RESEARCH ARTICLE

Health Promoting Behavior and Influencing Factors in Iranian Breast Cancer Survivors

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Abstract

<u>Background</u>: The purpose of this study was to investigate the associations among the internal health locus of control, depression, perceived health status, self efficacy, social support, and health-promoting behavior in Iranian breast cancer survivors and to determine influential variables. <u>Materials and Methods</u>: A predictive design was adopted. By convenient sampling the data of 262 breast cancer survivors in Iran were collected by questionnaires during 2014. Data were analyzed applying descriptive statistics, t-tests, one-way ANOVA, Pearson's correlation coefficients, and stepwise multiple regression. <u>Results</u>: The internal health locus of control, depression, perceived health status, self efficacy, social support and undergoing chemotherapy all correlated significantly with the health-promoting lifestyle. Stepwise multiple regression analysis revealed that social internal health locus of control, depression, perceived health status, self efficacy and social support and chemotherapy accounted for about 39.8% of the variance in health promoting lifestyle. The strongest influence was social support, followed by self efficacy, perceived health status, chemotherapy and depression. <u>Conclusions</u>: The results of the study clarifed the seriousness of social support, self efficacy, perceived health status and depression in determining the health-promoting lifestyle among Iranian breast cancer survivors. Health professionals should concentrate on these variables in designing plans to promoting a healthy lifestyle.

Keywords: Health promotion behavior - internal control - self efficacy - perceived health status social support

Introduction

Breast cancer is the primary cause of cancer death among women universally. It is predicted that over 508, 000 women globally died in 2011 due to breast cancer. Although breast cancer is thought to be a disease of the advanced world, nearly 50% of breast cancer cases and 58% of deaths happen in less developed countries (World Health Organization, 2014). Breast cancer survival rates differ greatly throughout the world, ranging from 80% or over in North America, Sweden and Japan to around 60% in middle-income countries and below 40%in low-income countries. The low survival rates in less developed countries can be described mainly by the lack of early diagnosed projects, resulting in a high prevalence of women existing with late-stage disease, as well as by the lack of adequate detection and treatment facilities (World Health Organization, 2014). According to the most recent Iranian cancer registry report, breast cancer is the most prevalent cancer among Iranian women (Mousavi et al., 2009).Iranian women are affected by breast cancer at least 10 years earlier than their counterparts in developed countries (Chon et al., 2001).

Mammography lead to decrease mortality in breast cancer up to 16% and even 29% in 40-49 age group with early detection (Hellquist et al., 2011). Thus, in spite of high occurrence, detection and treatment in primary stages elevates the portion of survivors (Rızalar and Altay, 2010). Since the survived individuals are grown, health policy makers have started to concentrate to their life time events (Fallowfield and Jenkins, 2015). Diabetes, heart disease and obesity are the complications that threaten cancer survivors more than those other population in comparison (Aleman et al., 2014; Naughton and Weaver, 2014; Rugbjerg et al., 2014; Travier et al., 2014). In this line Ashing et al. (2014) demonstrated, 75% of breast cancer survivors revealed at least one comorbidity with arthritis (37%), high blood pressure (37%), psychological complications (29%), and diabetes (19%). These comorbid situations are mostly link with diminish total survival and elevates mortality (Phillips and McAuley, 2015). Consequently, shifting to a health-promoting lifestyle is vital to cancer survivors, both for health status promotion and preventing (Mishra et al., 2015; Schiavon et al., 2015).

It is established that adjusting with healthy life style is a major barrier to cancer survivors (Moon et al., 2013; Hauken et al., 2015). Greater risks of comorbidity in cancer survivors and other proofs that cancer survivors

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are at higher risks of other cancers and chronic diseases, interventional programs to make aware of theses group regarding their health problems are mostly essential.

Since the process of cancer treatment is complicated and the outcome of the cure is ambiguous, it is critical for a person to pursue health promotion lifestyles.

