ISSN: 0975-766X
CODEN: IJPTFI
Available Online through
Research Article
www.ijptonline.com

PREVALENCE AND SOCIO-DEMOGRAPHIC DETERMINANTS OF BREAKFAST CONSUMPTION INTENTION AMONG ELEMENTARY STUDENTS

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Received on 10-08-2016 *Accepted on 06-09-2016*

Abstract

Breakfast consumption is a favorable habit and positively impacts nutritional balance, physical growth, school performance and learning during childhood. The aim of this study was to determine the factors related to breakfast consumption based on the theory of planned behavior. This cross-sectional study conducted in Shadegan city, the southwest of Iran, among a total of 384 elementary students, were randomly selected to participate voluntarily in the study. Participants filled out a self-administered questionnaire including the theory of planned behavior constructs. Data were analyzed by SPSS version 21 using *t*-test, correlations, and regression statistical tests at 95% significant level. The mean age of respondents was 10.46 years [95% CI: 10.31, 10.60], ranged from 7 to 12 years. About, 44.7% of participants reported every day eat breakfast. We found correlation significant between age and breakfast eating behavior (p=0.004 & r=-0.171). In addition, our result indicated eating breakfast behaviors among girl student was a significant more than the boy students (p=0.022 & t=-2.298). Linear regression analysis was performed to explain the variation of eating breakfast behaviors. TPB variables accounted for 50% of the variation of the eating breakfast behaviors. In addition, subjective norms and intention were the best predictors for eating breakfast behaviors.

Keywords: Eating, Nutrition, Behavior Change.

Introduction

Breakfast is the first meal in a day and its consumption by children is related to adequate nutrient intake and it has a significant role in improving their nutrition (Alexy, et al., 2010). Breakfast consumption is a favorable habit and

positively impacts nutritional balance, physical growth, school performance and learning during childhood (Murphy, et al., 2011). Breakfast has been referred to as the most important meal in a day as it follows the longest period of daily hunger and its omission can result in the reduction of nutrients accessible to the brain and finally, the reduction of cognitive performance (Mahoney, et al., 2005). Elementary school is a period in which new and relatively stable eating habits are formed and the children become more familiar with and impacted by his peers and the new environment (Alexy, et al., 2010).

Studies have indicated that breakfast consumption has useful impacts on the increase of nutritional quality, more attendance of school and more learning ability and doing assignments in children (Littlecott,, et al., 2016). Review papers have also considered breakfast consumption to impact information process speed in the brain and memory retrieval and they have found the providing of nutrients in a short time and maintaining their level in the mind to be a significant factor in the improvement of brain performance (Iovino, et al., 2016). Breakfast consumption results in the increase of students' school attendance and reduces their absenteeism. In addition, it results in the increase of the quality of the students' diet. Studies conducted on the impact of breakfast consumption on learning ability in school have revealed that the students who attend school without consuming breakfast have a lower learning ability, compared with children who consume breakfast (Basch, 2011).

The nutritional needs of student who attend school without consuming breakfast or whose breakfasts low nutritional value are not met and the reduction of physical growth and behavioral problems such as the reduction of learning ability, aggression, irritability and problem in cognitive performances is seen in these children. In addition, one of the main causes of not consuming breakfast is the lack of purposeful education and lack of understanding the importance of breakfast consumption in children (Gajre, 2008).

Furthermore, it should be noted that the improper eating habits that are formed in the individual during childhood often remain in the last stages of life and in this regard, studies have indicated that omission of breakfast is common and increasing in children (Lytle, et al,. 2000). On the other hand, the special position of school as the center of gathering of children and the role of teachers and parents in transferring knowledge and creating favorable attitude and finally, changing the behavior of children and their parents can have a determining role in health transformation in the society . Resistance to learning is lower during childhood as the behavioral concepts and patterns remain stable and fixed and can

impact the child's lifestyle in the future. In addition, children are transferors of health message from school to home (Murata, 2000).

Meanwhile studies indicate that the most effective health promotion programs are based on theory-based approaches and the selection of a good theory is the first stage in the process of planning health promotion programs (Kok, 2014). In this regard, the theory of planned behavior is a theory that has been employed in different studies for predicting behavior (Eldredge, et al., 2016; Jalilian et al., 2015; Mirzaei-Alavijeh, et al., 2015; Mirzaei-Alavijeh, et al,. 2016; Morowatishaifabad, et al., 2015; Jalilian, et al., 2016). Different studies have verified the adequacy of this theory in predicting different behaviors (Armitage, & Conner, 2001), especially health-related problems (Godin, & Kok, 1996). Therefore, considering the results of similar studies and the acceptable explaining ability of this theory, the theory of planned behavior was used as the theoretical framework of the study (Berg, et al., 2000; Wong, & Mullan, 2009). According to this theory the initial determiner of behavior is behavioral intention which indicates the individual's motivation for adopting a behavior.

