

The role of protection motivation theory in predicted of nutritional behavior in prevention cancers in mothers in Yazd city, Iran

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Summary. *Introduction:* Currently, cancer is one of the most important health concerns-care in the world and Iran. The causes of cancer can be effective in creating things like the environment, food, genetics, hormones, viral factors, sunlight, smoking, weight and physical activity. In this study for first time the Protection motivation theory was applied in nutrition behavior that are important in prevention of cancers. *Materials and Methods:* This was a cross-sectional and descriptive study. The participants were from 18 health centers, 9 health centers was selected and from every health center, 24 mothers were selected by simple sampling. The data was collected by a researcher making questionnaire that was completed by participants. After completion of questionnaires, all gathered data were transferred to SPSS 16 and analyzed under ANOVA, Chi square, T-test and Pearson tests and descriptive statistics. *Results:* Subjects were in the age group between 27-40 years. The education of 41.4% of participants was university. There is significant difference between age of participant and Perceived self efficacy ($p=0,005$). The data showed that the structures of Protection motivation theory could predicted 34.9% of behavior Nutritional Prevention of Cancer that the most of them was for Perceived Rewards with 39%. *Discussion:* The data of this study showed that protection motivation theory is effective in predicted the nutritional behavior in prevention of cancers. So we can use from this theory for planning the educational program in prevention of unsuitable behavior in prevention of cancers.

Keywords: Protection motivation theory, cancer, nutritional behavior

«IL RUOLO DELLA TEORIA DELLA MOTIVAZIONE A PROTEGGERSI NEL PREVEDERE IL COMPORTAMENTO ALIMENTARE NELLA PREVENZIONE DEI TUMORI IN DONNE NELLA CITTÀ DI YAZD, IN IRAN »

Riassunto. *Introduzione:* Attualmente, il cancro è una delle più importanti preoccupazioni per quanto ne riguarda salute e cura a livello mondiale e in Iran. Le cause che influiscono sul cancro possono essere molteplici: ambiente, cibo, genetica, ormoni, virus, luce solare, fumo, peso e attività fisica. In questo studio per la prima volta la Teoria della motivazione a proteggersi è stata applicata nel comportamento alimentare, importante nella prevenzione dei tumori. *Materiali e Metodi:* Questo è uno studio osservazionale trasversale e descrittivo. I partecipanti provenivano da 18 centri sanitari. Sono stati selezionati 9 centri sanitari e da ciascuno sono state selezionate 24 donne tramite semplice campionamento. I dati sono stati raccolti da un ricercatore mediante questionario che è stato compilato dai partecipanti. Dopo il completamento dei questionari, tutti i dati raccolti sono stati trasferiti al programma SPSS 16 e analizzati con ANOVA, Chi quadrato, T-test e test di Pearson e statistiche descrittive. *Risultati:* I soggetti erano

nella fascia di età 27-40 anni. L'educazione del 41,4% dei partecipanti era universitaria. Si evidenzia una differenza significativa tra l'età del partecipante e l'autoefficacia percepita ($p = 0,005$). I dati hanno mostrato che le strutture della Teoria della motivazione a proteggersi potrebbero prevedere il 34,9% del comportamento nutrizionale per la prevenzione del cancro. La maggior parte di queste era per la ricompensa percepita con il 39%. *Discussione:* I dati di questo studio hanno mostrato che la Teoria della motivazione a proteggersi è efficace nel prevedere il comportamento alimentare per la prevenzione del cancro. Possiamo quindi partire da questa teoria per la pianificazione di programmi educativi che prevengano abitudini di vita scorrette.

Parole chiave: Teoria della motivazione a proteggersi, cancro, comportamento alimentare

Introduction

Cancers are those diseases with uncontrolled growth cellular and invasion to tissue and systemic metastasis (1).

