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Original Article

Factors Affecting Fast Food Consumption Behaviors of Female Students in North of Iran: Application of Theory of Planned Behavior

Nooshin Rouhani-Tonekaboni[1], Seyed Jalil Seyedi-Andi[2], Mehdi Haghi[3*]

[1] *Department of Health Education and Promotion, School of Health, Guilan University of Medical Sciences, Rasht, Iran*
[2] *Social Determinants of Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran*
[3] *Social Determinants of Health Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran*

[*] *Corresponding author: Mehdi Haghi*
Email: mehdihaghi37@yahoo.com

ABSTRACT

Background: Adolescents are the most frequent fast food consumers. This unhealthy behavior lead to overweight that is associated with diabetes mellitus, hypertension, and heart diseases. The present study aimed to determine factors associated with behavior of fast food consumption (FFC) of female high school students based on the Theory of Planned Behavior (TPB) in the city of Tonekanon, north of Iran.
Methods: The present cross-sectional study was conducted on 197 female students studying at high school. The constructs of the theory of planned behavior including attitude, subjective norms, perceived behavioral control, as well as intention and behavior of fast food consumption were assessed using a pre-tested psychometric questionnaire. Spearman correlation coefficient and linear regression method were used to test the study hypotheses.
Results: The constructs of attitude, subjective norms, and perceived behavioral control were accounted for 37.8% in variation of fast food consumption intention. The construct of subjective norms and perceived behavior control was significantly associated with intention of FFC. Intention of FFC was significantly associated with behavior (B coefficient = 0.76, P-value = 0.001) and predicted 63.8 % of the variance of fast food consumption behavior.
Conclusion: The present study showed that the TPB is a powerful theory in predicting FFC behavior. Subjective norms followed by perceived behavioral control were the strongest predictors of FFC intention.
Keywords: Fast Food, Students, Theory of Planned Behavior
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Introduction

It is necessary to follow a proper and adequate diet given the high energy and nutritional requirements in adolescence (1). Studies have shown that sedentary lifestyle, high-fat diets containing carbohydrates, and inadequate consumption of fruits and vegetables are increasing among adolescents. These unhealthy behaviors cause increased prevalence of overweightness in childhood, which is associated with type II diabetes, hypertension and heart diseases (2). Adolescents are the most frequent consumers of fast foods (1). In a study by

Lee, fast food consumption (FFC) once or twice per month was observed in 38.5% of primary school students and 40.5% of high school students, and a higher rate in 40-50 year-old people (3). Another study reported a significant relationship between weekly FFC and overweightness and obesity (4). Research has shown that frequent FFC leads to a high intake of energy, saturated fats and sodium, and inadequate intake of vitamins A and C, milk, fruits and vegetables (1). In a systematic review study, the general prevalence of obesity and overweightness was reported 5.1% and 10.8% in Iranian children and adolescents respectively (5). Given all the above, FFC is associated with negative health attitudes (6). Some studies have reported that frequent FFC among adolescents is due to their positive views on their taste, desire to consume salty foods, and favoring eating out (7, 8). Other studies have shown that more fast foods are consumed by people with better attitudes toward them (9). Another study showed that the increase in FFC is due to their simplicity of consumption and the hatred toward cooked foods (10). Behavior and its related factors should be understood for the development of methods for changing diet or undesirable FFC, and educational planning for proper diet. Most studies have investigated nutritional knowledge and behaviors (7, 8, 11, 12). Given the high prevalence of FFC among adolescence and its proven adverse effects on health, it is important to use a model to determine factors associated with FFC to develop an educational program. Previous studies have identified reasonable predictive power for theory of planned behavior (TPB) for predicting factors related to FFC (1, 13, 14). The TPB was proposed by Fishbein & Ajzen in 1975 (15). According to this theory, behavioral intention is determined by attitude toward behavior, subjective norms, and perceived behavioral control. Attitude is positive or negative feelings of an individual toward conducting a certain behavior. Subjective norms is defined as social pressures perceived by the individual about conducting a certain behavior, which can be initiated by other significant persons such as friends, family, teachers, specialist etc.). Perceived behavioral control is the individual's understanding of their ability to perform a behavior (self-efficacy), and the ability to control associated with behavior(16, 17).

In a study by Seo et al., constructs of TPB predicted 67.5% of the variance of intention to consume fast food (1). In Mirkarimi et al. study, constructs of TPB predicted 65.5% of the variance of behavioral intention (14). Given the importance of the issue, and the difference in the normative beliefs in different countries to perform behaviors, the present study was designed and conducted to determine factors affecting FFC in female students at public high schools in the city of Tonekabon based on the theory of planned behavior.

