



## Investigation of the Knowledge and Skill of Proper Consumption of Fruit and Vegetables among Shahrekord Adolescent Girls

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### Abstract

**Background:** The life style is formed and stabilized in adolescence. Since consumption of fruits and vegetables may affect the risk of chronic diseases, their low consumption during adolescence is very important. Knowledge and skill is considered as one of the main determinants of this behavior. This study aimed to investigate the Knowledge and skill of proper consumption of fruit and vegetables among adolescent girls in Shahrekord, Iran.

**Materials and Methods:** This study was a descriptive-analytic investigation conducted on high school girls in Shahrekord city during 2013 to 2014. 308 female students were selected randomly from 8 high schools and a researcher made questionnaire was used to collect the demographic, Knowledge and skill related data. Validity and reliability of the questionnaire was evaluated by internal consistency method (Cronbach's alpha = 0.70, Cronbach's alpha= 0.76), respectively. The collected data was analyzed by SPSS-21 software.

**Results:** The mean age of students was  $13.86 \pm 1.3$  years. There was no statistically significant association between consumption of fruit and vegetables and fathers' education level, mothers' job and parents' age. However, there was a significant association between fathers' job and adolescents' skill of fruit and vegetables consumption ( $P < 0.05$ ). In addition, a significant association between mothers' education level and adolescents' knowledge and skill of fruit and vegetables consumption was observed ( $P < 0.05$ ). There was a significant direct association between knowledge and skill ( $P = 0.01$  and  $r = 0.82$ ), so that adolescents with more knowledge, had a better skill as well.

**Conclusion:** Considering the adolescents' low knowledge and skill in proper consumption of fruit and vegetables and also the direct association between knowledge and skill, it seems necessary to implement educational programs according to the health education and promotion theories and models, with contribution of parents and school personnel, to improve the knowledge and skill and empower adolescent girls in consumption of fruit and vegetables.

**Key Words:** Adolescent, Behavior, Fruit, Knowledge, Vegetables.

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## 1- INTRODUCTION

Adolescence is one of the important periods of life in which one passes from childhood to adulthood and acquires abilities that are used in adulthood (1, 2). Many of health related beliefs and habits are formed and stabilized in adolescence. If a non-healthy life style is formed during this period, it will usually remain for the rest of life (1). Unhealthy life style is the cause of many of chronic diseases. It is predicted that chronic diseases will be the cause of 75% of deaths in 2020 (3).

One of the main preventing factors of chronic diseases is sufficient consumption of fruit and vegetables. Fruit and vegetables are the best nutritional sources of antioxidants, vitamins, soluble fibers and other nutritional compounds (4) and they prevent overweight and obesity as well (5-7). Despite of benefits of fruit and vegetables consumption, less than one third of adults and about 20% of children and adolescents in the United States, have the recommended amount of fruit and vegetables in their daily diet (8, 9).

Results of the conducted investigations on students in various parts of the world, like the one conducted by Branscum and Kaye (10) and Wilson et al. (11), also indicate the insufficient fruit and vegetable consumption. The consumption of fruit and vegetables is considered a vigorous part of a well lifestyle. An adequate consumption of fruit and vegetables could decrease energy concentration, extend satiety, upsurge fiber consumption and reduction general energy intake (3).

Many studies have shown that habit of fruit and vegetables consumption is formed during childhood and adolescence and food preferences and eating habits are stabilized during those periods (12), and become the predictor of the food consumption in adulthood. Therefore, early and timely interventions may maximize the health benefits and results

(13). One of the main predictors of fruit and vegetables consumption is adolescents' skill in doing that (14). If children are responsible for preparation of their own fruit and vegetable servings, they should do some activities like peeling, cutting, baking and so on. Some studies have reported, that children's skills in terms of fruit and vegetables preparation is very limited, and they do not know how to prepare their fruit and vegetable servings (14). Many adolescents may be able to recognize healthy foods like fruit and vegetables, but they don't have the basic skills in preparing them. We must find the barriers like lack of skill and make suitable interventions if needed (15).

Knowledge is a very important issue. Before we ask somebody to do something correctly, they should know what is that behavior and acquire information about that specific behavior. The first step in health education is to inform people about what they should know about a healthy life so that they can enjoy a complete physical, mental and social health. Therefore, the role of knowledge is very bold and may lead to the retention of healthy behavior. In addition we can expect a student to do behaviors like proper consumption of fruit and vegetables only when they have a complete information about these behaviors. They must know what are these behaviors and the accurate and comprehensive information should be conveyed to them.

