Research Article

Predictors of the nutritional behavior of housewives in Sarayan county: an application of the social cognitive theory

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Abstract

Background: Healthy nutrition is part of a healthy lifestyle. A healthy diet can lead to physical and mental health in people. In recent years, a great deal of attention has been paid to good nutrition as a development index and to women as breeders of the next generation. Most organizations, including the World Health Organization and UNICEF, have highlighted health as one of their priorities with an emphasis on nutritional needs. The present study aimed to evaluate the predicting power of Bandura's social cognitive theory for the nutritional behavior of housewives in Sarayan, Southern Khorasan Province, Iran.

Methods: This descriptive-analytical study was conducted in Sarayan in 2016 on 400 housewives who were married and aged from 30 to 50 years. Random stratified cluster sampling method was utilized, and a researcher-made questionnaire was used to collect data. The face and content validity of the questionnaire was approved by experts, and reliability was confirmed by calculating Cronbach's alpha coefficient. Data was then analyzed by SPSS-18 software, using both descriptive and inferential statistical tests at the significance level of $p<0.05$.

Results: The mean age of the participants was 38.7±5.9 years. A total of 286 (70.8%) persons had poor nutritional behavior, 102 (25.2%) persons had moderate nutritional behavior, and 16 (4%) persons had good nutritional behavior. From among the social cognitive theory constructs, self-efficacy ($p<0.001$) and situation ($p<0.001$) were significant predictors of the nutritional behavior of housewives. These two variables could predict 13.6% of the nutritional behavior of housewives.

Conclusions: The results of this study showed that self-efficacy is the most important predictor of the nutritional behavior of housewives. Therefore, designing educational interventions to promote self-efficiency in housewives is recommended.

Keywords*:* Nutritional Behavior; Social Cognitive Theory; Housewives; Predictor

1. Introduction

A lot of effort is today in process to promote health levels. Health practitioners, who previously emphasized on treatment of diseases, are now focusing on prevention and health promotion by improving lifestyle and eliminating the factors that have adverse effects on human health (**1**). According to the World Health Organization (WHO), 70-80% of deaths in the developed countries and 40-50% of deaths in the developing countries occur due to lifestyle-related diseases (**2**). Lifestyle is the method that people choose for their life;

its infrastructure is built in the family, and it is affected by culture, race, religion, socioeconomic status and beliefs (**3**). Healthy nutrition is a component of a healthy lifestyle. A healthy diet can lead to physical and mental health in human beings, and in fact proper nutrition is the main condition for a healthy life (**4**). Several studies worldwide have investigated the dietary pattern changes in different Mediterranean countries, Latin America and Europe over the years. The results of these studies show

that in recent decades, the dietary habits and access to food have changed with a similar pattern in all these countries, i.e., the increased consumption of carbohydrates, animal products and fats as well as reduced consumption of vegetable products (**5-7**).

The low consumption of fruits and vegetables is from among the top 10 risk factors of mortality around the world (**8**). Nowadays, despite the benefits of fruits and vegetables, in many developing countries low consumption of this food group has been observed and only a few countries receive the FAO-recommended amounts (**9**). According to the latest report by the Center for Disease Control of the Iranian Ministry of Health about the risk factors of non-communicable diseases in 30 provinces in 2007, the average daily intake of fruits and vegetables in the 15 to 64 year old population is2.62 serves. Based on this report, North and South Khorasan provinces with0.8 and 1 unit respectively, have the lowest rates of fruit and vegetable intake in the15 to 64 year old adults, and low rates of vegetable intake among other provinces with 1.1 units in men and 1.5 units in the 15 to 64 year old women (**10**). On the other hand, about 50% of the population is deficient in micronutrients like iron, iodine, calcium and vitamins, and the per capita dairy consumption in Iran (170 g per day) is very low compared to developed countries (450 g per day) (**11**). Jessri et al. found in their study that the rate of milk consumption in Iran has decreased from 4.5 percent to 3.2 percent during 1961-2005 (**9**).

