

The Study of Knowledge, Attitude and Nutritional Practice of Secondary School Students in Darab City, Fars Province, Iran in 2011-2012

Zahra Moaadelı ¹; Aazam Hossainnejad Neyrizi ^{2,*}; Iman Sharifikia ³; Khadijeh Abbasi Marandi ⁴

¹Darab Branch, Islamic Azad University, Darab, IR Iran

²Faculty of Nursing and Midwifery, Bushehr University of Medical Sciences, Bushehr, IR Iran

³Shahid Faghihi Hospital, Shiraz University of Medical Sciences, Shiraz, IR Iran

⁴Hazat Zeinab Nursing Faculty, Shiraz University of Medical Sciences, Larestan, IR Iran

*Corresponding author: Aazam Hossainnejad Neyrizi, Faculty of Nursing and Midwifery, Bushehr University of Medical Sciences, Bushehr, IR Iran. Tel: +98-9176967450, Fax: +98-7733450187, E-mail: ahosseini15@yahoo.com

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Background: The epidemiologic evidences suggest prevalence of chronic non-communicable diseases among adolescents and its substantial role in changing lifestyle and eliminating the associated risky factors. Thanks to the recent change in nutrition pattern, obesity in children and young adults has become one of fundamental health problems in the developed and developing countries, where any change in food habits requires knowing about adolescents' nutrition attitude and performance.

Objectives: The present study attempts to examine the nutrition pattern of secondary school boy and girl students in Darab city.

Patients and Methods: This cross-sectional study comprises 400 secondary school students (196 boys and 204 girls) and 8 public and private schools with one class per each grade in Darab city of Fars Province, Iran. To collect data, a researcher-made questionnaire including individual and demographical items as well as items measuring the students' awareness, attitude and practice used as research instruments. The data obtained were then analyzed through the SPSS software tests, Chi-Square and ANOVA statistical tests.

Results: The findings indicate that most participants had sufficient awareness and attitude related to consumption of snacks (61.5% and 89.3%, respectively). However, considering the participants' practice, most of the subjects were at average level (82.5%) and only 9.3% of the students had a proper nutrition practice. Moreover, parents' job and mothers' educational level held no statistically meaningful correlation with the rate of awareness, attitude and nutrition practice of the participants. Fathers' level of education by far had a considerable impact on the students' awareness, attitude, and nutritional practice.

Conclusions: Despite the higher levels of the participants' awareness and attitude, their nutrition practice is inappropriate. The results suggest that increasing trainings on nutrition pattern and improvement of schools policies seems critical in order to benefit from a healthy nutrition pattern.

Keywords: Snacks; Schools; Students

1. Background

According to the World Health Organization estimates, by 2020 non-communicable diseases will be the cause of nearly three-quarters of total death in the developed world (1). Currently, one major cause of non-communicable diseases is following an unhealthy diet and subsequent obesity in that overweight could be the central health problem in the 21st century (2). The modern age has identified lifestyle as the most important factor in maintaining health and avoiding different diseases especially chronic illnesses. The individuals' nutrition habits are the chief reasons for changing lifestyle (3). The tendency of childhood background towards chronic diseases, due to biologic components and associated risk-factors, leads to increasing incidence of chronic diseases which continues into adulthood. Changing diets in preference to consuming more foods containing saturated

fat, sugar and processed foods and low in fiber, as well as decreased level of physical activities in different communities illustrate global dominance of such risk factors (1, 4). Unfortunately, food patterns in the central Asia contain the highest rate of energy surplus to needs compared to the developed countries. Also, epidemic changes in rapid growth of risk factors for vascular diseases created a potential public health hazard, though extremely limited information provided by adult populations. So, it is assumed that health conditions and food habits have remarkably changed during the recent four decades. In other words, traditional foods are going to be replaced with western diets and the elderly people are more interested in healthier foods compared with adolescents (1, 5). Payab et al. in the Health Heart research project in Isfahan, concluded that the Iranian young adults are