It is shown that undertaking health behaviors after a cancer detection will be beneficial effort to strengthen the sense of control regarding their health in individuals (Meraviglia and Stuifbergen, 2011). Studies have shown that influential factors such as health locus of control, depression, self-efficacy, perceived health status and social support are affecting on health-promoting lifestyles. Health locus of control (HLC) has been investigated in relation to health attitudes and health behaviors (Falzon et al., 2012; Berglund et al., 2014; Gururatana et al., 2014; Iskandarsyah et al., 2014). For breast cancer survivors, achieve to a supportive surroundings can avoid psychological complications and sustain her well being (Lagana et al., 2014; Nazik et al., 2014). Depression has recognized as a negative predisposing variable for cancer, such as breast cancer (Sahin et al., 2013; Sotelo et al., 2014). When individuals are self assessed as having high self-efficacy, they will energetically cooperate in health behaviors or lifestyles and then they empower to perform healthy behaviors (Hanson, 2014). Low level of perceived health has been related with various physical symptoms such as tiredness, headaches, musculoskeletal problems, mastitis, perineal pain, dysuria, stomachaches, and nausea (Schytt et al., 2005). So exploring the influential factors and variables on health-promoting behaviors, empower the researchers to give authority in following a health-promoting lifestyle.

The research questions in this study include (1) what are the relationships among demographic and illness-related characteristics, IHLC, depression, social support, self-efficacy, perceived health status, of health behaviors, and health-promoting behaviors? (2) what are the predictors of health promoting lifestyles in breast cancer survivors?

Materials and Methods

This research used a predictive design to examine relationships among IHLC, depression, social support, self-efficacy, perceived health status, and health-promoting behaviors in Iranian breast cancer survivors and to identify factors influencing health-promoting behaviors. Included in this study were Iranian breast cancer survivors who had finished treatment by surgery, chemotherapy, and/or radiation but not necessarily hormone therapy.

Data collection procedures

Initially, the researchers approached the leaders of oncology wards, explaining the purpose of the study and asking for a list of potential subjects with telephone numbers to contact. The leaders then recruited the potential subjects who were willing to participate in the study on a voluntary basis. A list of 391 potential subjects was obtained by leaders of oncology wards. The potential subjects, then, were approached by the researchers by

phone to make sure whether they wanted to participate in the study. Among 391 potential subjects, 346 answered the phone and 45 did not. Among the 346 subjects who answered the phone, 18 refused to participate, explaining that they were too busy or without providing any explanation. Once questionnaires were sent to the 328 subjects who agreed to participate voluntarily in the study, 283 subjects returned the questionnaires. Twenty one questionnaires were not complete enough for the analysis; thus, in the end 262 questionnaires were used.

Ethical considerations

Before collecting the data, the proposal for the study was approved by the Institutional Review Board where the study was carried out. All potential subjects were informed about: the purpose of the study; what being in the study would involve; anonymity and confidentiality issues; and, the right to withdraw from the study, at any time, without repercussions. In addition, each potential subject was given the primary investigator's (PI) contact information and encouraged to contact her if they had questions or concerns. After the verbal consent was obtained initially by phone, the written consent form and the questionnaires with a stamped envelope to return the mailed questionnaire were mailed.

Internal health locus of control

The C form of the Multidimensional Health Locus of Control (MHLC) scales (Wallston et al., 1994) was used to assess participants' feelings of control over their illness or disease. It was designed as a generic medical condition specific measurement of locus of control that could easily be adapted for use with any medical condition. It consists of one Internal scale and three External scales: (1) chance, (2) doctors, and (3) powerful others. In this study, the word 'condition' was substituted with 'cancer' for the patients. This instrument consists of 18 items using a 6-point Likert format, ranging from 1='strongly disagree' to 6='strongly agree'. Alpha reliabilities of the MHLC subscales ranged from 0.673 to 0.767 when it was developed (Wallston et al., 1978). When it was used in the Iranian version, the alpha reliabilities of each subscale were 0.61 for IHLC, 0.68 for PHLC, and 0.8 for CHLC (Hashemian et al., JPMA). The scores of IHLC were used for the analysis. The higher the IHLC score, the more likely it is that an individual believes he/she has control over his/her health.

