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Original Article (Pages: 2131-2142)

Fast Food Consumption Behaviors in High-School Students based on the Theory of Planned Behavior (TPB)

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Abstract

Background: Studies report inappropriate snack and junk food consumption patterns in children and young adults in Iran. The current survey was aimed to explore fast food consumption behaviors in high-school students based on the Theory of Planned Behavior.

Materials and Methods: A cross-sectional study was done among 500 high-school students. Samples were selected based on cluster sampling method at first and simple random at second. Data were collected using a researcher-made questionnaire. To analyze, SPSS-16 and tests, including t-test, Chi-square, correlation coefficient and multiple regressions were used.

Results: The monthly frequency of fast food consumption was 4.01. The TPB explained fast food use behaviors with R^2 of 0.6, effectively. Results also represented that frequency of fast food consumption was meaningfully in line with behavioral intention ($\beta = 0.60$, $P < 0.05$) and subjective norms ($\beta = 0.17$, $P < 0.05$).

Conclusion: It seems likely beneficial to consider important subjective norms **(**especially friends) that may strongly effect on high-school student intention to use fast food. Also students perceived behavioral control must be increased.

Key Words: Fast Foods, Intention, Perception, Students.

*Please cite this article as: Mirkarimi K, Mansourian M, Kabir MJ, Ozouni- Davaji RB, Eri M, Hosseini SG, et al. Fast Food Consumption Behaviors in High-School Students based on the Theory of Planned Behaviors (TPB). Int J Pediatr 2016; 4(7): 2131-42.

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Received date Mar 23, 2016; Accepted date: Apr 22, 2016

1- INTRODUCTION

Fast food consumption is significantly increased in the last 30 years in the American and Europeans countries (1). Studies indicate inappropriate snack and junk food consumption patterns in children and young adults in Iran (2, 3). The most fast food costumers are usually teens and twenties, because these products are probably fast, convenient and partly inexpensive (4). Iranian investigation showed that % 51 of children consume snack, inappropriate juice and soda in a week (5) that reported that adolescent, nowadays, consume more fast food compared to previous generations (6).

In a study conducted by Lee et al. fast foods were consumed once or twice monthly by 38.5 % and 40.5 % in elementary and high school students, respectively (7). Faghih and Anousheh survey also reported that 20 % of adolescent and 10 % of adults consumed sandwich 3 times or more in a week (8). According to numerous surveys, children and adolescent who consume fast food have more energy intake, saturated fat, sodium, carbohydrates and sugar, and have less fiber, vitamin A and C, fruits and vegetables consumptions compared to others (9, 10). Too much consumption of fast food can result in chronic diseases, including obesity, diabetes, and hypertension (7).

Fast food consumption effect negatively on dietary behaviors in the way that their consumption is in line with lower scores of nutrition knowledge, dietary attitude and behavior as well as unhealthy eating among children and adolescent (11-13). Designing a beneficial nutrition education needs a comprehensive perception of effective factors on fast food use. The vast majority of associated studies has focused on in detail such as snack consumption (14-16) or has included simple analysis of consumption rates and its patterns (4, 17).

The Theory of Planned Behavior (TPB) is an extended form of Theory of Reasoned Action (TRA) by Ajzen (18). The TRA describes behaviors as they associated with attitude and subjective norm, while the TPB also comprising perceived behavioral control.

In fact, the TPB assumes that human behaviors are impacted by behavioral intention affected by subjective norms, attitude and perceived behavioral control. With regards to the fast food consumption, "attitude" would be personal or negative feelings, while "subjective norms" would be how much an individual likes to respect and pursue the opinions of a person who are important to him or her. "Perceived behavioral control" would be a person' perceived ability and belief to use or disuse of fast food (7).

The predictive power of TPB has been confirmed in numerous topics toward behavior change (19). TPB has been used to explain so many healthy behaviors such as eating behaviors (19-21). Then, the current survey was aimed to investigate the fast food consumption rates and its effective factors in high-school students based on TPB.

2- MATERIALS AND METHODS

2.1. Study design and procedure

A cross-sectional study was conducted between January 2014 and July 2015. Participants of the current survey were recruited from all high schools in Ali Abad-e- Katoul city, North of Iran. The study protocol was confirmed by Golestan University of Medical Science (ID number- 930216012).

