

Determinants of Fast Food Consumption among Students of Tehran: Application of Planned Behavior Theory

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Abstract

Background

Today, lifestyle changes have led to increasing fast food consumption. Regarding importance of nutrition in adolescence, the present study aimed to identify determinants of fast food consumption using theory of planned behavior among students of guidance schools in Tehran, Iran.

Materials and Methods

This cross-sectional study (descriptive-analytical) was carried out using self-administered questionnaire among 768 (384 boys and 384 girls) students of grades 1, 2 and 3 in regions 2, 9 and 18 of Tehran. Sampling method in this study was randomized and multi-stage. Finally, participants were selected from 10 schools. Data was gathered using scales based on constructs of Theory of Planned Behavior. Obtained data was analyzed using SPSS software (version 16.0). Participation of students in this study was voluntary and with informed consent.

Results

Logistic regression confirmed the predictability of perceived behavioral control for students' intention to fast food consumption (odds ratio [OR]: 1.02, 95% confidence interval [CI]: 1.01, 1.04). In addition, perceived subjective norms (OR: 1.01, 95%CI: 1.001, 1.02) and behavioral intention (OR: 1.9, 95% CI: 1.64, 2.2) predict significantly fast food consumption behavior.

Conclusion

Based on results, perceived behavioral control, subjective norms and intention were reported as predictors of fast food consumption, thus these constructs should be addressed in designing fast food-related educational interventions among study population.

Key Words: Fast Food Consumption, Students, Theory of Planned Behavior.

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1- INTRODUCTION

Food habits are rooted in cultural, environmental, economic, social and religious factors. One of the effective factors in developing chronic diseases is lifestyle and food patterns and habits. Improper food habits and unhealthy environments have increased the prevalence of non-contagious diseases in the world (1, 2). The wide economic, social, demographic and technological changes in recent decades have caused many changes in people's lifestyles. These changes have increased the use of fast food (3). Fast food restaurants are one of the most popular food sources outside of the home. Fast food is prepared easily and quickly, and is cheap in compare with the amount of foodstuffs which offers to the customers and almost is favorite of all age groups. Fast food refers to foods that are used outside the home such as hamburgers, pizza, fried chicken, etc. (4, 5).

Majdabadi and colleagues explained the main causes for fast food consumption in teenagers as deliciousness, accessibility, more diversity than home foods, feelings of independence and entertainment in teenagers (6). In adolescence, created physical changes affect nutritional needs, while changes in lifestyle can affect their food habits and choices, so healthy food at this period is important to support growth and evolution and to prevent future probable problems (7). In fact, many adult's behavioral patterns and food habits are made at childhood and are changed less in adulthood. Given that the quality and quantity of nutritional patterns play an important role in health or in creating different diseases, it may be important to pay attention to how habits and children nutritional patterns are made (8). Rouhani et al. reported an increase in children and teenagers' fast food consumption in recent years (9). In fact, Nutrition behaviors of Iranian adolescents are not desirable for this age. Breakfast skipping, low fruit and

vegetables consumption are common behaviors, while consumption of fast foods and unhealthy snacks are higher than the acceptable values (10). Studies show that fast foods are not often healthy and cause weight gain, obesity, increase of type 2 diabetes and cardiovascular diseases (11). Fast food users' diet includes low amount of vitamin A, carotene and vitamin C, which these antioxidants help to increase health and prevent cancer and play role in other health conditions. Also, using fast food is related to a low calcium and magnesium diet and nutrients that are effective in bone health (12). In addition, the amount of iron and riboflavin is limited in these foods and a few of them are having folic acid (13).

Because of using oils for frying at high temperatures, these kinds of foods may be included of toxic and improper substances that threaten the health of users (14). In a study of 13-17 years old youth in Boston, USA in 2004 it was found that there is an important relationship between overweight and obesity with pre-prepared foods (15). According to the statistics of Center for Disease Control and prevention (CDC) in 2007-2008, 17% of 2-19 years old children and adolescents are and 34% of 20 years and older adults are fat (16). Health problems are interconnected with human behavior and the theory and patterns of behavior study provide good insight to find ways to prevent these problems (17).