Social support

To measure social support, the Personal Resource Questionnaire II (PRQ-II) developed by Weinert (Weinert, 1988) was used. It is a self administered norm-referenced instrument measuring the social support perceived by subjects. It has 25 items with three dimensions. It is a four point scale with total scores ranging from 25 to 100, where higher scores indicate better social support. In the study of Baheiraei et al (2012) in Iran, the Cronbach's α and the intra-class correlation coefficient (ICC) were established 0.84 and 0.9, respectively (Baheiraei et al., 2012).

Health-promoting lifestyle

The Health-Promoting Lifestyle Profile II developed

by Walker et al. (1987) was used to measure health-promoting lifestyle. It is an instrument with a 52-item summated behavior rating scale. It employs a four-point response format to measure frequency of self reported health-promoting behaviors with 1 = never, 2=sometimes, 3 =often, and 4=routinely. It consists of the domains of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management (Walker et al., 1987). Thus, health responsibility has 8 items, physical activity 8, nutrition 9, spiritual growth 9, interpersonal relations 8, and stress management 8. The total scores of the HPLP II range from 50 to 200 with a higher score indicating a better health-promoting lifestyle. For this study, the Health-Promoting Lifestyle Profile II was translated into Persian using to the following steps: (i) the original English instrument was translated into Iranian by the researcher, (ii) the Iranian version was translated back into English by a bilingual professional person who had not seen the original English version and (iii) the three versions were then compared. Unclear or incorrect translations were discussed between the researcher and the professional translator until agreement was obtained. Thus, the translation process followed the recommendations provided by the California Academic Press and according (White and Elander, 1992). For present study alpha reliability coefficient for the total scale is 0.89. The alpha coefficients for the subscales range from 0.699 to 0.898.

Depression

The Center for Epidemiologic Studies-Depression (CES-D) scale is a self-report scale designed to measure depressive symptomatology in the general population (Radloff, 1977) and is commonly used to measure depression in cancer patients. Hann et al. (1999) validated its reliability and validity for women with breast cancer in particular (Hann et al., 1999). To measure the degree of depression for this study, the persian version of the CES-D scale translated and validated by researcher was used. It consists of 20 items with a four point scale, with higher scores indicating more depression. Item numbers 4, 8, 12, 16 were coded in reverse because they were positive sentences. The total score of depression ranged from 0 at the lowest to 60 at the highest. In the study of Chon et al. (2001), the alpha reliability coefficient was 0.91 (Chon et al., 2001). For this study, it was 0.83. In this study scores higher than 15 on the CES-D are considered indicative of clinical depression as Chon et al. (2001) suggested (Chon et al., 2001).

Perceived health status

The women's subjective rating of their own health condition by a one-item Short Form Health Survey with an 11-point numerical rating scale developed by Stewart et al. (1998) was measured (Stewart et al., 1998) . Scores ranged from zero ("I do not feel at all healthy") to 10 ("I feel that I could not be healthier"). Higher scores indicate higher levels of subjective health status. An 11-point single item numerical rating scale is widely used to measure subjective feeling (Kim, 2009) and the validity of this subjective rating scale was reported in a previous

study in Korea (Son et al.,2009). Before using this scale, three professors of women's health nursing confirmed the appropriateness and applicability of the scale for breast cancer survivors.

Perceived self-efficacy

Perceived self-efficacy was measured by way of the 10-item General Self Efficacy Scale (GSES). The items were rated on a 4-point Likert-type scale ranging from 1="not at all true" to 4="exactly true." An example of an item on the GSES was "I can manage everything in my life." A total score, which could range from 10 to 40, was calculated by summing response scores across all items. A higher score indicated greater perceived self-efficacy. The perceived self-efficacy questionnaire was found to have a Cronbach's alpha coefficient of 0.878 (Bandura, 1997).