rapidly absorbed by the western lifestyle. Iranian children and adolescents tendency towards the western food pattern besides consumption of fatty and salty snacks lacking nutritional value and declining interests in traditional foods could account for some of the existential problems (6), mainly the availability and acceptability of consumed foods, verified by cultural patterns (7). There are occasions that incorrect nutrition behaviors take place as a result of unavailability of healthy foods or the pleasing packing, color and design of unhealthy foods that attract young adults towards such foods. Therefore, increasing physical and sensory appeal of healthy foods is critical to maximize healthy food consumption especially among adolescents (8). Also, most of adults' behavioral pattern and eating habits are shaped in childhood, which resist changing in adulthood. Consequently, the nutrition pattern of children is of high importance, since quality and quantity of food play a significant role in individual's health and/or prevention from different diseases, in which parents play an indisputable role (9, 10). In fact, food habits of children in pre-school age are under absolute influence of the family, but upon entering schools children spend much time with their peers and apart from their family, conditions that gradually changes their eating habits and preferences (11, 12). Although, students have meals with family and thus follow parents' food patterns, at school they learn to consume snacks with friends or in absence of their parents. In other words, disputes among parents and children about the eating patterns occur on consuming snacks and junk foods. The amount of consumed snacks has a significant impact on supplying energy and nutritious foods in students. On the other hand approximately 60% of children aged from 8 to 12 years, who form 15% of total population of Iran, personally select their snacks that contain low nutritious materials and high energy (13, 14). A large portion of snacks consist of fat and sugar, create a false sense of satisfaction without fulfilling the children's nutritional needs. The consumption of such snacks at inappropriate times during the day ruins the students' appetite to eat more nutritious foods, and cause nutritional problems over time (15). Furthermore, due to high energy content, snacks result in obesity in students (2, 3, 16, 17). Junk foods like French fries, chocolates, candy, doughnut, cola, sandwiches, hamburger and pizza are all very popular with children and are among foods having high rate of calorie but worthless in terms of nutritious materials. These foods only produce much energy while damaging students' health (4, 15, 18, 19). According to the study on changes in food habits of young adults in Jenah city, 60% of the subjects consumed dairies less than 2 shares daily, 44% used less than 3 shares fresh fruits and vegetables daily and 80% of adults ate fried foods twice a week (20). A study indicated that being near to a fast food restaurant caused a negative impact on food consumption pattern of children (21). Different studies showed that including at least one healthy meal in students' diet could positive-

ly affect short-term memory, the rate of learning and as a result academic achievements (22, 23). Therefore, improvement of nutrition quality as well as changing food habits using proper method must become a priority. To identify and implement an effective program, the first step is to recognize the notorious needs and problems of children and their parents. Several recent studies have shown that increased knowledge of children influences consumption patterns of family and positively affects nutritional behavior (24, 25). Accordingly, eating culture and knowledge have been regarded as some essential factors that have considerably more impact on forming food patterns than the effect of economic factors among families (26). However, unfortunately in Iranian schools there exist little successful nutritious training and children's needs are not clearly defined (9).

2. Objectives

Therefore, the present study was designed to explore the eating patterns of students at schools besides specifying their nutritious needs in order to apply appropriate intervention based on desired nutritious requirements.

3. Patients and Methods

This cross-sectional study was carried out in 2012, and comprised 400 secondary school students (196 boys and 204 girls) selected from 11556 students by random sampling in 8 public and private schools with one class per each grade in Darab city of Fars Province, Iran. The research instruments included a researcher made questionnaire measuring demographical information (16 items), the rate of students' awareness (10 items), the rate of students' attitude (12 items) and students' practice (10 items). The content validity of the questionnaire was determined by 10 faculty members of Nursing and Midwifery Faculty, Shiraz University of Medical Sciences and Islamic Azad University, Darab Branch. The validity of the questionnaire was confirmed by the same academics and their ideas were applied. The split-half method was used for the questionnaire reliability. The correlation coefficient value among two halves was equal to 0.75.

3.1. The Data Collection and Scoring the Questionnaire

After receiving the permission from the Education Organization of Darab, the authors selected one grade randomly and the questionnaires were distributed. Exclusion criteria included the lack of voluntary cooperation or the absence of student on completion of the questionnaire. The awareness items such as eating fruits and vegetables are the main causes of obesity. What are the beneficial nutrients of health and naming the food groups were graded in terms of a 10 score scale and three levels of good, average and bad, where bad scored 0-3, average 4-7 and good 8-10. The maximum score for measuring students' attitude was 24 whereby bad scored 0-7, average

8-16 and good 17-24. Finally, to grade the students' practice, the maximum score of 10 was determined in which bad scored 0-3, average 4-7 and good 8-10. Attitude grading was done according to the Likert scale.

3.2. The Data Analysis

The SPSS software was the instrument to analyze the data. Frequency and percentage, t-test and chi-square test and ANOVA were used to examine nutritious patterns and demographic variables, respectively.

