sociodemographic characteristics on attitude and knowledge scores (Tables 6 and 7). The relationship by gender was statistically significant (p=0.004). The other factors were not significant.

Multivariate logistic regression was also performed to identify factors that affected the knowledge score. Teachers who had previous training courses were more knowledgeable about healthy foods than those who did not receive training (p=0.01). The other factors in the model were not statistically significant.

Discussion

The purpose of this study was to assess teachers' KAP regarding healthy eating. Teachers are furnished with professional nutrition knowledge and are considered a valuable source of information; therefore, they are well-positioned to play an essential role in improving students' healthy nutrition behaviors.

We identified limited knowledge among teachers concerning healthy food and nutrition. Overall, only a few participants answered all the knowledge score questions correctly. This finding was comparable to a study done in the US, which showed that no respondents answered all knowledge items correctly.[11] Our findings showed that gender had no significant effect on knowledge. This finding was supported by a previous study showing that gender significantly affected nutrition knowledge.[13] This similarity between findings may be related to the fact that both genders have similar lifestyles in Kuwait. A study from China showed that older teachers had significantly higher knowledge than younger teach-

Table 5. Dietary behaviors of the respondents one day before the survey distribution.

	≥1 time	0 times
75.0%	25.0%	Vegetables
70.0%	30.0%	Fruits
48.9%	51.3%	Fruit juice
76.3%	23.7%	Wheat bread
47.4%	52.7%	Fried meat
53.7%	46.3%	French fries
38.0%	62.0%	Frozen deserts
53.3%	46.7%	Doughnuts
54.3%	45.7%	Candy
37.0%	63.0%	Fruit flavored drink
51.0%	49.0%	Soda
53.3%	46.7%	Milk
54.3%	45.7%	Restaurant foods

Table 6. Beta coefficients, their level of significance, and 95% confidence interval of the association of attitude by certain variables.

	Beta coefficient	p-value	95.0% Confidence interval for B	
			Lower bound	Upper bound
Constant	8.899	2.6×10-4	7.799	9.998
Gender	-0.168	0.004	-0.845	-0.161
Age	0.003	0.963	-0.410	0.430
Experience	-0.005	0.940	-0.402	0.373
School	-0.081	0.158	-0.616	0.101
Nationality	-0.045	0.458	-0.544	0.246
Location	0.104	0.072	-0.028	0.646
Training	-0.093	0.113	-0.881	0.093

Reference categories: female, ≥ 40 years, ≥ 5 years, Secondary school, Other, Al-Jahra, yes.

Table 7. Beta coefficients, their level of significance, and 95% confidence interval of the association of knowledge by certain variables.

	Beta coefficient	p-value	95.0% Confidence interval for B	
			Lower bound	Upper bound
Constant	2.132	0.0001	1.106	3.159
Gender	-0.028	0.634	-0.397	0.242
Age	0.015	0.817	-0.346	0.438
Experience	0.074	0.247	-0.149	0.575
School type	-0.018	0.760	-0.387	0.283
Nationality	0.055	0.374	-0.202	0.536
Location	0.000	0.995	-0.314	0.315
Training	0.231	0.011	0.139	1.049

Reference categories: female, ≥ 40 years, ≥ 5 years, Secondary school, Other, Al-Jahra, yes.

ers, which is in contrast to our findings. This difference in findings is perhaps related to the fact that older teachers in China had more experience increasing their knowledge.[10,14]

Our findings are supported by a study carried in Kuwait in 2011, which showed that attitudes were almost equivalent between Kuwaitis and non-Kuwaiti.[13] It appears that non-Kuwaiti Arab teachers during their stay in Kuwait adopt the food and nutrition styles of Kuwaitis because the food culture is similar, and the lifestyles in Kuwaitis affect citizens and residents in the same manner.

In our study, teachers who previously participated in health food professional training courses had significantly higher knowledge than those who had not. Participation in a workshop or in-service nutrition training leads to improved knowledge. The number of teachers who participated in training was higher in a previous study (68%) than in the present study (14.6%).[16] These findings may result from knowledge obtained from professional training courses. A study from China showed that previous training significantly affected total knowledge.[10] These findings support our findings, which showed that previous training courses significantly affected total knowledge scores. The reason for this similarity may be related to the effectiveness of these nutrition courses.

We found that males and females had did not differ concerning attitudes. This finding agreed with a US study but not with all studies. The similarity between our findings and the US findings may be related to the similarity between the percentage of males and females participants.[11] A study from Turkey showed that female teachers judged all attitude statements significantly more positively than men. In our study, teachers had very positive attitudes toward nutrition; however, there was no significant difference between genders, and male teachers have more positive attitudes than females.[14] This difference is perhaps related to the fact that Turkey and Kuwait differ in terms of nutrition lifestyles.

When evaluating dietary behaviors, we found relatively high fruit and vegetable consumption and low fried food consumption among teachers (70%, 75%, and 47.4%, respectively); these findings contrast with those from a study in Texas, US, where the proportions were 28.9%, 34.4%, and 3.3%, respectively.[11]

Although this was the first study in Kuwait to assess teachers' knowledge, attitudes, and practices related to healthy eating, there were several limitations. The survey was distributed in only two of six major cities, suggesting that the results might not be generalized to all Kuwaiti teachers. Nevertheless, the two cities represented urban and rural areas in Kuwait. The study did not include private schools to investigate possible differences between private and governmental schools. Nevertheless, there is no reason to believe that teacher characteristics differ between public and private schools because the Ministry of Education in Kuwait exchanges teachers among schools every semester. The study relied on self-reported data, which may influence how teachers accurately report nutrition attitudes, beliefs, and health behaviors. Other methods such as simulations or situational judgment tests might be more appropriate. Our instrument was not validated; however, the literature lacks a validated instrument for this purpose. Nevertheless, the knowledge, attitude, and practice items were validated by an expert to ensure readability, clarity, and comprehensiveness.

Conclusion

There was limited knowledge of healthy eating combined with a low level of positive attitude among Kuwaiti teachers. This situation can affect the overall knowledge of the community.

Professional training is a significant factor influencing knowledge scores. These findings support the notion that educational workshops should be established to promote healthy nutrition. Therefore, future research could focus on developing and incorporating nutrition education for teachers as part of their standard training requirements to ensure their health and productivity and their ability to deliver efficacious programs to their students.

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