Data analysis

The Statistical Package for the Social Sciences (SPSS, SPSS Inc., Chicago, IL, U.S.A.), release version 10.0, was used for data analysis. First descriptive statistics was applied to analyze demographic and illness related factors of the samples as well as the variables IHLC, depression, social support, self efficacy and health promoting behaviour. Then one way ANOVA and t-tests were used to investigate differences in health promoting lifestyle based on the demographic and illness related factors. Pearson's correlation was used to determine associations among IHLC, depression, self efficacy social support, and health promoting lifestyle. At the end stepwise multiple regression analysis was used applying IHLC, depression, self efficacy and social support, to identify the significant predictors which committed to health-promoting lifestyles in Iranian breast cancer survivors and to identify the relative contribution of each variable.

Results

Demographic factors

The demographic factors of the sample are pictured in Table 1. The mean age of the samples was 47.9 (SD=11.4), ranging from 25-72. Most of them (n=239) were married and 59% had attended high school and above, and about 71% of the sample were not employed. Regarding financial situation only 20% of the sample demonstrated that they had no money problem. Most of them were living in a city. A summary of the demographic characteristics of the participants is presented in Table 1. When differences of health-promoting behaviors referred to demographic characteristics were investigated, no significant differences were shown.

Illness linked factors

Regarding illness-related characteristics, almost 77% of the samples had equal or less than stage II of breast cancer when they were detected (Table 2). Most of the samples (n=228) had encountered mastectomy. Most of them (n=231) had earned chemotherapy. Investigating differences of health-promoting behaviors referring to illness-related factors, no significant differences were revealed exempting for enduring chemotherapy (t= -3.01,

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Table 1. Health Promotion Behavior by Demographic Characteristics N=(262)

Characteristics	n(%)	Mean±SD	T or F	p
Age				
<40	55(21)	143.04±19.87	1.95	0.362
40-60	170(65)	135.98±32.75		
>60	37(14)	140.34±21.89		
Range (25-72)				
Mean±SD (47.9±11.4)				
Marital status				
Single	23(9)	141.46±12.76	0.55	0.622
Married	239(91)	140.23±32.45		
Education				
Iilitrated	34(13)	136.45±42.12	0.59	0.532
Primary	73(28)	137.21±23.62		
High school	105(40)	139.34 ±61.12		
Above college	50(19)	140.32±11.02		
Employment				
Housewife	186(71)	139.23±61.12	0.45	0.399
Employed	34(13)	136.54±73.18		
Retired	42(16)	140.65±12.97		
Financial situation				
No money problem	39(20)	140.45 ± 21.46	0.95	0.331
Fair	147(51)	136.23 ± 51.08		
Not enough	76(29)	135.64 ±16.90		
Area of residence				
Big city	126(48)	140.56±13.56	0.65	0.501
Small city	113(43)	141.23±37.35		
Urban	23(9)	138.25±45.12		
Number of Children				
0-1	42(16)	139.21±43.72	0.74	0.603
2	97(37)	140.53±23.50		
3	57(22)	136.21±03.22		
≥4	66(25)	138.01±63.41		

Table 2. Health Promotion Behaviors by Illness Related Characteristics (N=262)

Characteristics	n(%)	Mean ± SD	T or F
Stage of disease at diagnosis			
0	5(2)	139.26±10.36	1.24
1	16(6)	138.13±72.05	
2	181(69)	139.40±12.80	
3	44(17)	137.31±43.61	
Unknown	16(6)	136.34 ±51.12	
Type of surgery			
Mastectomy	228(87)	140.62±41.32	1.32
Lumpectomy	26(10)	139.63±51.18	
Mastectomy and Lumpectomy	8(3)	136.24±53.70	
Chemotherapy			
Yes	231(88)	141.95±16.37	-3.01*
No	31(12)	130.05 ±11.06	
Radiotherapy			
Yes	152(58)	139.46±22.76	0.65
No	110(42)	138.73±92.45	
Hormone therapy			
Yes	149(57)	139.35±46.13	0.55
No	113(43)	137.51±73.42	
Years since diagnosis			
<1 yr	52(20)	138.34 ±61.12	0.75
1-3 yrs	105(40)	140.72±18.06	
3-5 yrs	60(23)	138.83±69.12	
≥5 yrs	45(17)	136.54±73.18	
Family history of breast cancer			
yes	65(25)	139.55±16.77	0.85
No	197(75)	140.35 ±51.46	
Other disease			
Yes	52(20)	138.65±16.07	0.75
No	210(80)	140.25±31.16	