Obviously, dietary guidelines will be most effective when designed and run on the basis of the individual, social and economic circumstances and characteristics, and modifying one's behavior is possible by paying attention to all factors and not just the individual ones. Several researches in various countries have so far studied the relationship between demographic and socioeconomic factors such as age, gender, education level, marital status and level of physical activity and the nutritional behavior (fruit and vegetable consumption) (**12**). It seems that the current training programs in the health care system do not have a favorable effect on the nutritional behavior. These programs requires basic interventions, including the use of training programs which are based on appropriate theories, patterns and models, because theories have a huge potential in increasing the effectiveness of the health education programs (**13**). One of the most efficient theories in the prediction and explanation of the nutritional behavior is

Bandura's social cognitive theory (**14**). The social cognitive theory emphasizes that individual and environmental characteristics have an influence on behavior. This theory focuses on the mutual interactions between the individual, behavior and environment (**13**).

In addition to explaining the predictors and influential principles associated with behavior, the social cognitive theory provides strategies to change the behavior. Accordingly, the social cognitive theory assumes that behavior, including the nutritional behavior, is explained by individual factors (personal taste preferences, attitudes, beliefs, self-efficacy, concerns about health and body satisfaction), behavioral factors (meal consumption patterns, weight control behaviors, participation in preparing food and involvement in purchase) and social environmental factors or interpersonal factors (access to healthy food at home, eating with family and encouraging friends to healthy eating) (**15**).

In a study by Najimi et al. also a significant correlation was observed between the average daily fruit and vegetable intake and the behavior, the constructs of self-efficacy in difficult situations, self-efficacy in fruit and vegetable selection, and access to fruits and vegetables as the predicting variables (**16**).

In recent years, a great deal of attention has been paid to good nutrition as a development index and women as breeders of the next generation. Most organizations, including the World Health Organization and UNICEF have set attention to health and hygiene as one of their priorities with an emphasis on nutritional needs (**17**). Considering the importance of women's health as the central elements for family health and the key role of women in shaping the behavioral patterns, especially the nutritional behavior of other family members, and given the limited number of studies that investigate the nutritional behavior of housewives on the basis of theories of health education, the present study aimed to evaluate the determinants of the nutritional behavior of housewives based on the social cognitive theory.

2. Methods

This descriptive-analytical study was conducted in 2016 on 400 housewives in Sarayan who were married and aged 30 to 50 years. Using Amini et al. study (**18**) and inserting SD=4.31 and taking α=0.05 and d=0.45, the sample size in this study was determined at 400.

The multistage random sampling method was utilized. Accordingly, after visiting all urban health centers of Sarayan which were considered as clusters, and collecting detailed information about 30 to 50 year old married women under coverage of each center, the required sample size for each center was determined in proportion to its population and on the basis of the stratified cluster sampling. In the next step, with further visit to the urban centers, and according to the pre-selected (using random numbers software) number 40, the phone number and residence address of the selected households were extracted from the annual census book. Thereafter, health volunteers visited the selected households and after justifying the eligible households who had the conditions of entering to the study, and obtaining their agreement and informed consent, the questionnaires were completed by the eligible women.

The study inclusion criteria involved being a housewife and married woman (30-50 years old), under the coverage of the comprehensive health service centers, with at least the literacy to read and right, having informed consent to participate in the study, not being pregnant nor in the menopause, not having a health-related job, and lack of sensitivity to milk and dairy products or fruit and vegetables.

The research tool was a researcher-made questionnaire, involving the demographic information, a table examining the dietary habits and the constructs of the social cognitive theory (knowledge, outcome expectations and evaluation, self-efficacy, social support and situation).

The demographic information included 9 items: age, city of residence, subject's educational level, husband's occupation and educational level, number of family members, family income level, the amount paid for nourishment and the number of referrals to health centers.

The items relating to the evaluation of dietary habits (nutritional behavior) were 8 questions which determined the nutritional behavior by two options (Yes or No); each Yes answer received 1 score and each No answer received 0 score, and the total scores ranged from 0 to 8.

Ultimately, in order to evaluate the dietary habits, the scores were classified as follows: 0-4 scores as poor performance, 5-6 scores as moderate performance and 7-8 scores as good performance.