Currently, cancer is one of the most important health concerns-care in the world and Iran. As in industrialized countries, after heart-cardiovascular disease is the second leading cause of death. In Iran, daily in turns 98 and 30 thousand people annually lose their lives to cancer (2, 3). So, in Iran, cancers after heart disease and accidents are the third leading cause of death (3). It also predicts that by 2015, 13 percent of deaths in the worldwide are related to cancers diseases (3). Cancer is an increasingly important factor in the global burden of disease in the coming decades. Expected number of new cases increased by 15 million in 2020 that almost 60 percent of these cases occur in less developed countries (4). The annual incidence of cancer in men in America is 465.9 per hundred thousand and for women 804.3 per hundred thousand people (5). The causes of cancer can be effective in creating things like the environment, food, genetics, hormones, viral factors, sunlight, smoking, weight and physical activity (6). More than 90 percent of cancers are attributable to environmental and external factors. Although genetics play a role as a risk factor for cancer diseases, but several studies suggest that nutrition is an important environmental factors related to cancer (7).

The evidence shows that nutrition is responsible for 30 to 40% of all cancers (2, 6). As the study of Smeltzer et al., nutrition is responsible for 30% of cancers in developed countries and 20% of these disease is in developing countries (8). Many dietary factors, such as foods, how to prepare, Drkalry balance incoming, intake of food per meal can reduce the risk of cancer. Nutritional patterns, consumption of plant foods (fruits, green, grains, and cereals), limit the consumption of meat, dairy and other foods high in fat can reduce the cancers (8, 9). There is need to correct and modify the style of nutrition to health promotion be required, because many of data suggests that there is a close relationship between health and eating habits (10). Today, in many developed and developing countries medical researchers, carefully considered the correct of lifestyle for disease prevention because these phenomena are closely related to each other (11).

The data of Colditz showed that important factors as food habits, smoking and tobacco, physical activity, obesity and alcohol consumption are modifiable factors of life style of individuals in society and emphasize that adjustment these factors could play preventing role in cancers (12). The results of study of Key et al. showed that high salt intake increases the risk of gastric cancer. Very hot drinks and foods increase the risk of cancer of the oral cavity and pharynx (13). Necessary for health and education programs, especially in the prevention of chronic diseases such as cancer is

knowing the lifestyle of people in various aspects including their feeding behavior. To succeed in changing or maintaining healthy behaviors, there is need, health educators should be aware of the factors that influence learning that theory to contribute to this process (14). Protection motivation theory is one of these theories that is for understand and predict the health behavior on cognitive factors affecting individual decisions that can protect itself against the traumatic events. Based on this theory, environmental and personal factors combine to each other to bring up a potential health threat. The threatening message starts two cognitive process "Threat appraisal an Coping appraisal" (15). Coping appraisal is Ability to cope and fend off the threat assessment that includes:

1. Perceived self efficacy: the person Believing that can successfully perform the proposed actions.
2. Perceived response efficacy: the person estimate that the suggested treatment will be effective.
3. Perceived costs: the person estimate the cost that is associated with protective behavior (16).

Threat appraisal that is: factors affecting the likelihood of engaging in unhealthy behaviors that have the potential to assess which includes:

1. Perceived Rewards joint with behavior (17).
2. Percieved sensitivity: believe that the person is vulnerable to health threats: 2-percieved sensitivity.
3. Perceived severity: believe that a person has a serious health threat.
4. Fear: an intermediate variable between perceived susceptibility, perceived severity with threat appraisal.

Previous studies supporting structures contribute significantly to the protection motivation theory to predict the behavior of a variety of behavioral domains. Such studies can be applied to this theory are quitting smoking (18, 19), condom use (20, 21), cancer prevention (22, 23), reduced the risk of HIV infection (24), physical activity and dietary choices (25, 26). Because this theory have not been studied the effect of feeding behavior in cancer prevention, particularly in developing countries, including Iran. In this study for first time the Protection motivation theory was applied in nutrition behavior that are important in prevention of cancers.