Subjects were asked to complete questionnaire supervised by their teachers. To select samples, at first, all existed high schools in city were chosen based on cluster sampling method, at second, the study high schools were selected using simple random sampling. In final, sample

size were separately determined for male and female students. All of the 500 questionnaires were returned; no questionnaires were excluded, yielding a response rate of 100 %. To select high-schools, total schools were selected according to cluster sampling method, and then from selected clusters, high-schools were randomly chosen. Female (governmental 2,258 and non-governmental 148) and male students (governmental 2,323 and non-governmental 124) were separately calculated.

2.2. Sample size

According to a related study(22), and the estimation of correlation of perceived behavioral control of 0.25 and test power 80 %, 125 samples were estimated that, in final, 250 female and 250 male student were participated by considering 2 effect size.

2.3. Questionnaire and measurements

A researcher-made questionnaire was used based on the TPB in six sections:

- general characteristics (8 questions),
- Fast food use (five questions),
- Behavioral intention (5 questions),
- Attitude about fast food use (12 questions),
- subjective norm (9 questions), and
- Perceived behavioral control (13 questions).

General characteristics included gender, weight, height, parents' working status, parents' education, interest in weight control, interest in health and in final, do students solely eat؟ General obesity was tested based on Body Mass Index (BMI) (kg/m^2) that considered as $25 \leq BMI < 30$ for overweight and $BMI \geq 30$ for obesity (23). Body mass index is measured by an expert in health as weight in kilograms divided by height in meters squared, rounded to 1 decimal place.

Our literature review yielded no standardized questionnaire; therefore a new one was developed by the researchers for the current survey. The face validity of was approved by 5 specialists (3 specialists in health education and 2 specialists in nutrition) and its content validity by 9 specialists (7 specialists in health education and 2 specialists in nutrition). In overall, the Content Validity Rate (CVR) and Content Validity Index (CVI) were measured. The reliability of the questionnaire was tested by using of internal homogeneity and Cronbach's alpha, and the values of coefficients were also assessed for every constructs.

2.4. Fast food use

Fast food was described as fried chicken, pizza, hamburgers, french fries, and doughnuts. The fast food consumption was studied by frequency, days when it was consumed usually, persons with whom the subjects consumed fast food, the places that fast food was commonly used and, in brief, the purpose of the use. These questions included five questions that were asked in an open- end form.

2.5. Behavioral intention

Behavioral intention to consume fast food was assessed using the questions such as, "how often do you think you will use a fast food in the next month?" Fast food in the questions was about all aforementioned categories of fast food. A 4- point Likert scale (1: not at all, 2: a little, 3: somewhat, 4: very much) was applied, and scored from 5 to 20. Cronbach's alpha of 0.81 was achieved.

2.6. Attitude toward fast food consumption

Attitude toward fast food consumption was investigated using questions in terms of the pros and cons of fast food use. Questions were about familiarity, health, nutrition, store atmosphere, taste, sanitation, energy content of fast food,

fullness after eating, salt rate of fast food, fat content of fast food as well as beliefs about the relevance of obesity and fast food consumption. The questions in this part were answered based on a 4- point Likert scale (1: not at all, 2: a little, 3: somewhat, 4: very much) that scored from 12 to 48. All 12 questions of this part were adequately reliable with Cronbach's alpha of 0.79.

2.7. Subjective norm

Subjective norm is consisted of normative belief and motivation to comply(24). Normative belief was tested by three questions regarding how they perceived the beliefs of important individuals to them (parents, friends and teachers) for consuming fast food. Motivation to comply was explored by asking the subject how much they respected and pursued the beliefs of important people to them. All answered based on a 4- point Likert scale (1: not at all, 2: a little, 3: somewhat, 4: very much) that scored from 9 to 36. Cronbach's alpha was 0.83 and 0.87 for normative belief and for motivation to comply, respectively.

2.8. Perceived behavioral control

Perceived behavioral control was surveyed through thirteen questions about the enabling and disabling factors in terms of fast food consumption, all questions were answered with regard to the 4-point Likert scale (1: not at all, 2: a little, 3: somewhat, 4: very much), and scored from 13 to 52. The highest internal reliability was achieved for these questions with a Cronbach's alpha of 0.91.

2.9. Statistical analyses

Data analyses included two steps; 1) Simple statistics, such as frequencies, mean and standard deviations, and 2) Parametric statistical tests, such as t-test (to compare mean of two quantitative variables), Chi- square (to compare mean of two qualitative variables), Pearson correlation (to study relation of quantitative variables) and multiple regressions (to predict the effect of independent variables on dependent variables). In total, analysis was undertaken using the Statistical Package for the Social Sciences statistical software package version 16. P- Value was taken significant $P<0.05$.