The items related to the social cognitive theory included the following constructs:

The knowledge construct contained 12 multiple-choice questions, each correct answer being assigned 1 score and each wrong answer being assigned zero score, with the total scores ranging from 0 to 12.

The items related to the outcome expectations and evaluation construct included 12 and 11 questions respectively, which were analyzed on the basis of a 5 item Likert scale (very important, important, no idea, not important, not important at all) scored from 1 to 5.

The items related to the self-efficacy construct included 21 questions, social support included 8 questions, and situation (status) included 6 questions which were analyzed on the basis of a 4 item Likert scale (never, sometimes, often, always) scored from 1 to 4.

Validity of the questionnaire was approved by 9 professors of health education, epidemiology, etc. and CVR was calculated as higher than 0.8 for the research tool and CVI was calculated as higher than 0.9 for the whole scales, and the experts' comments were then applied. Also, the internal correlation method was used for measuring the reliability of the questionnaire by completion of 20 questionnaires by the study population. Accordingly, the Cronbach's alpha coefficient equaled to 0.7 for the outcome expectations construct, 0.75 for outcome evaluation, 0.85 for self- efficacy, 0.77 for social support and 0.72 for position.

After collaborating with the university, the main study was carried out. Distribution of the questionnaires was performed in cooperation with the health volunteers who were already justified about the research and all questionnaires were collected within 20 days. The obtained data was analyzed using frequency tables, central and dispersion parameters, Pearson correlation analysis and regression analysis with SPSS-18 software at a significance level of $p < 0/05$.

3. Results

The stepwise regression method was used for the data analysis. The errors were normal and independent and there was no linearity between the variables. Data analysis showed that the mean age of the participants was 38.7±5.9 years; about 61.6% of the participants and 66.9% of the husbands had diploma degree; most of the husbands (31.3%) had private businesses; 30.2% of them asserted that they spend half of the family income on nourishment, and 32.2% referred to health centers only once a year. The mean score of nutritional behavior was 3.66±1.62 and the scores

Table 1: Summary of the Central and Dispersion Parameters of the Social Cognitive Theory Constructs and Their Relationship with Nutritional Behavior

Variable	Mean±SD	Variation Range	Correlation Coefficient	Significance
Knowledge	5.53±2.15	1 to 12	0.07	0.14
Expectations	2.60±0.26	1 to 3	0.10	0.04
Outcomes	3.40±0.26	1 to 5	0.17	0.001
Environment	2.93±0.53	1 to 4	0.17	0.001
Situation	2.75±0.70	1 to 4	0.32	<0.001
Self-Efficacy	2.51±0.64	1 to 4	0.34	<0.001

Table 2: Summary of the Results of Stepwise Regression Analysis to Determine the factors affecting Nutritional Behavior

Stepwise Regression Phase	Entered Variables	Standardized Beta Coefficient	T Value	Significance	Adjusted Coefficient of Determination
Model 1	Self-Efficacy	0.34	7.25	<0.001	**11.3**
Model 2	Self-Efficacy	0.23	4.05	<0.001	
	Situation	0.19	3.40	<0.001	**13.6**

ranged from 0 to 8. A total of 286 (70.8%) persons had poor nutritional behavior, 102(25.2%) persons had moderate nutritional behavior, and 16(4%) persons had good nutritional behavior. Table 1 indicates the mean score of the constructs and their relationship with the nutritional behavior. According to the table, except for knowledge, all of the constructs had a direct and significant correlation with the nutritional behavior, and self-efficacy had the most correlation with the nutritional behavior.

The stepwise regression method was used for determining the factors that influence the nutritional behavior. The social cognitive theory constructs and the demographic variables were inserted into the model as the independent variables. In the first step, the self-efficacy variable became significant; hence, from among the constructs of the model, self-efficacy was the best predictor of the nutritional behavior. This variable alone explained 11.3% of the changes in the nutritional behavior. In the second step, the situation variables entered the model and explained 2.3% of the changes in the nutritional behavior. The other variables and the demographic variables did not have a significant effect on the nutritional behavior (Table 2). The standardized beta coefficient for the two variables of self-efficacy and situation shows that both variables have a direct effect on the nutritional behavior; also, by assuming the situation variable constant and adding one score to self-efficacy, 0.23 score is added to the nutritional behavior, and by assuming

the self-efficacy variable constant and adding one score to situation, 0.19 score is added to the nutritional behavior.