Behavioral intention is an outcome of a) individual's attitude towards the behavior; b) individual's perception of the social norms, other individuals and the environment; and c) individual's perception of the level of control he/she has over doing or not doing the behavior (Ajzen, 1991). Considering the importance of knowing the factors that impact and determine breakfast consumption in children, the present study was conducted for analyzing and predicting children's behavior regarding breakfast consumption and the way the determinants of attitude, social norms and perceived behavioral control impact breakfast consumption behavioral intention in elementary students in the city Shadegan in southwest Iran, using the theory of planned behavior.

Methods

This study was a descriptive cross-sectional study which was conducted among 384 elementary students in the city Shadegan, in the southwest of Iran. For conducting the study, first, the elementary schools in Shadegan were considered as cluster and then four female schools and four male schools were randomly selected. Afterwards, the participants in the study were selected from students using simple random sampling and they were given the designed questionnaire that was based on determinants of the theory of planned behavior, breakfast consumption behavior questionnaire and demographic information questionnaire.

It should be pointed out that the subjects were given explanations regarding the way the study is conducted, the confidentiality of the information and the objective of the study and they all entered the study willingly. This study has been approved by the institutional review board at the Abadan school of medical sciences, Abadan, Iran (IR.ABADANUMS.REC.1395.92).

Questionnaire included three sections that comprised of thirty-eight questions: ten questions for demographic factors, and eight questions for breakfast eating scale, and twenty items for theory of planned behavior constructs.

A: Demographics

Background data collected were: age (years), father age (years), mother age (years), parents' divorce (yes or no), gender (boy or girl), family number, and mother's job (housewife, employ), father's job (unemployed, freelancers, labour, and stuff employee), and parent's education (elementary, secondary, high school, university).

B: Breakfast Eating Scale

Breakfast eating scale was evaluated by 8-item scale. Each item was measured on an ordinal 8-point Likert-type scaling (0 to 7). Examples of the items are: How many days in the last week you eat breakfast?. The reliability coefficient for the breakfast eating scale in our study was 0.83, suggesting that the internal consistency was adequate.

C: Theory of Planned Behaviour Constructs

TPB scale was designed based on a standard questionnaire (Berg, et al., 2000; Wong, & Mullan, 2009) and included 16 items under four constructs including (a) attitude; (b) subjective norms; (c) perceived behavioral control; (d) behavioral intention. Five items were designed to measure attitude toward eating breakfast (e.g., If I eating breakfast, it would help me to don't feel tired in the classroom; α=0.83). Four items were designed to measure subjective norms toward eating breakfast (e.g., my parents encourage me to eating breakfast; α=0.75). Three items were designed to perceived behavioral control toward eating breakfast (e.g., I believe that I can eat breakfast, before go to school; α=0.72). Four items were designed to evaluate intention toward eating breakfast (e.g., I intend to eating breakfast, every day; α=0.71). In order to facilitate participants' responses to the items, all items were standardized to a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Data were analyzed by SPSS version 21 using *t*-test, correlations, and logistic regression statistical tests at 95% significant level.

Results

The mean age of respondents was 10.46 years [95% CI: 10.31, 10.60], ranged from 7 to 12 years. About 43.3% were male and 56.7% were female. In addition 44.7% of participants reported every day eat breakfast. We found correlation significant between age and breakfast eating behavior (p=0.004 & r=-0.171). In addition, our result indicated eating breakfast behaviors among girl student was a significant more than the boy students (p=0.022 & t=-2.298). Furthermore, there was no significant difference between breakfast eating behavior and mother education, father education, and parent's job.

Table 1 shows mean standard deviation and bivariate correlations between the TPB constructs, which were statistically significant at either 0.01 or 0.05 level.

Table 1: Predictor variables of eating breakfast behaviors based on bivariate correlation analysis.

	Mean (SD)	**Scores Range**	**X^1**	**X^2**	**X^3**	**X^4**
X^1. Attitude	21.06 (3.94)	5-25	1			
X^2. Subjective Norms	13.40 (3.95)	4-20	0.389**	1		
X^3. Perceived Behavioral Control	10.79 (2.65)	3-15	0.307**	-0.111*	1	
X^4. Behavioural Intention	10.54 (4.64)	4-20	0.178*	0.456**	0.327**	1
X5. Eating Breakfast Behavior	21.64 (13.21)	0-56	0.277**	0.501**	0.362**	0.428**

** Correlation Is Significant at The 0.01 Level (2-Tailed).

* Correlation Is Significant at The 0.05 Level (2-Tailed).

Linear regression analysis was performed to explain the variation of eating breakfast behaviors. As shown in Table 2, collectively, TPB variables accounted for 50% of the variation of the eating breakfast behaviors. In addition, subjective norms and intention were the best predictors for eating breakfast behaviors.

Table 2: TPB variables which were predictor of eating breakfast behaviors among participants.