3. RESULTS

3.1. General characteristics

The general traits are described in **Table.1**. In total, 500 high school students recruited in the current survey. The average of students age was 16.82 ± 0.8 .The mean height and weight for male students were 168.2 ± 7.5 cm and 63.19 ± 9.54 kg, respectively and 156.2 ± 8.3 cm and 55.53 ± 10.41 kg, respectively, for female students. The vast majority of the students had normal BMI, while 2.1 % were obese and 3.2 % were overweight. About interest in health, 50.4 % of the samples represented a high level of interest (very much and much). The participants were also interested in weight control, and female students reported a higher interest level than male students. In final, students were usually consumed food with their families (85 %).

3.2. Patterns of fast food consumption

These patterns are delineated in **Table.2**. Students used fast foods (all types) 4.01 times per month, in average. Hamburger and pizza were consumed more prevalent than fries, fried chicken and doughnuts. Hamburgers and pizza were more frequently consumed by male students (1.29 and 1.07 times per month) than female students (0.79 and 0.93 times per month), respectively, while girls were more frequently used doughnuts than boys (0.62 compared to 0.36 times per month).

Fast foods were eaten on special days (42.2 %) or in meeting friends (23 %). More male subjects (43.2 %) ate fast food

as snack, while majority girls (67.6 %) ate fast food as a meal. The samples ate fast foods when they were with friends (52.2 %), also means that fast foods use was in accordance with special days and friends.

3.3. Behavioral intention

The mean score of behavioral intention to use fast food was 10.71± 3.51 with regard to the maximum score of 20 that this score hypothesized to be somewhere between "a little" and "somewhat". There was no gender differences in the summed score; while, male students had a higher intention to use fried chicken and hamburger than females (**Table.3**).

Subjects' attitudes regarding fast food use reported in **Table.4**. The mean score of attitude was 24.29 out of 48. The students announced positive attitudes about fast food store atmosphere, taste and familiarity as well as negative attitudes regarding saltiness of fast food. Male students showed a significant stronger attitude in terms of saltiness (P< 0.01), while girls announced that consuming fast food will make them fat (P< 0.01).

3.4. Subjective norm

The analyses of subjective norm showed in **Table.5**. Subjective norm was evaluated by multiplying the normative belief score by the motivation to comply score. Normative belief was strong with friend, while motivation to comply reported the same scores for family, friends and teachers. Then, friends played more important role than family and teachers for fast food consumption. So, it seems likely that boys had higher subjective norm than girls (P<0.05).

3.5. Perceived behavioral control

The mean score of perceived behavioral control was 27.05 ± 6.12 out of 52, in total (**Table.6**). Male students had higher score than females, however no significant difference was found. Questions leading in higher scores were those about fewer sales promotions, fewer fast food stores and fewer advertisements. The lowest score was about location of fast food such as its proximity. Female students represented more difficulty than males for consuming fast food, a diet (P<0.001) and in changing fast food consumption behaviors (P<0.001).

The constructs of the Theory of Planned Behaviors were significantly and positively correlated (P<0.01) (**Table.7**). In total, fast food consumption behavior was strongly correlated with behavioral intention (r=0.735, P=0.01).

Multiple regression analyses were implemented to assess the importance of TPB constructs to fast food consumption behaviors (**Table.**8). The model was strongly significant (P<0.001) and showed a good proportion of the variance (R^2= 0.675) when subjective norms, attitude toward behavior and perceived control were regressed against intention. In this model, behavioral intention yielded a total score of intention to use fast food that reported in **Table.3**.

Although subjective norms and perceived controls were meaningfully in relevance with the intention of fast food use, however no significant relation existed in attitude. Based on the current findings, perceived behavioral control is the most critical construct in all three variables.

The second model (the effect of behavioral intention and subjective norms on frequency of fast food consumption) was also strongly significant (P=0.001) and described more than half of the variance.

Table.2 showed the total monthly consumption frequency for all types of fast food. Perceived behavioral control and behavioral intention were meaningfully in relation with fast food consumption. In brief, gender was not different in these relations.