4. Results

The participants consisted of 204 girls (51%) and 196 boys (49%) with average age 13 ± 1 . Totally, 27% of participants were studying in the first grade, 40.8% in the second grade and 32.3% in the third grade. Most of the students' fathers were self-employed having diploma and higher education, with mothers having secondary school education. Many students had 1-2 siblings. The rate of obesity was recorded among 23.8% of the students (21.4% boys and 26% girls). Also, most of the students consumed snacks at school. The students received the nutrition information through parents and lecture and were more interested in receiving information about foods ingredients. The results indicated that 71.8% of the students had breakfast and 86.2% consumed snacks. The participants' rate of awareness and attitude were 61.5% and 89.3%, respectively and were in acceptable level of using snacks (Table 1). With regard to practice, majority (82.5%) of students were at average level and only 9.3% of them showed an acceptable nutritional practice as shown in Table 1. Generally, 64.9% of participant consumed unhealthy and 35.1% used healthy snacks. A significant relationship was found between father's education ($P = 0.004$) and the students' awareness and attitude ($P = 0.043$) for eating snacks (Table 2), but no statistically meaningful association was observed between mother's job and education and father's job and awareness, attitude and practice on using snacks (Table 3). Statistically meaningful association was found between grade and attitude ($P < 0.001$) but no significant relationship regarding awareness and practice ($P = 0.12$, $P = 0.17$, respectively) as shown in Table 4. As shown in Table 5, a statistically significant relationship existed between gender and awareness but not between attitude and practice ($P = 0.1$, $P = 0.36$, respectively).

5. Discussion

The present study indicated the incorrect food habits among Iranian children in Darab, which also confirms the common eating patterns among the families. Culturally, a large portion of Iranian foods consist of bread and rice, though consuming cereals is significantly low. In addition, frequency of eating dairies, fresh fruits and vegetables is considerably similar to the consumption of fatty and sweet foods. This indicated that eating healthy

Table 1. The Frequency Distribution of Awareness, Attitude and Practice Scores in Secondary School Students^a

Variables	No. (%)
Awareness	
Poor	5 (1.3)
Average	149 (37.3)
Good	246 (61.5)
Attitude	
Poor	0 (0)
Average	43 (10.8)
Good	357 (89.3)
Practice	
Poor	34 (8.5)
Average	329 (82.5)
Good	37 (9.3)

^a The highest percentage of awareness and attitude are assessed as good, but in terms of practice the scores are at average level.

Table 2. The Distribution of Mean Scores of Awareness, Attitude and Practice in Terms of Father's Education^a

Scores	Number	Mean \pm SD	P Value
Awareness			0.004
Illiterate	29	7.68 \pm 1.49	
Elementary school	53	7.05 \pm 1.78	
Secondary school	99	7.84 \pm 1.61	
Diploma	89	7.97 \pm 1.57	
Associate degrees higher	130	8.05 \pm 1.58	
Attitude			0.043
Illiterate	29	20.17 \pm 3.14	
Elementary school	53	19.67 \pm 3.01	
Secondary school	99	20.1 \pm 2.42	
Diploma	89	19.67 \pm 2.79	
Associate degrees higher	130	20.70 \pm 2.69	
Practice			0.526
Illiterate	29	5.82 \pm 1.31	
Elementary school	53	5.67 \pm 1.55	
Secondary school	99	5.65 \pm 1.57	
Diploma	89	5.78 \pm 1.41	
Associate degrees higher	130	5.97 \pm 1.42	

^a As it is clear, father's education positively affects awareness and attitude. The test of ANOVA confirms the meaningful relationship.

Table 3. Distribution of Mean Scores of Awareness, Attitude and Practice in Terms of Father and Mother's Job ^a

Variables	Number	Mean ± SD	P Value
Mother's job			
Awareness			0.245
Housewife	316	77.7 ± 1.67	
Employed	84	8.01 ± 1.46	
Attitude			0.228
Housewife	316	20.04 ± 2.85	
Employed	84	20.45 ± 2.32	
Practice			0.636
Housewife	316	5.82 ± 1.45	
Employed	84	5.73 ± 1.51	
Father's job			
Awareness			0.791
Self-employed	161	7.84 ± 1.59	
Worker	76	7.65 ± 1.66	
Office clerk	151	7.88 ± 1.67	
Other	8	7.87 ± 1.35	
Attitude			0.142
Self-employed	161	20.12 ± 2.51	
Worker	76	19.52 ± 3.10	
Office clerk	151	20.41 ± 2.81	
Other	8	20.50 ± 2.39	
Practice			0.334
Self-employed	161	5.65 ± 1.60	
Worker	76	5.85 ± 1.34	
Office clerk	151	5.94 ± 1.35	
Other	8	6 ± 1.51	

^a According to the results, mother's and father's job have no considerable impact on awareness, attitude and practice as indicated by the t-test and ANOVA test.