*$p < 0.05$

Table 3. Scores for IHLC, Depression, Social Support, and Health-Promoting Lifestyle (N=262

Variable (actual range of scors)	Mean±SD
IHLC (6-36)	25.16±4.24
Perceived health status (4-8)	6.58±1.84
Depression(0-57)	16.78±6.54
Social support(37-100)	80.34±11.42
Self efficacy(13-40)	29.11 ±6.97
Health-promoting lifestyle(71-190)	139.87±66.21
Health responsibility(9-31)	21.20±11.32
Physical activity(8-32)	19.32±22.31
Nutrition(15-35)	25.21±15.35
Spiritual growth(12-36)	28.11±13.65
Interpersonal relations(8-32)	23.22±15.35
Stress management(11-32)	20.30±17.22

p=0.030) (Table 2). Other pertinent illness-related factors of the samples are also illustrated in Table 2.

Scores for social support, self efficacy, depression, IHLC, and health-promoting lifestyle

Table 3 shows that the mean score of IHLC was 25.16 (SD=4.24). The mean score for depression was16.78 (SD=6.54). The number of subjects who had scores higher than 15, the cutoff point for clinical depression, was 146 (55.9%). The mean score for social support, health-promoting lifestyle were 80.34 (SD=11.42) and 139.87 (SD=66.21) respectively. Among the six domains of a health promoting lifestyle, spiritual growth had the highest score (28.11±13.65), while physical activity showed the lowest (19.32±22.31).

Relationships among IHLC, depression, self efficacy, social support, and health promoting lifestyle

Table 4 shows correlations among IHLC, depression, self efficacy, social support and a health-promoting lifestyle. Significant negative relationships were identified between IHLC and depression (r=-0.1968, p<0.05), depression and social support (r=-0.621, p<0.001), perceived health status and health-promoting lifestyle (-0. 1732, p<0.01) and depression and health-promoting lifestyle (r=-0.1968, p<0.001). Significant positive relationships were detected between IHLC and health-promoting lifestyle (r=0.1301, p<0.05), and social support and health-promoting lifestyle (r=0.6450, p<0.001).

Predictors of health promoting lifestyles for breast cancer survivors

Results of stepwise multiple regression analysis demonstrated that 39.8% of the variance (p<0.001) in health-promoting lifestyles was elucidated by a integration

Table 5. Stepwise Multiple Regression Analysis of Breast Cancer Survivors' Health promoting Lifestyles

Variables	β	PartialR²	Model R² with variable add
Social support	0.4921**	0.309	0.309
Self-efficacy	0.698*	0.031	0.34
Chemotherapy	0.201*	0.025	0.365
Depression	-0.1602*	0.016	0.381
Perceived health status	-0.1548*	0.014	0.395
IHLC	0.0112*	0.003	0.398

*P<0.05, **p<0.001

of six predictors, social support, self-efficacy, depression, IHLC, perceived health status, and chemotherapy (Table 4). The strongest predictor was social support (R²=0.309), followed by self-efficacy, chemotherapy, perceived depression and IHLC (Table 4). This revealed that the breast cancer survivors had a higher prevalence of health-promoting lifestyles if they experienced a stronger