4. Discussion

The present study aimed to evaluate the determinants of the nutritional behavior of housewives based on the social cognitive theory. This study is one of the few studies conducted on the use of the social cognitive theory to examine the predictors of nutritional behaviors among housewives. Considering that the nutritional behaviors examined in this study included fruits, vegetables, milk and dairy products, the results were compared with similar studies.

The results of the present study suggest that there are some problems in the nutritional behavior (eating fruits, vegetables and dairy products) of housewives in Sarayan, so that about 70 percent of the housewives in this study had poor nutritional behavior and only about 4 percent had good nutritional behavior. The study by Pasdaret al. also showed that about 78% of the studied households consumed vegetables less than the recommended amount and only about 31% of the studied households consumed standard amounts of dairy products (**19**). A study by Pan in the U.S. indicated a significant decrease in the daily consumption of dairy products and vegetables and the increased fat consumption (**20**), which is consistent with the present study.

The results of this study showed that self-efficacy and accessibility (situation) were the best predictors of the nutritional behavior, and altogether these two variables could predict 13.6% of the nutritional behavior changes.

This finding is in line with previous studies on the effect of social cognitive theory in predicting different nutritional behaviors, which report less than 30 percent of prediction (21). Beiranvandpour reported that the social cognitive theory predicted 21 percent of the nutritional behavior, Jalili obtained the number 16% for this rate (13, 21).

Najimi et al. found that self-efficacy and accessibility constructs can be considered as predicting factors for fruit and vegetable consumption among students (16), which is very similar to results of this study.

According to Salimi et al, the two constructs of self-efficacy and social support predicted the breakfast intake in female university students (22); this study is similar to our study considering the predictive effect of self-efficacy construct. Some other studies have also enumerated self-efficacy as an important factor in fruit and vegetable consumption (23, 24). Reynolds considers self-efficacy as an important element of the social cognitive theory for promotion of fruit and vegetable consumption (25).

Jeihooni et al. showed that higher self-efficacy leads to better nutritional behavior. In Rachelle's study of the association between postmenopausal women's beliefs and osteoporosis preventive behaviors, the results showed that self-efficacy was positively related to the amount of calcium intake (26).

Accessibility is one of the environmental variables in social cognitive theory. The results of this study showed that in case of accessibility, the nutritional behavior examined in this study (eating fruits, vegetables and dairy products) increases. Najimi et al. also observed a significant correlation between the students' access to fruits and vegetables and consumption of this food group (16). Moreover, with regard to accessibility, Baranowski showed in his study that parents' support in providing children with access to fruits and vegetables is one of the most important predictors of consumption of this food group (27).

Considering the characteristics of our study population, study of the social cognitive constructs reveals that from among the cognitive constructs, self-efficacy (compared with outcome expectations and evaluation), and from among the social constructs, accessibility (compared with social support) are of greater importance in increasing the rate of fruit and vegetable consumption in housewives; the exceptional role of self-efficacy must be taken into account in health promotion interventions (16).

Although the other studied constructs, including knowledge, outcome expectations and evaluation and social support did not have the power of predicting the nutritional behaviors of this study, they had a direct and significant (weak) relationship with the nutritional behaviors.

The studies by Beiranvandpour (21), Jeihooni (26) and Salimi (22) also showed that the knowledge construct does not have a predictive power and have a significantly weaker relationship with the nutritional behaviors; the results of these studies are consistent with our study, however, Jalili's study (13) obtained different results.

Regarding the outcome expectation construct, results of the studies by Salimi (22), Beiranvandpour (21) and Najimi (16) confirmed our results, though the study by Jalili (13) is contrary to our findings about the predictive power of this construct and its significance to the nutritional behaviors.

As for the outcome evaluation construct, Salimi's study (22) confirmed our findings about the predictive power of this construct and its significance to the nutritional behavior, though Beiranvandpour (21) and Jalili (13) reject our results.

