RESEARCH ARTICLE

Editorial Process: Submission:12/24/2017 Acceptance:02/16/2018

Socio-Cognitive Determinants of the Mammography Screening Uptake among Iranian Women

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Abstract

Background: Mammography screening uptake is the most effective method in breast cancer screening. The aim of this study was to determine the determinants related to mammography screening uptake among Iranian women based on the theory of planned behavior. **Materials and Methods:** This cross-sectional study was conducted among 408 women who referred to health centers in Kermanshah city, the western of Iran, during 2016. Participants filled out a self-administered questionnaire. Data were analyzed by SPSS version 21 using Pearson correlation, linear and logistic regression statistical tests at 95% significant level. **Results:** The mean age of participants was 39.61 years [SD: 8.28], ranged from 30 to 60 years. Almost 13% of the participants had already mammography screening uptake at least once. Perceived behavioral control (OR=1.229) and behavioral intention (OR=1.283) were the more influential predictors on mammography screening uptake. **Conclusions:** Based on result, it seems increase perceived behavior control toward mammography screening uptake may be usefulness in promotion of mammography screening uptake among Iranian women.

Keywords: Breast cancer- cognitive- health psychology- behavior change

Asian Pac J Cancer Prev, **19 (5)**, 1351-1355

Introduction

Breast cancer is the most common type of cancer in the world and the second cause of cancer-related deaths, after lung cancer (Shiryazdi, et al., 2014). Breast cancer has been identified as the most common malignancy in Iranian women (Kadivar, et al., 2014). The age of affliction with breast cancer in Iran is 10 years earlier, compared with developed countries, and the most common age of affliction with breast cancer is between the age of 40 and 49 years (Harirchi et al., 2004). Although the way of preventing breast cancer is no known, early or timely diagnosis of the disease highly impact successful treatment and less spread of diseases; according to the studies the fife-year survival rate of women who had timely diagnosis with breast cancer was 90%; of course the survival rate is different in different countries in a way that the survival rate is 80% in North America, Sweden and Japan, 60% in countries with average income and 40% in low-income countries (Ebrahimi et al., 2002). Despite access to mammography for early diagnosis of breast cancer, unfortunately in developing countries this disease is often not detected in the early stages (when most of the cases can be treated) and 19 to 25 percent of the deaths caused by breast cancer are thought to be due to the lack of use of mammography (Mirzaei-Alavijeh et al., 2015). If mammography is performed on women by physicians at an appropriate time, the progress of 95% of the breast cancer cases into the advanced stage will be prevented; in addition, there is a need for radiotherapy in fewer cases when the breast cancer is detected early, compared with cases of breast cancer that have been detected late, and the quality of life of the patients is higher (Ebrahimi et al., 2002). Mammography which is considered as a standardized screening method is necessary for achieving the highest level of success in screening; 35 to 50 percent of the initial cases of breast cancer are detected only through mammography, and this scorning behavior is the effective technique for ensuring early detection of breast cancer (Paul et al., 2015; Elmore, et al., 2005). Considering the increasing trend of cancer in Iran and patients' late visit of physician, it's seems necessary planning health program for cancer early detection screening behaviors promotion (Jalilian and Emdadi, 2011). In this regard, studies have indicated that the most effective programs are based on theory-based approaches that are originated in behavioral change models (Jalilian et al., 2016a). Therefore, for understanding the behavior of the consumer, this study used the Theory of Planned Behavior (TPB) which is a social psychology theory; the TPB is a behavioral change theory and suggests that intention is the main determinant of behavior that is impacted by the following three determinants: (a) Attitude (A) towards the behavior (b) Subjective norms (SN); and (c) Perceived behavior

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control (PBC); the extent to which the behavior will be simple or difficult, in the individual's perception (Jalilian et al., 2016b). In this regards, several studies reported that researches based on psychological and socio-psychological theories have a prominent role in creating programs that positively impact health promotion (Baghiani-Moghadam et al., 2012; Mirzaei-Alavijeh et al., 2016; Morowatishaifabad et al., 2015). Regarding the mentioned reasons, our TPB based study focused on exploring socio-cognitive determinants related to the mammography screening uptake in a sample of women in the west of Iran.

Materials and Methods

Participants

This cross-sectional study was conducted among 408 women referred to health centers in Kermanshah city, the western of Iran, during 2016. The sample size was calculated at 95% significant level according to the findings of pilot study and by considering the 20% probable rejection rate a sample of 408 was estimated. Of the population of 408, 400 (98%) signed the consent form and voluntarily agreed to participate in the study. To enroll the participants and collect data the following stages were done. First, different areas of the city were classified based on the division of the municipality areas, next for each eight municipality areas in the Kermanshah city, one health centers were randomly selected (a total of eight health centers were selected). Then, subjects referred to the health centers for taking health care, were enrolled into our research voluntarily. Subjects aged 30 to 60 years old were considered as inclusion criteria in the study, while lack of interest to participate and incomplete questionnaires were introduced as extinction. This research has been approved by the institutional review board at the Kermanshah University of medical sciences (KUMS.REC.1395.277).