Table-1: Demographic characteristics of high school students

Variables		Total (n=500)	Gender		T or chi-square test
			Male	Female	
Weight (kg)		7.454***	55.53± 10.41	63.19± 9.54	59.36± 10.02
Height (cm)		9.332***[1]	156.2 ± 8.3	168.2 ± 7.5	162.2 ± 7.7
BMI		3.254***	20.9± 2.7	20.2 ± 3.1	20.55± 2.8
Mother's education	Primary school	93 (37.2)	74 (29.6)	167 (33.4)	9.398*
	Middle school	51(20.4)	61(24.4)	112 (22.4)	
	High school	57 (22.8)	72(28.8)	129 (25.8)	
	Academic degree	49 (19.6)	43 (17.2)	92 (18.4)	
Father's education	Primary school	22 (8.8)	41(16.4)	63 (12.6)	1.869
	Middle school	17 (6.8)	28 (11.2)	45 (9)	
	High school	96 (38.4)	82 (32.8)	178 (35.6)	
	Academic degree	115 (46)	99 (39.6)	214 (42.8)	
Interest in health	Very much	46 (18.4)	52 (20.8)	98 (19.6)	7.129
	Much	80 (32)	62 (24.8)	142 (28.4)	
	Average	104 (41.6)	97 (38.8)	201 (40.2)	
	Little	18 (7.2)	30 (12)	48 (9.6)	
	Very little	2 (0.8)	9 (3.6)	11(2.2)	
Interest toward weight control	Very much	57 (22.8)	32 (12.8)	87 (17.4)	59.879***
	Much	94 (37.6)	57 (22.8)	152 (30.4)	
	Average	76 (30.4)	121(48.4)	198 (39.6)	
	Little	17 (6.8)	22 (8.8)	39 (7.8)	
	Very little	6 (2.4)	18 (7.2)	24 (4.8)	
Members that students eat foods with them	Whole family	80 (32)	107 (42.8)	187 (37.4)	6.316
	Some members of family	136 (54.4)	102 (40.8)	238 (47.6)	
	Alone	18 (7.2)	25 (10)	43 (8.6)	
	Friends	16 (6.4)	16 (6.4)	32 (6.4)	

1) T-test, **P < 0.01, ***P < 0.001; 2) N (%), χ^2-test, *P < 0.05, ***P < 0.001.

Table- 2: Patterns of fast food consumption

Variables		Total	Gender		T or chi-square test
			Female	Male	
Consumption frequency	Hamburger	3.212**[1]	0.79 ± 0.97	1.29 ± 1.52	1.04 ± 1.39
	French fries	0.497	0.50 ± 0. 92	0.49 ± 0.92	0.48 ± 0.90
	Pizza	1.183	0.93 ± 1.14	1.07 ± 1.6	1.03 ± 1.07
	Fried chicken	0.232	0.93 ± 0.89	0.95 ± 0.88	0.95 ± 0.89
	Doughnuts	-2.007*	0.62 ± 1.39	0.36 ± 1.05	0.49 ± 3.29
	Total score[2]	1.099	3.81 ± 3.49	4.17 ± 3.49	4.01 ± 3.49
Places for consuming fast food	When parents not at home	25 (10)	38 (15.2)	63(12.6)[3]	18.862**
	Special days	113 (45.2)	98 (39.2)	211(42.2)	
	Meeting friends	72(28.8)	43(17.2)	115(23)	
	When hungry	28(11.2)	49(19.6)	77 (15.4)	
	Out of habit	5 (2)	12(4.8)	17 (3.4)	
	Others	7 (2.8)	10(4)	17 (3.4)	
With whom they ate	Parents	48 (19.2)	49(19.6)	97 (19.4)	8.629*
	Brothers/ sisters	45(18)	59(23.6)	104(20.8)	
	Friends	140 (56)	121(48.4)	261(52.2)	
	Alone	17(6.8)	21(8.4)	38(7.6)	
Consuming fast food as	A meal	169 (67.6)	142 (56.8)	311 (62.2)	11.837***
	Snack	81(32.4)	108 (43.2)	189 (37.8)	
Place	Near home	29 (11.6)	63(25.2)	92 (18.4)	43.012***
	Near school	20 (8)	48(19.2)	68(13.6)	
	Downtown	197(78.8)	133 (53.2)	330 (66)	
	Others	4(1.6)	6 (2.4)	10 (2)	

[1] T-test, *P < 0.05, **P < 0.01; [2] A total score that was used as a dependent variable for consuming fast food;
[3] N (%), by χ^2-test, *P < 0.05, **P < 0.01, ***P < 0.001.

Table-3: Intention for consuming fast food

Variables	Total	Gender		T
		Males	Females	
I incline to use hamburger in a month	2.09 ± 0.89	2.27 ± 0.91	2 ± 0.83	2.879**[1]
I incline to use French fries in a month	1.92 ± 0.85	2.05 ± 0.87	1.89 ± 0.86	1.106
I incline to use pizza in a month	2.39 ± 0.87	2.40 ± 0.88	2.39 ± 0.84	0.832
I incline to use fried chicken in a month	2.41 ± 0.85	2.49 ± 0.85	2.39 ± 0.87	1.397
I incline to use doughnut in a month	1.90 ± 0.81	1.81 ± 0.79	1.99 ± 0.83	-1.769
Total	10.71 ± 3.51	11.02 ± 3.42	10.66 ± 3.59	1.129

[1] T-test, **P < 0.01.