Methods

This is a cross-sectional study that was conducted on female students of public high schools in the city of Tonekabin, located at north of Iran. A sample size of 197 students was calculated based on 0.65 margin of error, a 95% confidence interval and a previously estimated standard deviation of 4.48 for FFC behavior (14). The sample was selected using multistage random sampling method. The urban part of Tonekabon had four female high schools at the time of sampling, of which, two were randomly selected, and one classroom was selected from each grade in each high school, making a total of six classrooms from two high schools.

After obtaining permission from the local education authorities and coordination with school's management the researcher visited the selected high schools at different hours. The study objectives were explained to school officials and then questionnaires were made available to the study population to complete. The questionnaire took about 30 minutes to complete.

Data were collected using a self-administered researcher-made questionnaire. To design the questionnaire a focus group study (FGD) was conducted on 30 students to state their willingness and barriers toward FFC and the items was developed based on the findings obtained from the FGD and similar studies (1, 13, 14). The face validity of the questionnaire was assessed by 15 students that were not included in the final sample and appropriate rewording was applied. The content validity of the questionnaire was assessed by eight experts in health education, nutrition, and biostatistician on three parts of TPB constructs. The attitude toward FFC was explored using 11 items about pros and cons of FFC. The content validity index (CVI) of attitude items ranged from 0.81-0.84. The subjective norms was determined using 6 items about their perception toward opinions of other important people. The CVI index was ranged from 0.82-0.85. The perceived behavioral control was assessed using 11 items regarding facilitating and inhibiting factors for FFC. The CVI index ranged from were 0.84- 0.87. The internal consistency of the questionnaire was estimated using Cronbach's alpha coefficient. The estimated coefficients were ranged from 0.72 to 0.79. FFC behaviors was defined as the frequency of FFC as times consumed daily, weekly or monthly. Fast food defined as pizza, hamburgers, sausage, French fries and fried chicken.

All statistical analyses were carried out in SPSS-20 using Kolmogorov-Smirnov, correlation test, variance analysis, independent t-test, and also linear regression analysis at significance level of 0.05.

Results

Of total, 197 participants completed the questionnaire (respondent rate = 98%). The majority of respondents (74.1%) were lived in the city with a Household size of four people (50.5%). The most frequently consumed fast foods by students were pizza (58.9%), French fries (18.8%), and burger (12.2%). Most of the students (60%) consumed fast foods in the restaurants with their families, and 38.5% consume it with their friends. Only 4.5% of students did not consume fast foods at all. Table 1 shows demographic characteristics of the study participants and the scores of TPB constructs.

Table 1. Descriptive Statistics of FFC Behavior, Intention, and TPB Constructs

Variable	Mean (SD)	Score range	Percent of maximum score
FFC behavior	3.93 (1.03)	1-7	56.1%
Intention	5.71 (1.07)	2-10	57.1%
Attitude	26.89 (4.8)	11-55	48.9%
Subjective norms	17.6 (4.2)	6-30	58.7%
Perceived behavior control	24.47 (5.06)	11-55	44.5%

Abbreviation: TPB, Theory of planned behavior; FFC, Fast food consumption

The mean score of TPB constructs, intention and FFC behavior are shown in table 1. The participants acquired about half percent of maximum scores in all FFC behavior, TPB constructs and intention.

According to table 2, there was significant correlation among TPB constructs. A direct and strong correlation was observed between intention and behavior of FFC (r = 0.73). Intention to consume fast food had a moderate direct correlation with attitude (r = 033) and subjective norms (0.49), and moderate inverse correlation with perceived behavioral control (r = -0.49).

The linear regression analysis was used to assess prediction of FFC intention by constructs of TPB. The results are shown in table 3. The constructs of TPB including attitude, subjective norms, and perceived behavioral control constructs predicted 37.8% of the variance of intention. The Subjective norm was significantly associated with an increase in average score of intention. While, perceived behavioral control was significantly associated with decreasing in average score of intention. Moreover, linear regression analysis showed that FFC intention can explain for 63.8% of variance of FFC behavior.

Discussion

The present study investigated FFC and its related factors based on TPB among female high school students. The study population moderately consumed fast foods, as 11.2% of them had fast foods 2-3 time per week and 34.6% once a month. In a study by Yarmohammadi et al. in Iran 26.3% of high school students consumed fast foods once a month, which is less than that in the present study (14). In another study 27.6% of students had fast foods 2-3 time per week (1).