It shows that there is a close relationship between knowledge and skill. Total, maximum Iranian adolescents have no desire to raise their consumption of fruit and vegetables. Recognizing the key reasons involved in these performances and endorsing exercise and consumption of fruit and vegetables in this age group can contribute meaningfully to the keep and elevation of their well-being and health. Considering the above issues and necessity of paying especial attention to

adolescent girls, this study was conducted to investigate the adolescent girls' habits in proper consumption of fruit and vegetables in Shahrekord, Iran.

## 2- MATERIALS AND METHODS

### 2-1. Study design and population

This was a descriptive-analytic study conducted in 2013 to 2014 on high school girls in Shahrekord, Iran. 308 students from 8 governmental high schools were selected randomly by means of attendance list. Since the whole Shahrekord city is covered by two regional education departments and according to the number of students in each school, 4 schools from the region one and 4 schools from region two were selected randomly to make sure that the whole city is covered geographically and culturally.

### 2-2. Measuring tools

Researcher made questionnaire was used based on the Knowledge and Skill of Proper Consumption of Fruit and Vegetables in three sections:

- General characteristics (8-question),
- Knowledge (9-question),
- Skill of Proper Consumption of Fruit and Vegetables (3-question),

The collected demographic data included age of student, age of parents, parents' job and their education level. In order to investigate adolescents' skill in proper consumption of fruit and vegetables, 3 questions were used including: "Have you ever made a food or dessert by fruit and vegetable?" "Have you ever washed fruit and vegetables at home?" "Do you make snack at home by fruit and vegetables?"

Answers to these questions were evaluated according to Lickert 5 choice scale (never, rarely, sometimes, most of the times, always) and the scoring was as follows: never= 0, rarely= 1, sometimes= 2, most of

the times= 3, and always= 4. Adolescents' knowledge of fruit and vegetable consumption was assessed by 9 questions (e.g. how much fruits should be consumed every day? how much vegetables should be consumed every day? fruits and vegetables contain which of the followings?). The true answers scored one and the false ones or the answer of "I don't know", got scored zero. On completion of the questionnaires the scores of knowledge and skill substructures were calculated based on 100.

Validity and reliability of the questionnaire was evaluated by the following method: in order to determine the face validity, a full list of the items was prepared and given to a group of 30 high school girls with the demographic, economic and social characteristics similar to the target group.

We applied their ideas in the forms. For qualitative evaluation of the content validity, 5 experts in health education and 4 experts in nutrition were asked to check the amount of coverage of the concept and subscales by the used terms and statements. Reliability of the questionnaire was evaluated by content consistency method. The Cronbach's alpha was calculated to be 0.76 for questions about fruit and vegetables consumption skill and 0.70 for questions of knowledge, respectively.

### 2-3. Inclusion criteria

The study inclusion criteria consisted of being a first-year female student in a public high-school in Shahrekord, giving an informed written consent, willingness to participate in every stage of the study.

### 2-4. Exclusion criteria

The study exclusion criteria consisted of being older than 15 years, reluctance to contribute, and the student's absence or moving to alternative school and incomplete of the questionnaire.

### 2-5. Ethical considerations

After being introduced to the Chahar Mahal and Bakhtiari province education department from Shahid Beheshti University of Medical Sciences, 8 high schools were selected randomly from the list. After random selection of the high schools, the researcher obtained consent from principals and teachers. Then, after explaining the aims of the study to participants and assuring them about confidentiality of their information, questionnaires were given to the students.

### 2-6. Data analyses

To evaluate the data with respect to attaining the study purposes as well as the qualitative and quantitative variables, using the SPSS statistical software version 21, and the Chi-square, one way analysis of variance, Pearson test and also Kolmogorov - Smirnov test were used.

Kolmogorov - Smirnov test was used to test the normality of data distribution. In order to investigate the fruit and vegetables consumption skill in various groups according to the parents' education level, age and job, one way analysis of variances was used. Pearson test was used to investigate the association between substructures and Chi-square test was used to assess the association between levels of knowledge and skill.