Table 4: Attitude for fast food consumption

Questions	Total	Gender		T
		Males	Females	
Fast food is familiar to me	2.39 ± 0.77	2.40 ± 0.80	2.31 ± 0.71	0.648
I think that fast food is not good for health	1.50 ± 0.58	1.49 ± 0.53	1.55 ± 0.61	-1.109
I think that fast food can provide all vital nutrients for us	1.79 ± 0.68	1.82 ± 0.72	1.76 ± 0.61	0.858
I think that fast food is delicious	3.25 ± 0.60	3.37 ± 0.59	3.21 ± 0.59	1.928
I think that fast food stores provide an attractive environments	2.63 ± 0.74	2.63 ± 0.81	2.63 ± 0.71	0.006
I think that fast food stores are clean	2.01 ± 0.74	2 ± 0.76	2.07 ± 0.71	-0.959
I think that fast food is clean and safe	1.84 ± 0.69	1.85 ± 0.69	1.82 ± 0.70	0.411
I think that fast food portions are large enough to feel full	1.69 ± 0.61	1.69 ± 0.64	1.69 ± 0.59	2.018
I think that fast food has a lot of salt	2.47 ±0.85	2.59 ± 0.91	2.34 ± 0.73	2.658**
I think that fast food has a lot of fat	1.89 ± 0.71	1.85 ± 0.73	1.95 ± 0.70	-1.169
I think that consuming fast food will make me fat	1.41 ± 0.57	1.48 ± 0.61	1.35 ± 0.50	3.399**[1]
I think that fast food has a lot of calories	1.42 ± 0.53	1.42 ± 0.52	1.41 ± 0.51	0.189
Total	24.29 ± 3.76	24.59 ± 3.76	24.09 ± 3.71	1.198

[1] T-test, **P < 0.01.

Table-5: Subjective norm for fast food consumption

Variables		Total	Gender		T
			Males	Females	
Motivation to comply	I follow my family's beliefs	2.88 ± 0.58	2.91 ±0.63	2.86 ±0.52	1.099
	I follow beliefs of teachers	2.86 ± 0.58	2.87 ± 0.65	2.59 ±0.51	-0.534
	I follow beliefs of friends	2.88 ±0.51	2.88 ±0.59	2.91 ±0.41	-0.941
	Total	8.62 ± 1.23	8.66 ± 1.39	8.36 ± 1.08	-0.128
Normative belief	I think that my family would like my fast food consumption	1.68 ± 0.65	1.78 ± 0.64	1.56 ± 0.61	2.936**[1]
	I think that my teachers would like my fast food consumption	1.68 ± 0.54	1.74 ± 0.55	1.63 ± 0.52	1.837
	I think that my friends would like my fast food consumption	2.24 ± 0.75	2.29 ± 0.79	2.21 ± 0.69	1.157
	Total	5.6 ± 1.56	5.81 ± 1.59	5.4 ± 1.50	2.405*
Motivation to comply × Normative belief	Family	4.49 ± 2.30	5.29 ±2.38	4.59 ± 2.19	2.791**
	Teacher	4.98 ± 2.01	5.09 ± 2.16	4.79 ± 1.83	1.329
	Friends	6.63 ± 2.68	6.75 ± 3.03	6.49 ± 2.27	0.837
	Total	16.1 ± 5.56	17.13± 6.17	15.87 ± 5.04	1.997*

[1] T-test, *P < 0.05, **P < 0.01.