Table 4. The Distribution of Mean Scores of Awareness, Attitude, and Practice in Terms of Grade ^a

Scores	Number	Mean ± SD	P Value
Awareness			
First	108	7.43 ± 1.74	0.12
Second	163	8.01 ± 1.41	
Third	129	7.91 ± 1.75	
Attitude			
First	108	20.40 ± 2.55	0
Second	163	20.59 ± 2.66	
Third	129	19.31 ± 2.84	
Practice			
First	108	5.97 ± 1.39	0.17
Second	163	5.93 ± 1.35	
Third	129	5.50 ± 1.62	

^a Using t-test, a statistically meaningful relationship was observed between grade and attitude ($P < 0.001$), but not between awareness and practice.

Table 5. The Distribution of Mean Scores of Awareness, Attitude and Practice in Terms of Gender ^a

Scores	Number	Mean ± SD	P Value
Awareness			
Female	204	7.60 ± 1.71	0.006
Male	196	8.50 ± 1.52	
Attitude			
Female	204	19.32 ± 2.98	0.1
Male	196	20.96 ± 2.20	
Practice			
Female	204	5.74 ± 1.51	0.369
Male	196	5.87 ± 1.42	

^a Using t-test, a statistically meaningful relationship was observed between gender and awareness ($P = 0.006$), but not between attitude and practice.

and fresh foods especially fruits and vegetables have remarkably decreased while consumption of unhealthy foods has increased among the young adults (1). Presently, there is a very low consumption of micronutrient-rich foods such as vegetables, fruits and milk by large number of children and adolescents (27, 28). In the current research, more students used unhealthy snacks (64.9%) compared to those who consumed healthy foods (35.1%). Since the nutritional environment has been taken into account as a risk factor of obesity particularly in the urban areas, it would be important to examine the rate of awareness and attitude of the students in cities in association with the food habits (29). In this regard, the present study assessed the student's awareness and attitude towards snacks. Our findings illustrated that most of participants were in good condition in terms of awareness and attitude (61.5% and 89.3%, respectively). Moreover, the results showed that approximately all students were familiar enough with the negative impact of unhealthy foods; however, few participants continued eating improper foods, confirming that their awareness has no positive impact on changing their practice. In other words, although the participants were reasonably aware of attitude, no statistically meaningful relationship was observed between knowledge, practice and food habits, and only 9.3% of students had good level of practice. This result is consistent with those of several studies (9, 30-32). Abdollahi et al. in their study of district 13 in Tehran showed proper scores for awareness and nutritional attitude of their participants (75% and 51%, respectively). But, only 29% of their studied population obtained appropriate food performance score. The correlation coefficient value between awareness and attitude equaled 0.26, which indicated that increased awareness and trainings affected the student's attitude; however, just trainings would not be effective. Thus, preparing proper training materials has a significant role (9). Most studies conducted on students, showed that awareness was in a