### 3- RESULTS

The mean age of student's was  $13.86 \pm 1.3$  years old. Results showed that 76% of the participating students' mothers were housewives and 48.7% of the fathers were self-employed; 46.1% of the fathers and 53.8% of mothers had the education level of high school diploma (**Table-1**).

The mean score of knowledge was  $39.14 \pm 20.40$  (a total of 100 scores), the mean skill score of student in proper consumption of fruit and vegetables was

$33.44 \pm 18.89$  (a total of 100 scores). So, the girl students' level of knowledge and skill in fruit and vegetable consumption was low. Findings of this study indicate that the number of adolescents who have chosen the answer of "rarely" to the questions of "Have you ever made a food or dessert by fruit and vegetable?" "Have you ever washed fruit and vegetables at home?" and also, "Do you make snack at home by fruit and vegetables?" has been 140 (45.5%), 134 (43.5%), and 147 (47.4%), respectively (**Table-2**).

There was a significant direct association between knowledge and skill, such that adolescents who had higher knowledge of fruit and vegetable consumption had a higher skill in making food and desserts by fruit and vegetables ( $P=0.021$ ), wash fruit and vegetables at home ( $P=0.001$ ) and make snacks by fruit and vegetables ( $P=0.042$ ).

No statistically significant association was observed between father's education level, mother's job and parent's age and adolescents' skill in proper consumption of fruit and vegetables. However, there was a significant association between father's job and adolescent's skill ( $P<0.05$ ). In contrast, students whom father were employee had better skill in fruit and vegetables consumption.

In addition, there was a positive relationship between adolescents' knowledge ( $r=0.81$  and  $P=0.019$ ) and skill of proper consumption of fruit and vegetables ( $r=0.17$  and  $P=0.005$ ), and their mother's education level, such that adolescents whom mother's education level was high school diploma, had better knowledge and skill of fruit and vegetables consumption of in comparison with those whose mother's education level was academic degree (**Table-3**).

**Table-1:** Demographic data collected from participating students in Shahrekord city, Iran

Variables		Number	Percentage
Father's age	< 40 years	140	45.50
	40-50 years	136	44.20
	>50 years	32	10.40
Mother's age	<30 years	46	14.90
	30-40 years	227	73.70
	>40 years	35	11.40
Father's education level	No education	9	2.90
	Primary education	22	7.10
	Secondary education	98	31.80
	High school diploma	142	46.10
	Academic	37	12.00
Mother's education level	No education	2	6.00
	Primary education	13	4.20
	Secondary education	70	22.70
	High school diploma	176	53.80
	Academic	47	13.00
Father's job	Self-employed	69	22.40
	Employee	150	48.70
	Worker	61	19.80
	No job	7	2.30
	Other	21	6.80
Mother's job	Self-employed	39	12.70
	Employee	35	11.40
	House wife	234	76.00

**Table-2:** Mean scores of skill questions and frequency of answers about proper fruit and vegetables consumption

Questions	Mean $\pm$ SD	Never	Rarely	Sometimes	Most of the times	Always
Have you ever made a food or dessert by fruit and vegetables?	1.35 $\pm$ 1.08	61(19.8)	140(45.5)	61(19.8)	28(9.1)	18(5.8)
Have you ever washed fruit and vegetables at home?	1.43 $\pm$ 1.08	57(18.5)	134(43.5)	55(17.9)	51(16.6)	11(3.6)
Do you make snack at home by fruit and vegetables?	1.23 $\pm$ 1.14	80(26.00)	147(47.7)	32(10.4)	28(9.1)	21(6.8)

SD: Standard deviation.

**Table-3:** The relationship between adolescent knowledge and skill of fruit and vegetables and some of demographic variables

Variables	Father's job		Mother's education	
	P-value	r	P-value	r
Knowledge	0.126	0.038	0.019	0.081
Skill	0.022	0.542	0.005	0.017

#### 4- DISCUSSION

Consumption of at least 5 servings of fruit and vegetables daily is very beneficial in preventing risk factors of cardiovascular diseases and hypertension, cancers and so on (1). The findings showed that the mean of knowledge of adolescents about the amount of portion of fruit and vegetable intake, recognition of fruit and vegetables, fruit and vegetables intake by different age groups and etc. is  $39.14 \pm 20.40$  (a total of 100 scores), and is constant with the results of most similar studies conducted such as Tavassoli (2), Najimi (16) and Hashemi (17).