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	SE B	Beta		
Step 1					
Attitude	0.175	0.230	0.055	0.760	0.449

Subjective Norms	2.013	0.271	0.575	7.436	< 0.001
Perceived Behavior Control	0.422	0.444	0.073	0.950	0.344
Intention	0.486	0.248	0.151	1.958	0.053
Step 2					
Subjective Norms	2.054	0.265	0.586	7.752	< 0.001
Perceived Behavior Control	0.532	0.420	0.092	1.267	0.208
Intention	0.476	0.248	0.148	1.924	0.057
Step 3					
Subjective Norms	2.130	0.259	0.608	8.237	< 0.001
Intention	0.564	0.238	0.175	2.368	0.020

R^2=0.50, F=59.326, P <0.001

Discussion

Regarding the importance of breakfast, it should be mentioned that different studies have considered breakfast as the most important meal in a day and eliminating it can result in the reduction of nutrients accessible to the brain and ultimately the reduction of cognitive performance (Mahoney, 2005). Nonetheless, studies indicated that omission of breakfast is common in children and the rate of this habit is increasing (Nicklas, et al., 2004). The findings of the present study indicated that 44.7 percent of the students had consumed breakfast in the past week. In this regard, the studies conducted on students in Maryland in the United States indicated that 20 percent of the students went to school without breakfast consumption (Gross, et al, 2004). Also, the results of another study on adolescent girls reported the lack of breakfast consumption in them to be up to 50 percent (Affenito, 2007) and these findings are highly consistent with the findings of the present study. Considering these findings, it seems that most children are not willing to eat breakfast and this shows the need for appropriate solutions in order to create willingness to eat breakfast in children.

The findings of the present study indicated that the mean score of breakfast consumption behavior was significantly higher in females, compared with males. This finding is consistent with the findings of the study by Siega-Riz et al (Siega-Riz, et al., 1998). Of course, some studies have reported that breakfast consumption is higher in males (Merten, et al., 2009; Videon, & Manning, 2003). Therefore, considering the difference of results, it seems that the prevalence of the aforementioned behavior for both sexes is equally important.

The breakfast consumption prevalence was decreased with the increase of age in the present study and this result is consistent with the results of several similar studies (Nicklas, et al., 2000; Lytle, et al., 2000; Barton, et al., 2005). The

lack of breakfast consumption in higher age levels may be due to the lower level of attention given to older children by their parents and hormonal changes in the body due to growth which results in the change in appetite. A study conducted in the United States indicated that young adults, compared with teenagers, were less impacted by dietary behaviors at home and their breakfast consumption rate was lower (Merten, et al., 2009).

Finally, our results indicated TPB variables accounted for 50% of the variation of the eating breakfast behaviors. In addition, subjective norms and intention were the best predictors for eating breakfast behaviors.

Studies have indicated that food selection is a complex behavior and is impacted by different environmental, individual and biological factors. The importance of these three factors in food selections by individuals is not paid attention to adequately. Hunger and desire for food, taste, time of eating, accessible resurrects family, friends, and mass media impact food selections in teenagers (Neumark-Sztainer, et al., 1999). In other words, the difference in the role of patterns, norms and social support in students who regularly eat breakfast and those who do not is significant. For example, in the study by Kong on teenagers ages 10 to 14, the importance of eating breakfast from the perspective of the parents was a predictor and a significant factor for reducing the prevalence of omission of breakfast in children and teenagers (Cheng, et al., 2008).

Also, the results of the study by Kothe et al on the predictors of breakfast consumption in university students indicated the role of subjective norms in predicting breakfast consumption (Kothe, et al., 2011). Baranowsi et al. reported in their study that parents' support regarding providing access of children was one of the main predictors of fruit and vegetable consumption (Baranowski, et al., 2008). Regarding the prediction of breakfast consumption variance, Mullan et al indicated that the constructs of the theory of planned behavior were able to predict 47.6 percent of breakfast consumption behavior variance (Mullan, et al., 2013). These findings are highly consistent with the result of the present study. These findings indicate that the strategies for increasing subjective norms and behavioral intention should be emphasized in designing dietary interventions for increasing breakfast consumption rate in students.

The relationship of some socioeconomic factors with breakfast consumption status in students was not explored in the present study and this is one of the limitations of the present study. The role of the environment and family's dietary habits on breakfast consumption has been emphasized in different studies and the lack of exploring this variable is

another limitation of the present study. In addition, data collection through questionnaire was another limitation of the present study as it can be accompanied by a fraction of error.

Conclusion

Individuals with a higher age and males had a higher chance of not consuming breakfast. Also the constructs of the theory of planned behavior were able to predict 50 percent of the variance of breakfast consumption in the participants and the constructs subjective norms and behavioral intention had a higher predictive ability, compared with other constructs of the theory of the planned behavior.

Acknowledgement

It is a part of a research confirmed by Abadan school of medical sciences, Iran. Hereby, the researchers appreciate the Abadan school of medical sciences, Abadan, Iran.

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