The theory can be useful in many cases; theories help to determine the components that affect apparently different types of behavior, as well as understanding these components and its function. They may also provide recommendations on how and under what conditions these components can be affected. As a result, the theories provide a valuable tool to solve wide kinds of problems and can help us in predicting the possible outcomes of interventions (18). The theory-based interventional programs facilitate health behaviors

change through presenter's understanding of behavior change mechanisms (19). One of the useful and popular theories in health education and health promotion interventions especially in the field of nutritional behavior, is theory of reasoned action (TRA) proposed by Martin Fishbein and Ajzen. This theory claims that behavioral intention is prior to behavior and is specified by attitude towards behavior and subjective norms. Attitude towards behavior is determined by behavioral beliefs and outcome evaluation and subjective norms are determined by normative beliefs and motivation to comply. At the end of the 1980s, Ajzen felt that the theory is incomplete in explaining behavior, especially in people who have little power or capability in their behavior. As a result, he added a structure to TRA that was called perceived behavioral control. Adding this structure led to the creating the theory of planned behavior (TPB).

The perceived behavioral control structure is dependent on control beliefs and perceived power. These theories emphasize the role of thoughts in decision making about confliction in behaviors (20). In general, Theory of Planned Behavior (TPB) proposes that individual's behavior is driven by behavior intentions and behavior intentions are determined by individuals' attitude toward a given behavior and subjective norms as well as perceived behavioral control. Behavioral intention is used as a proxy for behavior and indicates an individual's motivation to perform a certain behavior. Attitude toward behavior represents an individual's positive or negative feelings towards a certain behavior. Subjective norm entails an individual's perception of the social environment indicating whether significant others will approve his/her a behavior. Perceived behavioral control refers to an individual's perception of his resources and confidence to perform a behavior (21).

Regarding to the high consumption of fast foods in today's society, it seems that it is essential to pay attention to the harmful effects of these foods on health. Studying the determinants of individuals' nutritional problems is the first step of any planning and regarding to the priority of the theory-based interventions and literature review evidence in the field of good fit of the theory of planned behavior with nutritional subjects, the present study aims to study the determinants of fast food using in students in Tehran using the theory of planned behavior.

2- MATERIALS AND METHODS

2-1. Study Design and Population

The present study was a cross-sectional descriptive-analytic research aiming at studying determinants of fast food using in students in Tehran using the theory of planned behavior.

2-2. Sampling, Inclusion and Exclusion Criteria

In this research, based on the formula $n = z^2pq / d^2$, 768 students (384 boys and 384 girls) were selected from secondary school students in regions 2, 9, and 18 of Tehran education through multidimensional random sampling. Among the three selected regions, two secondary boy and girl public schools and two non-profit schools were selected randomly in each of regions 2 and 9, and in the region 18, regarding to the small number of non-profit schools and the quantity of students in these schools, the samples were selected from two public schools in the area among 10 schools. It should be noted that the population of students in each region was determined by the percentage of all students in that area. Studying at first and second and third grades of guidance school and consent of participation in the study were inclusion criteria.

2-3. Instrument

The data collecting tool in this study was a researcher-made questionnaire which its framework was made of constructs of the theory of planned behavior. The first part was related to demographic questions, the second part was related to behavior questions and behavioral intention, attitude towards behavior, subjective norms and perceived behavioral control. To determine the apparent content validity of the questionnaire, 6 experts were asked in this regard. After applying the proposed changes, the last revision was prepared with 68 questions. Also, the internal consistency method was used to determine the reliability of the constructs of the planned behavior theory. The Cronbach's alpha for attitude constructs, subjective norms and perceived behavioral control was 0.86, 0.58, and 0.76 respectively, which have been changed by removing two questions from the construct of subjective norms; the Cronbach's alpha value for this construct was changed to 0.73.

2-4. Data Analysis

The collected Data were analyzed in this study using SPSS software version 16.0, and correlation tests and logistic regression. Spearman correlation test was used for surveying the correlation among the constructs of the TPB. Also, for prediction of intention as well as behavior, logistic regression was done.