Measures

Prior to conducting the main project, a pilot study was carried out. Initially the relevant questionnaires were administered to 30 women who were similar to study population in order to estimate the duration of the study conduction and to evaluate the reliability of the questionnaire. To estimated reliability used alpha Cronbach coefficient for each TPB constructs questionnaire were as follows: attitude (α=0.77); subjective norms (α=0.72); perceived behavior control (α=0.76) and behavioral intention (α=0.85).

The background variables assessed in this study included: age, educational level (primary school, secondary school, high school, academic), number of children, job (housewife, working), family history of breast cancer (yes, no), and mammography screening uptake (yes, no).

TPB scale was designed based on a standard questionnaires (Cooke and French, 2008; Browne and Chan, 2012; Murphy et al., 2013) and included fourteen items under four constructs of 1) attitude, 2) subjective norms, 3) perceived behavioral control, and 4) behavioral intention. Specifically, five items measured attitudes towards the mammography screening uptake (e.g., mammography screening uptake for me is: pleasant). Five items measured the subjective norms towards the mammography screening uptake (e.g., if I do mammography screening uptake, my husband will confirm it). Two items measured the perceived behavioral control to mammography screening uptake (e.g., do mammography screening uptake is difficult for me). The behavioral intention to mammography screening uptake was measured by tow items (e.g., I intend do mammography screening uptake with aim of cancer early detection in this year). 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 Analysis

The Statistical Package for the Social Sciences (SPSS) version 21 was used for the purpose of data entry, manipulation, and analysis. Descriptive statistics were used to summarize and organize the data. Bivariate correlations were computed to ascertain the magnitude and direction of the associations between the TPB variables. Logistic regression analysis was performed to explain the prediction of mammography screening uptake on the basis of TPB and background variables. A hierarchical multiple linear regression analysis was performed to explain the variation in intention to mammography screening uptake, using the TPB variables of attitudes, subjective norms and perceived behavioral control. Cronbach's Coefficient Alpha was used to estimate the internal consistency of the various measures.

Results

The mean age of participants was 39.61 years [SD: 8.28], ranged from 30 to 60 years. Almost 13% (52/400) of the participants had history of mammography screening uptake at least once. Regarding the educational status: 37.3% (n=149) had in elementary, 22.5% (n=90) middle, 27.3% (n=109) were diploma and 13% (n=52) were academic. About, 6.3% (25/400) participants were worker and 93.7% (375/400) were housewife.

Table 1 shows mean standard deviation and bivariate correlations between the TPB constructs

A Backward step-wise model building procedure was conducted and finally on 3rd step the procedure stopped and the best model was selected, among the TPB variable: perceived behavioral control (OR=1.22) and behavioral

Table 1. Bivariate Correlation Analysis of Mammography Screening Uptake

	Mean (SD)	X[1]	X[2]	X[3]
X[1]. A[1]	19.25 (3.76)	1		
X[2]. SN[2]	14.19 (5.46)	0.119*	1	
X[3]. PBC[3]	7.41 (1.89)	0.314**	0.184**	1
X[4]. BI[4]	6.44 (2.11)	0.265**	0.554**	0.320**

**, Correlation is Significant at the 0.01 Level (2-Tailed); *, Correlation is Significant at the 0.05 Level (2-Tailed); [1]Attitude; [2]Subjective Norms; [3]Perceived Behavioral Control; [4]Behavioural Intention

Table 2. Logistic Regression Analysis for TPB Variables Related to Mammography Screening Uptake

Variables	B	S.E.	Odds Ratio	95% Confidence Intervals	
Final model; Step 3				Lower	Upper
PBC	0.206	0.094	1.22	1.02	1.47
BI	0.249	0.077	1.28	1.10	1.49

Table 3. Logistic Regression Analysis for Background Variables Related to Mammography Screening Uptake

Variables	B	S.E.	Odds Ratio	95% Confidence Intervals	
Final model; Step 9				Lower	Upper
Age	0.037	0.017	1.03	1.00	1.07
Positive history of breast cancer in family	1.699	0.635	5.46	1.57	18.98

Table 4. Predictors of the Intention to Mammography Screening Uptake Based on Linear Regression Analysis

Variable	B	SE B	B	t	p-value
A	0.083	0.024	0.148	3.537	< 0.001
SN	0.195	0.016	0.503	12.440	< 0.001
PBC	0.202	0.047	0.181	4.277	< 0.001

Adjusted R squared, 0.37; F, 79.580, P< 0.001

intention (OR=1.28) were the more influential predictors on mammography screening uptake Table 2.

As mentioned in statistical analyses, a step-wise model building procedure was conducted and among the background variables: age (OR=1.03) and positive history of breast cancer in family (OR=5.46) were major determinants to predict mammography among the participants Table 3.