Table-6: Perceived behavioral control toward fast food consumption

Questions	Total	Gender		T
		Males	Females	
I can eat fast food even if fewer fast food stores are near	1.80 ± 0.66	1.80 ± 0.66	1.80 ± 0.69	0.001
I think that meeting friends at places other than fast food stores would be difficult	2.69± 0.69	2.68± 0.69	2.61± 0.66	1.854
I can eat fast food even while I am on diet.	2.01± 0.74	2.23± 0.76	1.81± 0.64	5.092^{***1}
I can eat fast food even if I have to wait for a long time	2.07± 0.78	2.04± 0.73	2.02± 0.79	0.721
I can eat fast food even if fewer advertisement of fast food is on TV, internet and etc	2.48± 0.73	2.57± 0.72	2.49± 0.76	1.102
I can eat fast food even if they offer few sale promotions	2.31± 0.83	2.39± 0.85	2.25± 0.79	1.472
I think that changing my fast food consumption behaviors for health would be difficult	1.95 ± 0.66	2.03 ± 0.67	1.84 ± 0.63	2.873**
I think that using places other than fast food stores for special occasions such as birthday would be difficult	1.89 ± 0.70	1.91 ± 0.68	1.85 ± 0.73	0.611
I think that changing my fast food consumption behavior is difficult because I have eaten them from very young ages	1.90 ± 0.69	2.01± 0.67	1.79 ± 0.65	2.769**
I can eat fast food even if I get nutrition education using multimedia (e.g website, video clip) rather than basic lecture or brochure	2.01 ± 0.73	1.94 ± 0.74	2.09 ±0.76	-1.786
I can eat fast food even if I get continued nutrition education	2.03 ± 0.78	2.03 ± 0.80	2.02 ± 0.79	0.139
I can eat fast food even if I learn how to quickly prepare a simple meal	2.07 ± 0.79	2.09 ± 0.81	2.01± 0.78	1.108
I can eat fast food even if I get nutrition education about impact of fast food on health (e.g. calories, nutrient content(	1.84± 0.77	1.84± 0.71	1.87± 0.81	-0.116
Total	27.05± 6.12	27.56 ± 6.02	26.45± 6.23	1.769

[1)] T-test, $^{**}P < 0.01$, $^{***}P < 0.001$.

Table-7: Correlation coefficients between variables

Variables	Fast food consumption frequency	Intentions	Attitudes	Subjective norm	Perceived control
Fast food consumption frequency	1.00				
Intentions	0.735^{**1}	1.00			
Attitudes	0.379**	0.460**	1.00		
Subjective norm	0.349**	0.421**	0.465**	1.00	
Perceived control	0.589**	0.658**	0.612**	0.453**	1.00

[1)] $^{**}P < 0.01$.

Table-8: Multiple regressions for fast food consumption

Variables		F	β[1]	R^2
Behavioral intention[2]	Attitudes	0.91	0.04	0.655
	Subjective norms	3.12^{**4}	0.14	
	Perceived behavioral control	10.87***	0.55	
Frequency of fast food consumption[3]	Behavioral intentions	12.87***	0.60	0.558
	Subjective norms	4.01***	0.17	

[1)] Standardized parameter estimate; [2)] Intention to use fast food in a month that shown in table 3; [3)] Total frequency of fast food consumption in a month, as reported in table 2; [4)] $^{**}P < 0.01$, $^{***}P < 0.001$.

4- DISCUSSION

The current survey explored fast food consumption among high school students. We also tested the effective factors in consuming fast food based on the TPB. The average of student's age was 16.82 ± 0.8. The mean height and weight for male students were 168.2 ± 7.5 cm and 63.19 ± 9.54 kg, respectively and 156.2 ± 8.3 cm and 55.53 ± 10.41 kg, respectively, for female students. The aforementioned findings were based on BMI criterion; most of subjects had normal body weight, while 3.2 % and 2.1 % were overweight and obese, respectively.

The aforementioned status is similar to the most studies conducted in Iran (25, 26). This study showed the mean monthly frequency of fast food use to be 4.01 (4.17 for male students, 3.81 for female students). With regards to the studies conducted by Kobayashi (27) and Alfawaz et al.(28) high school students ate fast food about once or twice per week that is in accordance with our survey. Hamburgers were the most frequent consumed fast food at 1.04 times per month that followed by pizza at 1.03 times per month. In a study executed by Seo et al (7), the monthly frequencies of fast food consumption were as follow: 1) 1.05 for hamburgers, 1.02 for Fried chicken, 0.97 for pizza, and 0.50 for doughnuts, that was so similar to the current survey, while in Alfawaz et al.(28), the most frequent meals were apple pie (0.152) and meat shawrma (0.086).

In a survey implemented in Turkey, a country with similar cultural and social-economic status, pizza, chicken doner and hamburger were respectively more preferred fast foods(29). In our survey, male students (43.2 %) inclined to eat fast food as snack, while females (67.6 %) ate usually fast food as a meal that was similar to Seo and et al. investigation(7). It seems logical, because girl usually more consider their daily calories intake and more inclined to control weight. However, other studies (17, 30) showed that snacks were routinely consumed as a fast food. Then it is likely beneficial to apply nutrition education toward the energy content of fast food to inform students in terms of snacks calories. According to the subjective norms, fast food use was strongly related to friends of high school students. Most students in our investigation ate fast food in downtown (66 %). This might be caused by the fact that the current explored samples were lived in a small town with on access fast food stores in downtown. Our samples consumed fast food when they meet their friends (52.2 %). Other studies also presented that fast food consumption was associated with meeting friends (29, 31). As mentioned, the current participants were not consumed fast food in every day. Then the most nutrition educational program must focus on the relation of students with their friends.