In the present study, pizza, French fries, and hamburgers were the most frequently consumed fast foods that is inagree with previous studies (18, 19). Most of these fast foods contain unhealthy raw materials. The World Health Organization has officially placed processed meats among the most carcinogenic substances in the world, similar to arsenic and asbestos (20). Moreover, saturated fats are abundantly used in the preparation of fast foods, and their process of preparation is also unhealthy. These can create many problems in digestive system, nutrition, overweightness and obesity. Educational planning for nutrition is necessary for reducing FFC based on factors affecting behavior (14, 21).

In the present study, the majority of students was influenced by their parents and nutritionist, respectively. Another study stated the effect of family and friends (13), while in other studies (1, 14, 22, 23), students were mostly influenced by their friends. In the present study, students consumed fast food in restaurants mostly with their parents. Therefore, parents have a greater influence on students with regard to fast food consumption. Hence, parents should also be considered in nutrition education planning, and should be trained because parents' training students will produce better results. Furthermore, nutritionists should be used in the design and implementation of nutrition education programs.

In the present study, TPB constructs and intention were significantly correlated with FFC behavior. These results agree with those obtained by several other studies (1, 14, 24), such that FFC intention has a direct correlation with subjective norms and an inverse correlation with perceived behavioral control, which meant that people with greater control over the amount of FFC had lower intention to consume fast food. A strong and direct correlation was observed between FFC intention and behavior.

In the present study, 37.8% of the variance of intention was predicted by TPB constructs, and this was significant about subjective norms and perceived behavioral control, and subjective norms had greater prediction power. In a study by Sharifirad et al. (25), TPB constructs predicted 25.7% of the variance of FFC intention, and attitude had the greater role in predicting intention than other constructs. Similar to these results, Dunn et al. (13) reported subjective norms as the greatest predictor of intention. In another study (1), 67.5% of the variance of intention was predicted by TPB constructs, and this was significant in relation to perceived behavioral control and subjective norms, and perceived behavioral control was the stronger predictor.

In the present study, intention to consume fast food predicted 63.8% of the variance of FFC behavior. In a similar study, intention to consume fast food was reported as a strong predictor of the frequency of FFC (18). In another study, intention to consume fast food predicted 6% of the behavior, and it was argued that the wide gap between intention and behavior can lead to behavior due to the internal or external factors, and another reason given was that people do not always act on their intentions (14).

In the present study, the influence of others and control over internal or external factors for FFC (such as concern about health harms, the delicious taste of fast food) are observed. The educational planning should focus on the factors explaining FFC.

The present study limitations included its cross-sectional nature, students' young age, and errors of recalling the information with regard to behavior-related items, especially. The present study results showed that a moderate number of people consumed fast food. The future educational interventions should make an effort to reduce FFC, with greater focus on students from lower grades and lower socioeconomic classes. Moreover, parents, doctors, and nutritionists should have greater influence on students. Internal and external factors of FFC should be more controlled in order to change the pattern of FFC among students, and they should be guided toward health nutritional behaviors, such that refraining from consumption of high-fat and fast foods, and consumption of healthy and nutritious foods, and fruits and vegetables are taught.

Table 2. Matrix of Correlation Coefficient of TPB Constructs, Intention and Behavior of FFC

Variables	Behavior	Intention	Attitude	Subjective norms
Intention	0.735**			
Attitude	0.307**	0.329**		
Subjective norms	0.441**	0.490**	0.388**	
Perceived behavior control	-0.462**	-0.486**	-0.428**	-0.540**

*P-value<0.05; **P-value< 0.001

Table 3. The Predictors of Intention and Behavior based on TBP Constructs Using Linear Regression Model

Dependent variable	Predictor variables	Standardize beta	T-test	R^2
Intention	Attitude	0.050	0.661	
	Subjective norms	0.346	4.092**	
	Perceived behavioral control	-0.318	-3.680**	0.378
Behavior	Intention	0.799	17.969***	0.638

*P-value < 0.05; **P-value < 0.01; ***P-value < 0.001

Given that the present study students are in their adolescence, taste, appearance and diversity of food are important to them. With regard to certain fast foods such as pizza and hamburger, parents can be advised to prepared them at home as much as possible, and use healthy raw materials in their preparation. In preparing fast foods, the following should be observed: avoiding processed meats like sausages, and using fewer spices, less oil, and the right cooking temperature. With regard to fast foods, students and parents could be advised to use home-made vegetable pizzas.

Conclusion

Finally, because the results confirmed the effectiveness of TPB in predicting FFC intention and behavior, conducting TPB-based healthy nutrition interventions in schools is recommended, which can have a major role in establishing healthy behaviors and in their positive outcomes.

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Ethical consideration

The study protocol has been approved by ethical review board of Shahid Sadoughi University of medical sciences.

Conflicts of interests

Authors declared no conflict of interest.

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