Materials and methods

This was a cross-sectional and descriptive study. The participants were From 18 health centers, 9 health centers was selected and from every health center, 24 mothers were selected by simple sampling.

The data was collected by a researcher making questionnaire by participants. the questionnaire was include demographic variables and structures of Protection motivation theory.

Internal validity of questionnaires was confirmed by a team of experts in cancers and health education; and also its external validity was confirmed by a pilot testing on 20 peoples were not attended in the main study (alpha chornbach = 0.7 to 0.84).

All structures were complied on 5-degree Likert responses. The score of (totally opposed to totally accepted) from 1 to 5 were considered to calculate the score for each subscale that was the sum of scores. The questions of perceived susceptibility was 10 that its scores was 10-50. The questions of perceived susceptibility was 10 that its scores was 10-50. The questions of perceived severity was 6 that its scores was 6-30. The questions of Perceived self efficacy was 10 that its scores was 10-50. The questions of Perceived response efficacy was 11 that its scores was 11-55. The questions of perceived costs was 6 that its scores was 6-30. The questions of Perceived Rewards was 7 that its scores was 7-35. The questions of fear was 9 that its scores was 9-42. The questions of intention for preventive nutrition behavior was 7 that its scores was 7-35 and the questions of behavior was 99 that its scores was 9-42.

After completion of questionnaires, all gathered data were transferred to SPSS 16 and analyzed under ANOVA, Chi square, T-test and Pearson tests and descriptive statistics.

Results

The ages of participants was between 16-51 years with an average of 29.2 ± 5.87 and 49.5% of subjects were in the age group between 27-40 years. The education of 41.4% of participants was university. Table 1 shows the mean scores and SD of structures of Protec-

tion motivation theory. Most of the preventive nutritional behavior (86.6%) was about question "do not use moldy food products and germinated foods" and the lowest preventive behavior (56%) was about question "Steamed and boiled cook method". The data of table 2 showed there is significant difference between age of participant and Perceived self efficacy ($p=0,005$), Perceived response efficacy ($p=0.007$), perceived susceptibility ($p=0.0001$) and Perceived severity ($p=0,01$). there was no significant between age and perceived costs - Perceived Rewards, fear, intention to behavior and behavior ($p>0.05$). The Spearman test showed

there is significant difference between education of participants and Perceived costs ($p = 0.043$), Perceived severity ($p=0.01$) and Perceived Rewards ($p=0.008$). There was no significant difference between education of participants and other structures of Protection motivation theory ($p>0.05$). Analyses regression showed that Coping appraisal could predicted about 28% of behavior Nutritional Prevention of Cancer and Threat appraisal could predicted about 24% of behavior Nutritional Prevention of Cancer.

The data of table 3 showed that the structures of Protection motivation theory could predicted 34.9%

Table 1. Mean, SD, score ranging from acquisition and average percentage of the maximum score obtained of structure of PMT.

Structures of PMT	Mean	SD	Score ranging from acquisition	Average percentage of the maximum score obtained
Perceived response efficacy	49.39	4.66	11-55	89.8
Perceived self efficacy	45.14	4.24	10-50	90.2
Perceived susceptibility	40.98	5.59	10-50	81.96
Intention for behavior	31.78	3.17	7-35	90.8
Behavior Nutritional Prevention of Cancer	31.1	4.28	9-45	99.11
Fear	29.05	8.36	9-45	64.55
Perceived severity	26.31	3.33	6-30	87.93
Perceived Rewards	19.92	7.22	7-35	56.91
Perceived costs	18.83	5.73	6-30	62.77

Table 2. The matrix of correlation coefficient of protection motivation theory constructs on cancers preventive behavior among study population