The TPB described fast food use behaviors with a reasonable level of R^2 (0.558 and 0.655 for all models). The current exploration achieved in a moderate attitude about fast food consumption with a score of 24.29 out of 48. Factors reporting comparably significant levels of attitude were store environment, taste, familiarity, and saltiness. These factors were also observed to be effective in other studies. In a study conducted on elementary and high school students in Busan by Lee, showed that taste of fast food was effective to be used (4).

Consistent with our hypothesis, friends were the most influential people to consume fast food, as expected. Moreover, students showed the same motivation to comply for family, teachers, and friends. The students' normative belief was also higher and more positive for friends than for family and teachers. This result indicate that most of the educational program must accentuate on friend as a critical group that may effect on fast food consumption. The perceived behavioral

control was also moderate with a score of 27.05 out of 52. In total, male students reported a higher level of perceived behavioral control (27.56) than female students (26.45) that indicate external control don't play an important role in consuming fast food among boys. A Pearson correlation test was applied to explore correlation among the constructs of the TPB. Results showed that higher intention and TPB constructs caused higher levels of fast food consumption. Other studies were also found this positive correlation between TPB constructs (32, 33). Based on results by multiple regression analyses, behavioral intention was affected by perceived behavioral control ($\beta = 0.55$) and subjective norms ($\beta=0.14$). Moreover, attitude toward fast food had no effect on behavioral intention. Behavioral intention ($\beta=0.60$) was significantly in relevance with fast food consumption and subjective norms ($\beta=0.17$).

4-1. Limitations of the study

The fact that the present study examined only high-school students may limit the generalizability of the findings beyond these participants.

5. CONCLUSION

Fast food consumption was positively predicted by behavioral intention and subjective norms; in addition, subjective norm was also predicted by behavioral intention. Therefore, designing interventions focusing on behavioral intention may be likely useful.

6- CONFLICT OF INTEREST

The authors declared that they have no conflicts of interest.

7- ACKNOWLEDGMENT

This paper was financially supported and also approved by Research Committee of Golestan University of Medical Science (ID number- 930216012). This study was financially supported by Golestan University of Medical Science, Iran.

8- REFERENCES

1. Bowman SA, Vinyard BT. Fast food consumption of US adults: impact on energy and nutrient intakes and overweight status. Journal of the American College of Nutrition 2004;23(2):163-8.

2. Abdollahi M, Amini M, Kianfar H, Dadkhah Piraghag M, Eslami A, Mirabadi M, et al. Qualitative study on nutritional knowledge of primary-school children and mothers in Tehran 2008; 14(1): 82-89.

3. Shahanjarini A, Shojaezadeh D, Majdzadeh R, Rashidian A, Omidvar N. Application of an integrative approach to identify determinants of junk food consumption among female adolescents. Iranian Journal of Nutrition Sciences & Food Technology 2009;4(2):61-70.

4. Lee JS. A comparative study on fast food consumption patterns classified by age in Busan. Korean Journal of Community Nutrition 2007;12(5):534-44.

5. Dehdari T, Mergen T. A survey of factors associated with soft drink consumption among secondary school students in Farooj city, 2010. Journal of Jahrom University of Medical Sciences 2012;9(4):33-9.

6. Brownell KD. Does a" Toxic" Environment Make Obesity Inevitable? Obssity Management 2005;1(2):52-5.

7. Seo H-s, Lee S-K, Nam S. Factors influencing fast food consumption behaviors of middle-school students in Seoul: an application of theory of planned behaviors. Nutrition research and practice 2011;5(2):169-78.

8. Faghih A, Anousheh M. Evaluating some of the feeding behaviors in obese patients visiting affiliating health centers. Hormozgan Med J 2008;12(1):53-60.

9. Paeratakul S, Ferdinand DP, Champagne CM, Ryan DH, Bray GA. Fast-food consumption among US adults and children: dietary and nutrient intake profile. Journal of the American dietetic Association 2003;103(10):1332-38.