2-5. Ethical Considerations

1. All stages of the project were performed with the approval of the education management and schools' principals, and all attempts were made to avoid disturbances in the work of teachers and principals and students' assignments and curricula. 2. Before delivering the questionnaire to people, the aim of the research was expressed and the oral consent of the schools' officials and

students was obtained and the participation of the individuals in the study was done voluntarily and with informed consent. 3. Anonymous questionnaires were used to collect data and people were assured of the confidentiality of the information.

3- RESULTS

The present research was conducted to study the determinants of fast food using among students in Tehran using the theory of planned behavior. Based on findings, the prevalence of male and female students was 50.5% and 49.5%, of which 34.5% were in the first grade, 34% were in the second grade and 31.5% were in the third grade, 36% of them were in the region 2, 36.5% were in the region 9 and 27.5% were in the region 18. The frequency of students in public and non-profit schools was 84% and 16%, respectively. 33% of the fathers and 30% of the mothers of the studied students had academic education and most of the parents had diplomas and under diploma degree. Also, in terms of the occupational status of the students' parents, 50.5% of the fathers had unofficial jobs and 79% of the mothers were housewives (**Table.1**).

In **Table.2**, the correlation for the constructs of the theory of planned behavior (attitude toward behavior, subjective norms, perceived behavioral control, behavioral intention, and behavior) is shown using Spearman correlation test. All constructs of the theory of planned behavior have a significant correlation with the behavior of fast food consumption. So, increasing the behavior of fast food consumption is directly related to increase of attitude towards behavior, perceived subjective norms, perceived behavioral control, and behavioral intention.

Table-1: Literacy and job status frequency distribution among parents of students

Variable	Gender	Sub-group	Number (%)
Literacy Status	Father	Diploma ≤	511 (66.5)
		Associate and BSc	186 (24.2)
		> BSc	68 (8.9)
		Total	768 (100)
	Mother	Diploma ≤	540 (70.3)
		Associate and BSc	175 (22.8)
		> BSc	53 (6.9)
		Total	768 (100)
Job Status	Father	Worker	29 (3.8)
		Employee	345 (44.9)
		Self-Employee	388 (40.5)
		Total	762 (100)
	Mother	Housewife	609 (79.3)
		Worker	25 (3.3)
		Employee	100 (13)
		Self-Employee	34 (4.4)
Total	768 (100)		

Table-2: The correlation between constructs of TPB

Variables	1	2	3	4	5
1. Attitude					
2. Subjective Norms	.28** P<.001				
3. Perceived Behavioral Control	.33** P<.001	.35** P<.001			
4. Intention	.23** P<.001	.22** P<.001	.37** P<.001		
5. Behavior	.15** P<.001	.18** P<.001	.25** P<.001	.46** P<.001	

** Correlation is significant at the 0.01 level (2-tailed); TPB: theory of planned behavior.

The prediction of behavioral intention of consume fast food using the constructs of the theory of planned behavior (attitude toward behavior, subjective norms and perceived behavioral control) at 95% confidence level and with logistic regression test shows perceived behavioral

control (0.001 >P) as a predictor of the behavioral intention of fast food consumption. In other words, those with a higher perceived behavioral control are 1.02 times more likely to have a more intention to consume fast foods (**Table.3**) (**Figure.1**).

Table-3: Prediction of fast food consumption intention using constructs of TPB

Variables	B	Logistic Regression Sig.	OR	95% CI for OR
Constant (a)	-5.29	< 0.001	0.005	-
Attitude	-0.001	0.74	0.99	0.99, 1.006
Subjective Norms	0.01	0.06	1.01	0.99, 1.02
Perceived Behavioral Control	0.02	< 0.001	1.02	1.01, 1.04

TPB: Theory of planned behavior; OR: Odds ratio; 95% CI: 95% confidence interval.