better condition compared with practice. The gap between awareness, attitude and nutritional behavior particularly about consuming fresh fruits and vegetables among fourth to sixth graders was considerable in Lin et al. studies. This indicated poor attitude of the age groups towards nutrition as an important health factor since the quality of eaten foods was significantly poor and did not meet growth needs of the students. By far, there was a positive association between awareness and attitudes (33). Furthermore, different factors including body image, parents' food patterns, peers pressure, teachers, media, advertisements and physiological needs were also influential (11, 12, 34). Characteristics of family such as parents' level of education, job, socio-economic status and number of children have a great impact on nutritional behavior and practice as well as the student's physical activity at school (35). Accordingly, the present study, examined the relationship between the participants' level of education and the job of parent's and the students' attitude, awareness and practice. However, we found no statistically meaningful association between mother's job and education and father's job and awareness, attitude and practice on using snacks. A significant relationship was observed between father's education and the students' awareness and attitude for eating snacks. Fu ML et al. noticed that Taiwanese children with higher educated parents had a better food pattern, so that, only 20% of the children with educated parents consumed candy and fried foods compared with ordinary children (30%). Similarly, eating high quality foods by a group with educated parents was 38% which was remarkably higher than other group (27%), (36). Changes in food pattern in children is influenced by their developments and access to foods at different levels of education and the amount of attention they receive from their parents on food patterns. For instance, parents stress on young children is how to eat appropriate foods and physical activities, but in older age group they put more emphasis on avoiding alcohol, drugs and sexual behaviors. The results of longitudinal study indicated that children's food patterns remarkably change as they grow up. These transformations reflected the decreased consumption of fruits and vegetables, deserts, meat and milk and increasing rate if eating different drinks particularly sweet drinks, salty fast foods, sea foods and beef (37). Adriana Perez et al. investigated food pattern and its different forms in grades 4, 8, and 11 in Texas. They concluded that 8 and 11 graders prefer consuming hamburger and other meats, cheese, bread and creamy pastry; and by far fourth graders inclined to eat cereals, milk, yogurt, and fruit. Furthermore, eighth and eleventh grader had remarkably more snacks than the fourth graders. The reasons for such considerable change of food pattern could be increased autonomy and physical activity of student and reduced parental supervision as children grew older (38). However, several studies have indicated the improved rate of nutritional awareness, attitude and per-

formance in older ages (39, 40). This therefore might be due to the impact of training and life experiences. By far, in Lin's study 4-6 graders had less breakfast than 1 and 3 graders (33). Other studies indicated that as students get older, they go to school without eating breakfast (41, 42). In the current study, a statistically meaningful difference was found between mean score of attitude and grade in three educational level ($P < 0.001$), but not in relation to awareness and practice. Also, mean score of awareness showed a significant relationship with gender ($P = 0.006$), but there was no meaningful relationship in regard to attitude and practice ($P = 0.1$, $P = 0.36$, respectively). Thomas et al., concluded that there was a significant disparity between nutritional practice of girl and boy students, as boys received higher amount of energy and protein daily compared to girls ($P = 0.029$), (43). Other studies have suggested that girls' level of nutritional awareness and attitude is higher compared with boys (44, 45). The difference between the level of awareness and attitude in boys and girls is attributed to expectancy of their social roles. In this context, further studies are required to obtain better insight. On the other hand, Leen and colleagues found no statistically meaningful difference between frequency of consuming vegetables, dairies and sweet, fatty or salty foods among boys and girls (1, 33). Unhealthy food habits among the participants of the present study highlight serious health risks in this age group which leads to the prevalence of obesity and chronic diseases in the next two decades. Accordingly, it is significant to prepare curriculum for training children to have healthy lifestyle and sufficient physical activities at schools and throughout country. On the other hand, to make these programs more influential, the nutrition policies have to be consistent with the society. In this context, the government must cooperate with industry, consumers, and social media. One of the most effective aspects of public involvement in solving health problems is active participation of children and adolescents in such programs. Children acquire a better perception of these concepts if they participate in medical trainings along with others. Children are the future parents; hence no child should leave the school unless they learn about healthy lifestyle and have sufficient knowledge about mental, emotional and physical health. In this regard, schools function as media to provide trainings and information about healthy lifestyle for future generation. One purpose of educational programs is to encourage students to take responsibility of transferring their knowledge, a practice that plays a considerable role in social changes. In this regard, several researchers have concluded that if the participation programs are held at schools, it would be a major step to ensure students' health and subsequently, the health of the community (41, 45). Doubtless, extending the children's roles beyond absolute receivers of medical training, will shorten the long path of health improvement projects. The limitation of this study is its descriptive

nature, due to time limit. Future studies are warranted to develop training programs, and monitor the nutritional practice of students using food frequency questionnaires.

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Authors' Contributions

Study concept and design: Zahra Moaddeli, Aazam Hosseinejad; acquisition of data: Zahra Moaddeli; analysis and interpretation of data: Aazam Hosseinejad, Zahra Moaddeli, Iman Sharifikia, Khadijeh Abbasi; drafting of the manuscript: Aazam Hosseinejad, Iman Sharifikia, Zahra Moaddeli, Khadijeh Abbasi; critical revision of the manuscript for important intellectual content: Aazam Hosseinejad, Khadijeh Abbasi; statistical analysis: Aazam Hosseinejad, Iman Sharifikia; administrative, technical and material support: Zahra Moaddeli; study supervision: Aazam Hosseinejad, Zahra Moaddeli.

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