10. Timperio AF, Ball K, Roberts R, Andrianopoulos N, Crawford DA. Children's takeaway and fast-food intakes: Associations with the neighbourhood food environment. Public health nutrition 2009;12(10):1960-64.

11. Park E, Kim K, Cho J. Dietary habits and nutrient intake according to the frequency of fast food consumption among middle school students in Cheongju area. Hum Ecol Res 2005;9:165-78.

12. Choi M. A study on the relationship between fast food consumption patterns and nutrition knowledge, dietary attitude of middle and high school students in Busan. Korean J Culinary Res 2007;13(2):188-200.

13. Shin E, Kim S, Lee S, Bae I, Lee H. Fast food consumption patterns and eating habits of 6th grade elementary school children in Seoul. J East Asian Soc Diet Life 2008;18:662-74.

14. SeockAh K, JoungWon L, KyeungEun K, JaeOk K, DongYean P. A study of the frequency of food purchase for snacking and its related ecological factors on elementary school children. Korean Journal of Community Nutrition 2004;9(4):453-63.

15. Jo JI, Kim HK. Food habits and eating snack behaviors of middle school students in Ulsan area. Korean Journal of Nutrition 2008;41(8):797-808.

16. Youn HS, Kwak HJ, Noh SK. A study on dietary behaviors, snack habits and dental caries of high school students in Gimhae, Kyungnam province. Korean Journal of Nutrition 2008;41(8):809-17.

17. Lyu E-S, Lee K-A, Yoon J-Y. The fast foods consumption patterns of secondary school students in Busan area. Journal of the Korean Society of Food Science and Nutrition 2006;35(4):448-55.

18. Kim KW, Ahn Y, Kim HM. Fast food consumption and related factors among university students in Daejeon. Korean Journal of Community Nutrition 2004;9(1):47-57.

19. Kassem NO, Lee JW, Modeste NN, Johnston PK. Understanding soft drink consumption among female adolescents using the Theory of Planned Behavior. Health Education Research 2003;18(3):278-91.

20. Maddock JE, Silbanuz A, Reger-Nash B. Formative research to develop a mass media campaign to increase physical activity and nutrition in a multiethnic state. Journal of health communication 2008;13(3):208-15.

21. Peng W. Design and evaluation of a computer game to promote a healthy diet for young adults. Health communication 2009;24(2):115-27.

22. Yarmohammadi P, Sharifirad Gr, Azadbakht L, Morovati Sharifabad, Hassanzadeh A. Predictors of Fast Food Consumption among High School Students based on the Theory of Planned Behavior 2011; 7(4): 449-459.

23. Lee SA, Wen W, Xu WH, Zheng W, Li H, Yang G, et al. Prevalence of obesity and correlations with lifestyle and dietary factors in Chinese men. Obesity 2008;16(6):1440-47.

24. Ajzen I. The theory of planned behavior. Organizational behavior and human decision processes 1991;50(2):179-211.

25. Pour Aram H KN, Golestan B, Abtahi M. Anthropometric indices such as weight, height, body mass index, fat under the skin among high schools students in urban and rural area of Astaneh Ashrafieh during 2000-2001. Medical Journal of Gilan University of Medical Science 2000-2001;12 (47):56-66.

26. Sarshar N, Khajavi A. The prevalence of obesity in females of 15-65 years of age in Gonabad, Iran. Ofogh-E-Danesh: J Gonabad Univ Med Sci and Health Serv 2006;12:38-43.

27. Kobayashi F. Japanese high school students' television viewing and fast food consumption. Nutrition & Food Science 2011;41(4):242-8.

28. Alfawaz HA. The relationship between fast food consumption and BMI among university female students. Pak J Nutr 2012;11:406-10.

29. Yardimci H, Ozdogan Y, Ozcelik AO, Surucuoglu MS. Fast-Food Consumption Habits of University Students: The Sample of Ankara. Pakistan Journal of Nutrition 2012;11(3):265-9.

30. Lee SS. A study on dietary behavior of children according to the their preferences for

fast food. Korean Journal of Community Nutrition 2004;9(2):204-13.

31. Jl F. Explaining adolescent behavior intention to consume fast food using the theory of planned behavior. Ann Arbor: North Dakota State University; 2013.p 100.

32. Hewitt AM, Stephens C. Healthy eating among 10–13-year-old New Zealand children: understanding choice using the Theory of Planned Behaviour and the role of parental influence. Psychology, Health and Medicine 2007;12(5):526-35.

33. Astrom A, Rise J. Young adults' intention to eat healthy food: Extending the theory of planned behaviour. Psychology & Health 2001;16(2):223-37.