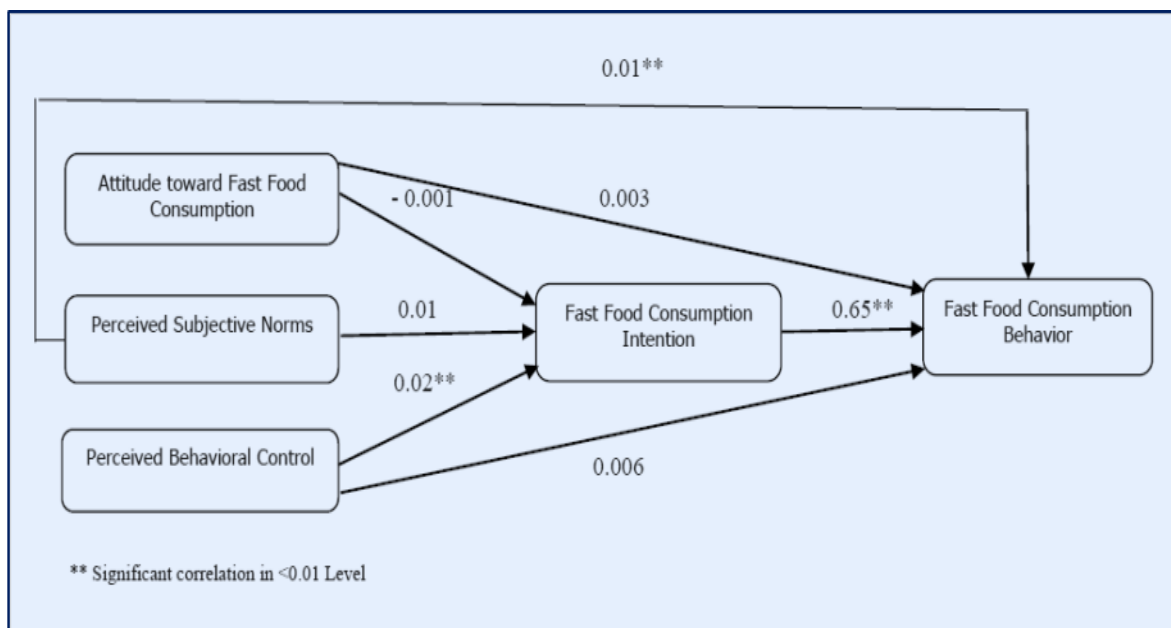


Fig.1: Results of regression analysis for correlates of fast food consumption behavior using TPB constructs (n=768). TPB: Theory of planned behavior.

Results for predicting fast food consumption behavior using the constructs of planned behavior theory (attitude towards behavior, subjective norms, perceived behavioral control and behavioral intention) at 95% confidence level and with logistic regression test showed that subjective norms constructs

(P-value = 0.03) and behavioral intention (P <0.001) are predictors of fast food consumption behavior. People with higher behavioral intention are 1.9 times more likely to use fast foods and people with higher subjective norms are 1.01 times more likely to use fast foods (**Table.4**) (**Figure.1**).

Table-4: Prediction of fast food consumption behavior using constructs of TPB

Variables	B	Logistic Regression Sig.	OR	95% CI for OR
Constant (a)	-3.32	< 0.001	0.03	-
Attitude	0.003	0.39	1.003	0.99,1.009
Subjective Norms	0.01	0.03	1.01	1.001,1.02
Perceived Behavioral Control	0.006	0.1	1.006	0.99,1.01
Behavioral intention	0.65	< 0.001	1.9	1.64,2.2

TPB: Theory of planned behavior; OR: Odds ratio; 95% CI: 95% confidence interval.

4- DISCUSSION

Findings of this study, using Spearman correlation test, indicated that there is a significant correlation between fast food consumption behavior with attitude, subjective norms, perceived behavioral control, and intention. Stefanie and Chery

also found a significant correlation between healthy nutritional behavior with attitude, perceived behavioral control and subjective norms (22), which is in line with the findings of this study. The results of this study, using regression analysis, showed that the attitude toward behavior is not predictor for the intention and behavior

of fast foods consumption. Among the studies that reported inconsistent results with the findings, studies from Dunn, Stefanie and Chery, and Yarmohammadi et al. can be referred (22-24). The findings of Stefanie and Chery's study showed that an attitude is a predictor for healthy nutritional intention (22). Yarmohammadi et al., in their study results, stated that attitude had the highest predictability score for the intention (24). In study of fast-food consumption determinants, Dunn et al. identified the attitude as predictors of the intention of fast-food consumption (23). The results of the study of Seo et al., along with the findings of this study, showed that the attitude toward fast food consumption did not have a significant relationship with behavioral intention (25).