Discussion

To investigate influential factors on health-promoting behaviors, using a correlational, cross-sectional research design with convenience sampling in 262 Iranian breast cancer survivors, we realized that the combined effects on health-promoting lifestyles, as the dependent variable, from a conjunction of five predictors, IHLC, depression, self efficacy social support, and chemotherapy as independent variables, were higher than the effect of any single predictor by itself. All five variables elucidated 39.8% of the variance in health promoting lifestyles in breast cancer survivors. This shows that Iranian breast cancer survivors were more possibly to fallow a health-promoting lifestyle if they had experience strong social support, had higher self efficacy, had chemotherapy, had IHLC and had lower depression. In summary, the five predictors of breast cancer survivors' health promoting lifestyles established in this research could be emphasize sources on consultation needs for individuals with breast cancer. The variance of this study is higher than the work of Yi and Kim (2013) and Frank-Stromborg et al. (1990), which reported that 34.98 and 23.52 percent variance in health-promoting lifestyle among respectively.

Consistent with the study of Yi and Kim (2013), Social support, was the most important predictor of health-promoting lifestyle in this study. It seems the admiring, supporting and appreciations the women, in this study, experienced from their family members and friends may

Table 4. Correlation among IHLC, Depression, Self Efficacy, Social Support, and Health-Promoting Lifestyle (N =262)

Variable	Health-promoting lifestyle	Social support	Self-efficacy	Depression	IHLC
Health-promoting lifestyle	1				
Social support	0.6450**	1			
Self efficacy	0.7121*	0.0401	1		
Depression	-0.1968**	-0.621**	-0.5725*	1	
Perceived health status	-0.1732*	-0.087	0.0561	0.0437	
IHLC	0.1301*	0.0562	0.1437*	-0.1165*	1

have improved their encouragement for better life style. The results of the current study are similar with other studies in other women which revealed powerful relation between social support and health-promoting behaviors (Lin et al., 2009; Thaewpia et al., 2012). The results of the study show that sociocultural construction of Iranian families made people be responsible and awareness of their families and introduce a sense of belonging, depending, intimacy, and social unity. So with the result of this study, we can contemplate that social support is an important truth of conductive or in a society in which individuals interactions are more dependent close on each other. As a result, Iranian cancer survivors might have been hugely influenced by the support of their family and friends in adjustment with health life style and fallowing healthy behavior. Consequently, in Iran having concentration on family members and communities as well as cancer survivors themselves is essential to establish healthy life styles so it should be the cornerstone of planning the program for health care makers.

The findings of this study found that women with a higher self efficacy were revealed to empower for perusing health promoting lifestyles. This is consistent with the results of other studies on cancer survivors (Pongthavornkamol et al., 2014), which found self efficacy as a predisposing factor. In this line Pender's Health Promotion Model (Pender and Murdaugh, 2006) demonstrates that experienced self-efficacy affects action by influencing perceived barriers to health heightening behaviors and statue of responsibility for fallowing a program in practice. People with high perceived self-efficacy have been realized to have assurance in their ability to implement special behaviors (Bandura, 1997). In a result, people who have higher self-efficacy are mostly to acquire knowledge to convert high risk behaviors to healthy life style., and peruse appropriate and proper self care once the symptoms are revealed comparing those with lower self efficacy (Korpershoek and Bijl, 2011). Studies in pregnant and obese women found that self efficacy as a strong predictor in health-promoting behaviors (Armitage et al., 2014; Thaewpia et al., 2012). In consequence, the results indicate that for promoting health-promoting life style in breast cancer survivors the consultations should be focused to receiving the self efficacy in health behaviors.

The current study explored depression as a negative predisposing factor. It demonstrates that depression must be assessed before fulfilling health-promoting interventional programs. This is consistent with the results of other studies on cancer survivors (Yi and Kim, 2013).