Perhaps the low level of education of the study participants (61.6% under high school diploma), which consequently somewhat affects the outcome expectations and evaluations, is one of the reasons for the non-predictive power of these three constructs.

Social support was another construct examined in this study which did not have a predictive power; this complies with the study by Najimi (16) but is not consistent with Salimi's study (22).The environment (social support) here refers to the physical condition or situation or the community around a person that can affect the individual's behavior (22).

The findings of this study on the social support constructare consistent with the studies by Beiranvandpour (21), Jalili (13) and Najimi (16) on the predictive power of this construct and its significance to the nutritional behavior, though not compatible with the studies by Jeihooni (26) and Salimi (22). Nevertheless, this could be expected to a large extent given the low level of education (knowledge) of the participants' spouses in this study (66.9% under high school diploma) and holding only a few training sessions for housewives in the comprehensive

health centers, and also due to their few or no visits to the health centers (72.3%had a visit every six to 12 months) especially since the discontinued distribution of contraceptive items.

The limitations of this study include its cross-sectional nature and the women's age group (30-50 years), which naturally makes it impossible to generalize the results to women in other age groups and especially elderly women. Another limitation of this study is the complexity of human behavior, and that by only examining the social cognitive theory constructs, we cannot explain all behaviors. In fact, one of the reasons that our model could predict just 13.6 percent of the nutritional behavior is that the housewives' behaviors can be influenced by several factors that may have not been addressed in this study.

5. Conclusion

Based on the results of this study, the most important determinants of the nutritional behavior in housewives are the self-efficacy and accessibility constructs. It seems that utilizing different methods with the aim of improving women's knowledge, attitude and performance with regard to the nutritional behaviors(increased consumption of fruits, vegetables and dairy products), including holding theoretical and practical training sessions for promoting their successful performance in addition to increasing the accessibility can all lead to an increase in women's self-efficacy and provide the foundation for improving the irnutritional behaviors.

6. Acknowledgements

References

1. Nooritajer M, Kordlu Z. [The impact of education on nutrition style and body mass index of women in Iran University of Medical Sciences]. Iran J Diabetes Lipid Disord. 2010;9(3):296-302. [Persian]

2. Abedi P, Jorfi M, Afshari P. Evaluation of the Health Promotion Lifestyle and its Related Factors in Reproductive Aged Women in Ahvaz, Iran. Community Health Journal. 2015;9(1):68-74. [Persian]

3. Janjani P, Momeni Kh, Karami J. The relationship between of social security and life style" with and with "life quality and happiness" of the Kermanshah women in Kermanshah. J Clin Res Paramed Sci. 2015;3(4):247-56. [Persian]

4. Torabi P, Abdollahi Z, Minai M, Zarei M, Ma'ani M, Sadeghi Qotbabadi F, et al. Nutritional education kit (for the health team in the Family Physician Program). Qom: Andeseh Mandeghar; 2003.[Persian]

5. Noah A, Truswell S. Commodities consumed in Italy, Greece and other Mediterranean countries compared with Australia in 1960s and 1990s. Asia Pac J Clin Nutr. 2003;12(1):23-9.

6. Bermudez OI, Tucker KL. Trends in dietary patterns of Latin American populations. Cad Saude Publica. 2003;19 (Suppl 1):S87-99.

7. Mazzocchi M, Brasili C, Sandri E. Trends in dietary patterns and compliance with World Health Organization recommendations: a cross-country analysis. Public Health Nutr. 2008;11(5):535-40.

8. World Health Organization. WHO fruit and vegetable promotion initiative report of the meeting, Geneva: World Health Organization; 2003. available at: www.who.int/dietphysicalactivity/publications/f&v_promotion_initiative_report.pdf

9. Jessri M, Mirmiran P, Golzarand M, Rashidkhani B, Hosseini Esfahani F, et al. Comparison of trends in dietary pattern in Iran, Middle Eastern and North African countries from 1961 to 2005. Pejouhandeh. 2011;16(1):1-10. [Persian]

10. Ministry of Health and Medical Education Departy of Health Center for Disease Control and Management. non-communicable disease risk factors surveillance provincial Report Islamic Republic of Iran. Tehran: kholoes; 2007. [Persian]