Having skill in fruit and vegetables consumption is considerable (18). According to the findings of current study, many of the students have chosen “never” and “rarely” options for skill related questions. In their study, Rakhshandehroo et al., reported that 17.2% of the students had chosen “never” and “rarely” options for the question of “Have you ever made a food or dessert by fruit and vegetables?” The percentage of student who had chosen these options for two questions of “Have you ever washed fruit and vegetables at home?” and “Do you make snack at home by fruit and vegetables?”, have been 35.2% and 29.6%, respectively (19).

There was a significant direct association between knowledge and skill, such that adolescents who had higher knowledge of fruit and vegetable consumption, had a better skill in making food and desserts by fruit and vegetables, wash fruit and vegetables at home and make snacks by fruit and vegetables. According to these findings it may be said that if we expect somebody to do a behavior correctly and soundly, they must know what that behavior is at first and then they must know how to do that.

Vanspost- Skagegard et al. reported in their study on eating habits of Swedish student, that adolescents whom mother's

education level was higher, had more vegetables and grains consumption (20). Leganger and Kraft also declared that women with higher education levels, have more desire to consume fruit and vegetables (21). But results of the present study showed that adolescents whom mother's education level was lower, had better skills in fruit and vegetable consumption. Perhaps parents with higher education levels are more sensitive about issues related to their children's growth and development and have more expectations, but unfortunately it seems that these sensitivities are more about their children's education and therefore issues like life skills and skill empowerment of children are neglected. Families must know that treating with the extreme kindness is not a good way of rearing children and they must pay more attention to their empowerment (19).

At current study, there was a significant association between father's job and adolescent girls' skill, such that girls whose fathers were employees, had better skill in fruit and vegetable consumption; perhaps it is due to the ability of the family to buy more fruit and vegetables and therefore, there is a possibility for girls to acquire the skill. Since existence of fruit and vegetables at home is a stimulator for learning how to wash, cut and make a food or dessert by fruit and vegetables, these girls can practice and acquire the skill. In Salehi et al.'s study, it was shown that with the increase in monthly income, consumption of fruit and vegetables increases, too (22). Middaugh et al., also reported that a fruit and vegetable rich diet is directly associated with the income (23).

A fruit and vegetable rich diet is necessary for maintaining the body immunity, preventing overweight and obesity, maintaining normal function of the body and reducing the burden of diseases (3, 24). According to the definition of health in which not only absence of diseases, but

all aspects of health and promotion of the quality of life are considered (25), all people and especially adolescents and young people must pay more attention to health related issues. Authorities and policy makers also should try to pave the way for improvement of these skills in the society by using health education and especially health promotion approaches. In addition, more attention should be paid to the schools. School as one of the main places of adolescents' social life, is a good environment for implementation of needed interventions to improve fruit and vegetable consumption model in this age group (26).

Considering the large population of students in Iran, using school based approaches in health education and promotion may lead to remarkable successes in various fields. Therefore, other than learning reading and writing skills, students may acquire other knowledge, attitude and new behaviors at school. These new behaviors not only will affect students' health, they will have a crucial effect on family and society health as well (27).

School based interventions may have a very important effect on creating, maintaining and promotion of the skill of fruit and vegetables consumption in adolescent girls. Planning and implementation of interventions to improve skills at school like holding especial events, making specific groups for each skill related to fruit and vegetable consumption and holding workshops may be effective steps towards training this issue. Having meeting with parents to train them about cooperate with their children and make some cooperative programs and actions for them are suggested actions at home to improve this skill.

#### **4-1. Limitations of the study**

The limitations of this study contain its use of self-report questionnaires; Present study

surveyed only high-school girls' pupils in government schools might boundary the generalizability of the outcomes external these contributors.

## **5. CONCLUSION**

Based on the findings of this study, the girl students' level of knowledge and skill in fruit and vegetable consumption was low. However, a significant direct association between knowledge and skill was observed, such that adolescents with higher knowledge had a better skill in proper consumption of fruit and vegetables. It must be mentioned that fruit and vegetable consumption in adolescent girls is very important; because improvement of the nutrition status in this group before pregnancy may reduce complications related pregnancy, delivery and lactation and prevent undesirable effects on fetes. Therefore, it is recommended to use health education and promotion theories and models to improve these skills and actions especially for children and adolescents.

**6- CONFLICT OF INTEREST:** None.

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