The present study showed that perceived health status had an inverse effect on health promoting lifestyles in breast cancer survivors. In consistent with our study, the study of Rottenberge et al (2014) showed poor self-rated health was associated with increased risk of death in cancer survivors. Christian et al. (2011) also demonstrated that poorer self-rated health was associated with both poorer sleep and lower physical activity. Thus in providing intervention programs a picture of health status should be clarify for patients to show them a real view of their health situation for encouraging them to follow the healthy behaviors.

In this study IHLC describes ignorable amount of variance which shows that IHLC to be a small portion of the prediction of a health-promoting behavior. Swinney et al. (2002) found similar results in their study with African American people with cancer.. Iskandarsyah et al. (2014) found that of women with breast cancer incline to attach their complications and illness to external sources of control, such as: physicians, significant others, chance and God. One probable reason for these phenomena is associated to the humor of cancer and its difficulties in treatment process. The belief of unmanageable nature of cancer and the ambiguity and unpredictability of its treatment might cause negative attitudes in patients regarding personal control to overcome their illness. This circumstance may lead to an expanded attitudes in external forces among individuals and low motivation and encouragement to improve health behavior.

The mean score for a health-promoting lifestyle was 139.87 (SD =66.21) in the possible rage of 50-200. This is similar to that (Mean=135.93, SD =22.53) of breast cancer survivors in Korea (Yi and Kim, 2013). In the study of Bahar et al (2014), the score was inconsiderably higher comparing with middle-aged healthy women (Mean=2.5±0.36).

It could be speculate that people attempt to adjust a higher health promoting lifestyle after a cancer detection (Mann et al., 2013). When each domain of health-promoting behaviors was compared, the score of spiritual growth was the highest among the six domains in the current study. This is consistent with the work of Frank-Stromborg et al. (1990) in the U.S in breast cancer survivors, which indicated the score of self-actualization was the highest. On the other hand, the score of physical activity was the lowest in the present study, similar to the works of Frank-Stromborg et al. (1990) which showed that the exercise was the lowest. This suggests that a feasible approach would be to promote light intensity activities as a way of ameliorating a sedentary life-style. Thus exercise should be emphasized in developing interventions for a healthy lifestyle, although more studies are required to identify which domain is in dominant and main role to health promotion.

The mean score for depression was 16.78 (SD=6.54), and a considerable amount (55.9%) of the sample emphasized depressive symptoms at a status related with clinically serious category of depression (=15 on the CES-D) in this study. when compared with Korean breast cancer survivors, these are noticable (Yoo et al., 2009; Yi and Kim, 2013). So oncology professionals must consider specialized observation to determine depression symptoms in Iranian breast cancer survivors, and to try to help them to overcome to it before fulfilling interventional projects for a healthy lifestyle.

The mean score for IHLC was 25.16 (SD=4.24) with a possible range from 6 to 36 in this study. This is less than for those of individuals in Korea 29.62 (SD=4.96) (Yi and Kim, 2013). A review study about religion and adjustment with serious medical illness demonstrated that when people couture serious illness they bend to believe in and depend on religious belief which may decrease the feel of helplessness and cultivate hope and faithfulness

100.0

75.0

50.0

25.0

0

6.3

56.3

31.3

Newly diagnosed without treatment

(Koenig et al., 2001). The results of this study should be emphasized for cancer consultation to create motivation in breast cancer survivors to gain self-confidence and ability to cope with psychological and social consequences of their illness and become self assured. But, more research is needed in this subject to evaluate if the amount of internality is considered with kinds of cancer, culture, believes or other factors.

Because of the samples homogeneousity in this study demographic factors were recognized not to be as affecting factors on health promoting lifestyle. The approach and conception of "health threat seriousness" in the health belief model which promote conformity and complaisance with health-promoting lifestyle (Rosenstock et al., 1988). So chemotherapy as a distasteful and harrowing experience is imperative in illustrate and interpret health-promoting behaviors in cancer survivors in this study.