Structures	Perceived self efficacy	Perceived response efficacy	Perceived susceptibility	Perceived severity	Perceived Rewards	Perceived costs	Fear	Intention for behavior	Nutritional Prevention of Cancer
Perceived self efficacy	-								
Perceived response efficacy	0.563								
Perceived susceptibility	0.411	0.437							
Perceived severity	0.379	0.328	0.192						
Perceived Rewards	-0.276	-0.154	-0.062	0.002					
Perceived costs	-0.054	-0.074	-0.041	0.006	0.558				
Fear	0.221	0.265	0.139	0.330	-0.153	0.256			
Intention for behavior	0.475	0.533	0.210	0.148	-0.232	-0.149	0.139		
Behavior Nutritional Prevention of Cancer	0.310	0.176	0.075	0.031	-0.546	-0.404	0.165	0.353	

$p<0.05$ $p<0.01$

Table 3. Regression analysis of protection motivation theory constructs as a predictor to behavior nutritional prevention of cancer

Predictor	Standard β	Non standard β	t	p	f	R2
Content		29.84			15.80	0.349
Perceived self efficacy	-0.222	0.230	2.929	0.004		
Perceived response efficacy	0.020	0.019	0.282	0.778		
Perceived costs	-0/153	-0.119	-2.171	0.031		
Perceived rewards	-0/389	-0.237	-5.385	0.0001		
Perceived susceptibility	-0.047	-0.037	-0.739	0.461		
Perceived severity	-0.064	-0.085	-0.988	0.328		
fear	0.045	0.024	0.715	0.715		

of behavior Nutritional Prevention of Cancer that the most of them was for Perceived Rewards with 39%.

Discussion

Cancers, after heart disease – coronary and events is the third leading cause of death in the world and it is likely that 13 percent of deaths that happens in the world in 2015, is associated with cancer (3). As already mentioned, individual behaviors and environmental factors, particularly dietary habits are the most important factors affecting the incidence of cancer (7). In this study for first time the Protection motivation theory was applied in nutrition behavior that are important in prevention of cancers.

The data of this study revealed there was a significant difference and positive correlation between Perceived self efficacy and Perceived response efficacy with Behavior Nutritional Prevention of Cancer ($p=0.001$). The positive correlation represent the belief that one can opt preventive behavior against health risk which is the risk of cancer. In this study was a significant difference and negative correlation between Perceived rewards and Perceived costs with Behavior Nutritional Prevention of Cancer ($p=0.001$).

The negative correlation represent the belief that one not opt preventive behavior against health risk which is the risk of cancer. Our results is same as the results of Planikoff et al. (25), their results showed that high Perceived self efficacy and Perceived response efficacy Increased protection motivation and behavior of a low-fat diet. Results of this study showed that there is no significant difference between education of par-

ticipants and Behavior Nutritional Prevention of Cancer that is different with the results of Helen et al. (27), his results showed that there was significant difference between education of his samples and attitude of suitable food. Data of this research showed that there is a significant difference between Coping appraisal and Protection motivation that increased their intention for Behavior Nutritional Prevention of Cancer. These results is same as the results of Planikoff (25), Tanner (27), Beck (28), Rogers (29) and Josie (30). In this study a negative correlation was between protection motivation and threat appraisal that increased the intention of participants for option of no suitable behavior. These results is same as the results of Planikoff (25), van der Velde (31), Stanley (32) and Campis (33). Our results showed that there was significant and negative correlation between Protection motivation and Threat appraisal that decreased the intention of participants for option of suitable behavior. These results is same as the results of Planikoff (25), van der Velde (31), Stanley (32) and Campis (33). So there was a negative correlation between nutritional behavior and Threat appraisal that is same with data of Planikoff (25), Rogers (29), Campis (33) and Rippetoe (34).

As expected, the Coping appraisal and Threat appraisal could predicted 28.4% of the variance of protection motivation to nutritional behavior that can Prevent the cancer, that about coping appraisal was significant. The results of studies of Planikoff (35), Miline (36), Greening (37), Aspinwall (24) and Floyd (38) revealed that the variables of coping appraisal are a stronger predictor of intention and behavior.

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