Other findings from this study, based on regression analysis, can refer to the fact that perceived behavioral control is significantly predicting the intention to consume fast foods. In a study by Seo et al. in Seoul, the findings showed that behavioral intention was significantly related to perceived behavioral control (25). Dunn et al. also referred to the predictability of perceived behavioral control for intention of fast food consumption (23). The results of the study, Yar Mohammadi et al., showed that perceived behavioral control was a predictor of intention (24). The findings of this study, using regression analysis, indicated that subjective norms and intentions significantly predict the behavior of fast food consumption. Similarly, Mirkarimi et al. in their study on fast food consumption behaviors in high-school students based on the theory of planned behaviors have reported that the TPB explained fast food use behaviors with R-squared (R^2) of 0.6, effectively. Results also represented that frequency of fast food consumption was meaningfully in line with behavioral intention and subjective norms (26). Findings of this

study showed that subjective norms predict the behavior of fast food consumption. In a study by Shahanjarnini et al. aiming at identifying the determinants of low-value meals consumption among adolescent girls using a combined approach based on the theory of planned behavior, the results showed that friends and peers in the qualitative part, and parents in the quantitative study, are the most effective people on students (27). In the study of Askari Mojabadi and his colleagues done among adolescents (Tehran), there was a significant relationship between subjective norms and fast food consumption behavior (6). Also, in the study of Javadi et al., the results showed that in choosing food, 60.5% of adolescents follow their mother, 25% follow other family members, 14.3% follow friends and 0.2% follows their teachers (28) that results of this study are in line with the present study. In another research, Rakhshandehrou et al. noted too subjective norms as one of the determinants of the behavior of fruit and vegetable consumption (29).

Regarding this finding about predictability of subjective norms, some suggestions (for example, peer education) seem to be useful. It has been approved in some researches as an effective method in teaching individuals in field of nutrition (30). The intention plays a central role in the theory of planned behavior. The intentions contain motivational factors that affect behavior and indicate to what extent the people want to behave and how hard they try to do it (31). In this study, regression analysis showed the intention as a predictor of fast food consumption behavior. In some studies, inconsistent results have also been reported, for example Stefanie and Chery, said in their study, that there is no correlation between the intention and the behavior of healthy nutrition (22). In studies of Stefanie et al and Seo et al, intention has reported as correlate of the behavior (22, 25). There

was no significant correlation between perceived behavioral control and fast food consumption in present study. Conversely, the results of the Dunn et al.'s study showed that perceived behavioural control (PBC) and intention predict the behavior of fast food consumption (23). Also, in Seo et al. analysis, regression analysis showed that fast food consumption behavior was significantly associated with perceived behavioral control (25). Yarmohammadi et al. have introduced in their study the intention and perceived behavioral control as predictors of behavior (24). Seo et al. reported that fast food consumption behavior was significantly related with PBC (25). The findings of Stefanie and Chery's study also indicated that perceived behavioral control was significantly predictive of healthy nutritional behavior (22). Yarmohammadi et al. concluded that in predicting behavior, intention alone and also with perceived behavioral control, could predict 6% of the behavior (24).

4-1. Limitations of the study

This study has some limitations, such as using self-report tools, which, of course, is inevitable in such studies. Also, it seems that the large number of questions in the questionnaire is another constraint, which can lead to students' fatigue and negligence in answering questions. However, in the pilot study, the minimum time needed to complete the questionnaire was 15-20 minutes. The limitation of the definition of fast food in different cultures can be other constraint in this study, which an explanation on fast foods was provided at the beginning of the questionnaire, an explanation also provided for students by researchers before the completion of the questionnaires. The lack of consideration of other factors which affect fast foods consumption such as access, low prices, etc. are also one of the limitations of this study, considering that the theoretical framework of this study is formed by the

theory of planned behavior and its constituent structures, the mentioned limitation was also unavoidable.

5- CONCLUSION

Generally, based on the findings of this study, we can say that TPB has a good predictability of fast food consumption behavior. The useful finding of this research can be explained in such a way that perceived behavioral control of students and their perceived subjective norms are important determinants of fast food consumption behavior. Therefore, interventional programs are recommended to focus on these determinants in order to reduce the consumption of fast food by students.

6- CONFLICT OF INTEREST: None.

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