11. Bahadori-Monfared A, Keramati AA, Moazzami-Sahzabi J, Mohamadi F, Farsar AR. The Impact of Education on Nutritional Behavior among Clients of Sardar-Jangal Health Center in 2012. Community Health Community Health (Salamat-i Ijtimai). 2014;1(1):62-8. [Persian]

12. Rostami H, Tavakoli H R, Joneidi N A, Hashemi G, Homauoni F, Naghavi S. Surveying Fruit and Vegetable Consumption and Their Associated Factors in the Staff of the Health Centers of the Baqiyatallah University of Medical Sciences in 2011. J Mil Med. 2014;16(3):133-9. [Persian]

13. Jalily M, Barati M, Bashirian S. Using social cognitive theory to determine factors predicting nutritional behaviors in pregnant women visiting health centers in Tabriz, Iran. J Educ Community Health. 2015;1(4):11-21. [Persian]

14. Glanz K, Rimer BK, Viswanath K. Health be-havior and health education: theory, research and practice. 4th ed. San Francisco: Jossey-Bass publisher; 2008.

15. Larson NI, Neumark-Sztainer DR, Story MT, Wall MM, Harnack LJ, Eisenberg ME. Fast food intake: longitudinal trends during the transition to young adulthood and correlates of intake. J Adolesc Health. 2008;43(1):79-86.

16. Najimi A, Ghaffari M, Alidousti M. Social cognitive correlates of fruit and vegetables consumption among students: a cross-sectional research. Pajoohandeh. 2012 15;17(2):81-6. [Persian]

17. Nemati A, Abbasgolizadeh N, Rahimi K. Nutritional Knowledge and Patterns of Women in Ardabil Province. J Health. 2011;2(3):33-9. [Persian]

18. Amini Moridani M, Tol A, Sadeghi R, Mohebbi B, Azam K. Assessing the Effect of Family-based Intervention Education Program on Perceived Social Support among Older Adults with Type 2 Diabetes: Application of Social Cognitive Theory. Journal of Nursing Education. 2015;4(3):30-40. [Persian]

19. Pasdar Y, Rezai M, Mohamadi N, Niyazi P. Dietary Pattern and Food Consumption among Kermanshah Households, 2011. J Kerman Univ Med Sci. 2014;20(1):25-36. [Persian]

20. Pan YL, Dixon Z, Himburg S, Huffman F. Asian students change their eating patterns after living in the United States. J Am Diet Assoc. 1999;99(1):54-7.

21. Beiranvandpour N, Karimi-Shahanjarini A, Rezapur-Shahkolai F, Moghimbeigi A. Factors Affecting the Consumption of Fast Foods among Women Based on the Social Cognitive Theory. J Educ Community Health. 2014;1(1):19-26. [Persian]

22. Salimi N, Karimi-Shahanjarini A, Roshanaei G. Regular breakfast consumption and its predictors based on the social cognitive theory in female students of Hamadan University of Medical Sciences. J Educ Community Health. 2014;1(3):20-7. [Persian]

23. Ma J, Betts NM, Horacek T, Georgiou C, White A, Nitzke S. The Importance of decisional balance and self efficacy in relation to stages of change for fruit and vegetables intakes by young adults. Am J Health Promot. 2002;16(3):157-66.

24. Chung SJ, Hoerr SL. Predictors of fruit and vegetables intakes in young adults by gender. Nutr Res. 2005;25(5):453-63.

25. Reynolds KD, Hinton AW, Shewchuk RM, Hickey CA. Social cognitive model of fruit and vegetables consumption in elementary school children. J Nutr Educ. 1999;31(1):23-30.

26. Jeihooni A, Hidarnia A, Kaveh M. Survey of predictors osteoporosis preventive behaviors among women in Fasa:Integrated of the Health Belief Model and Social Cognitive Theory. Health Syst Res. 2014;11(1):53-67. [Persian]

27. Baranowski T1, Watson K, Missaghian M, Broadfoot A, Cullen K, Nicklas T, et al. Social support is a primary influence on home fruit, 100% juice, and vegetables availability. J Am Diet Assoc. 2008;108(7):1231-5.