A hierarchical multiple linear regression analysis was performed to explain the variation of intention to mammography screening uptake, using the TPB variables of attitudes, subjective norms and perceived behavioral control. As can be seen in Table 4, were statistically significant predictors of the outcome measure. Collectively, they were accounted for 37% of the variation in intention to mammography screening uptake, F= 138.96, p< 0.001.

Discussion

The results of the study indicate that the attitude toward mammography screening uptake, the subjective norms toward mammography screening uptake, and the perceived behavioral control toward mammography screening uptake, as the three main constructs of TPB, were associated with the women's intention to mammography screening uptake. In the field of psychological cancer early detection screening behaviors, many studies have underlined the predictive potential of intention, for instance for the mammography screening uptake by women (Cooke and French, 2008; Browne and Chan, 2012; Murphy et al., 2013). Consequently, the results confirm suggestions that the TPB is a suitable theoretical basis for the planning program of the mammography screening uptake promotion among women's.

According to the results, 13% of the participants had history of mammography screening uptake at least once. Dezham et al., (2015) carried out a research on 294 women over 40 years in the city of Arak in center of Iran and reported that 13% of the participants had mammography screening uptake. Shiryazdi et al., (2014) stated that only 10.6% of female health care workers in Yazd, Iran, had undergone a mammogram. In addition, Ham et al., (2006) reported that 31.9% of Korean women had regular Pap smear test. The comparison of the our finding and similar domestic studies with similar studies conducted abroad indicated the discrepancy exists between the findings and indicates that mammography screening uptake is lower among Iranian women compared to other countries. These findings can be warning to women's health policy makers in Iran; and should be the focus of special attention.

The results of the present study indicated that, among demographic variables, having a family member with breast cancer and higher age were stronger predictors for mammography screening uptake. Consistent with the findings of the present study, the findings of the study by Tolma et al., (2014) indicated that having a family history of breast cancer was had significant statistical relationship with undergoing mammography in women. The identification of the determinants impacting mammography helps the health planners to create appropriate strategies for performing mammography.

Our result showed the older women had mammography screening uptake much more than younger ones. This result is similar to the results reported by other studies (Dezham et al., 2015; Fontaine and Smith, 1995). Various reasons may be stated for this discrepancy. Younger women may imagine themselves at lower risk of breast cancer. Lack of knowledge about cancer early detection screening behaviors may be another reason. Furthermore, studies indicate that younger individuals have less vulnerability perceptions regarding the risks around them and in other words, they consider themselves as immune against the health risks and threats and consequently they do not feel a need to adopt preventive behaviors; in fact, the term invulnerability describes

the belief in the individual that "I am less vulnerable to risk than others" and this type of belief weakens the adoption of any preventive behavior (Fontaine and Smith, 1995). Therefore, it seems that planning health promotion programs to increase seriousness about side effect of breast cancer (especially for younger women) may be usefulness of the results in order to promotion of mammography screening uptake.

Several studies have reported TPB variables' predictability to explain behavioral health screening such as breast cancer screening (Cooke and French, 2008; Browne and Chan, 2012; Murphy et al., 2013; Steele and Porche, 2005). For example, Steele and Porche (2005) carried out a research on 302 women between the ages of 40-74 who were without a prior history of breast cancer in rural Southeastern Louisiana women and reported perceived behavioral control was the strongest predictor of mammography intention. In addition Dezham et al., (2015) reported perceived behavioral control and subjective norms as important predictors for mammography screening uptake. Our findings are similar to the results reported by other studies.

Strengths and Limitations

Although the present study has several strengths, such as theory driven, and high sample size, the findings reported in this study have few limitations. First, the data collection is based on self-reporting, which always faces the risk of recall bias and we do not know how it could have affected the results. Second, data collection only among sample of Iranian women who referred to health centers in Kermanshah city, the western of Iran, and results cannot be generalized to other population of women. Finally, present study investigated mammography screening uptake during last year using yes-no scale which was the main limitations of present study and asks for more attention while interpreting the results.

In conclusions, there are multiple determinants to explain or predict the mammography screening uptake among women. The findings of present study moderately confirmed the applicability of the TPB to explain mammography screening uptake among women in Iran. We conclude that we found it seems increase perceived behavior control toward mammography screening uptake may be usefulness in promotion of mammography screening uptake among Iranian women.

Author's Contributions

Farzad Jalilian and Mehdi Mirzaei-Alavijeh developed the original idea the protocol of study. Parvaneh Ghorbani participated in writing article. All authors provided comments and approved the final manuscript.

Conflict of interests

The authors declare no conflict of interest.

Acknowledgements

This research has been approved by the institutional review board at the Kermanshah University of medical sciences (KUMS.REC.1395.277). We would like to thank deputy of research of Kermanshah University of medical sciences for financial support of this study.

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