Regarding correlation between social support and depression results clarified that stronger social support experiencing produced less depressive symptoms (r=-0.621, p<0.001). The result of this study is similar to the work of Shaheen et al.(2014) which found that social support was associated with fewer depressive symptoms in the people with cancer. Thus, for making policies to change lifestyle for breast cancer survivors these two items should be contemplated as the basic variable of health promotion interventions

As a suggestion further studies are necessary to determine whether more variance is contributed by additional variables, such as hardiness, resiliency, self esteem, hopelessness, loneliness, peer self efficacy, poor marital support may also valuable factors in explaining health-promoting behaviors for cancer survivors.

This has study has limitations in generalization of the results because of applying non-random selection, small sample size and only including women in the sample. In spite of these limitations, the results are advantageous and practical for nurses to produce appropriate projects to collaborate and assist women with recently diagnosed breast cancer to involve in healthy lifestyle and adopt adequately with their cancer diagnosis and treatment.

With regard to conclusions and implications for nursing practice, the results achieved from this study have imperative and influential indication for health care professionals when recommending health promotion behaviors for Iranian women with breast cancer. The most essential finding was the influence of social support on the health-promoting behaviors of Iranian breast cancer survivors. Interventional programs regarding health promotion life styles such as stress relaxation, appropriate physical activities and other projects could carry out in group sessions to foster social support. Since this study did not concentrate on interventions, future studies need to highlight on the expedition of the kinds of nursing care and other health services that may be most impressing in promoting healthy behaviors in breast cancer survivors.

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References

Aleman BM, Moser EC, Nuver J, et al (2014). Cardiovascular disease after cancer therapy. *Eur J Cancer Supplements*, **12**, 18-28.

Armitage CJ, Wright CL, Parfitt G, et al (2014). Self-efficacy for temptations is a better predictor of weight loss than motivation and global self-efficacy: Evidence from two prospective studies among overweight/obese women at high risk of breast cancer. *Patient Education Counseling*, **95**, 254-8.

Ashing K, Rosales M, Lai L, et al (2014). Occurrence of comorbidities among African-American and Latina breast cancer survivors. *J Cancer Survivorship*, **8**, 312-8.

Bahar Z, Beser A, Ozbıcakcı S, et al (2014). Health promotion behaviors of Turkish women. *Dokuz Eylul Universitesi HemsirelikYuksekokulu E Dergisi*, **6**.

Baheiraei A, Mirghafourvand M, Mohammadi E, et al (2012). Social support for women of reproductive age and its predictors: a population-based study. *BMC Women's Health*, **12**, 30.

Bandura A (1997). Self-efficacy: The exercise of control. New York (NY): W.H. Freeman.

Berglund E, Lytsy P, Westerling R (2014). The influence of locus of control on self-rated health in context of chronic disease: a structural equation modeling approach in a cross sectional study. *BMC Public Health*, **14**, 492.

Chon KK, Choi SC, Uang BC (2001). Integrated adaptation of CES-D in Korea. *Korean J Health Psychol*, **6**, 59-76.

Christian LM, Glaser R, Porter K, et al (2011). Poorer self-rated health is associated with elevated inflammatory markers among older adults. *Psychoneuroendocrinol*, **36**, 1495-504.

Fallowfield L, Jenkins V (2015). Psychosocial/Survivorship issues in breast cancer: are we doing better? *J Natl Cancer Inst*, **107**, 335.

Falzon C, Chalabaev A, Schuft L, et al (2012). Beliefs about physical activity in sedentary cancer patients: an in-depth interview study in France. *Asian Pac J Cancer Prev*, **13**, 6033-8.

Frank-Stromborg M, Pender NJ, Walker SN, et al (1990). Determinants of health-promoting lifestyle in ambulatory cancer patients. *Social Science Med*, **31**, 1159-68.

Gururatana O, Baker SR, Robinson PG (2014). Determinants of children's oral-health-related quality of life over time. *Community Dentistry Oral Epidemiol*, **42**, 206-15.

Hann D, Winter K, Jacobsen P (1999). Measurement of depressive symptoms in cancer patients: evaluation of the Center for Epidemiological Studies Depression Scale (CES-D). *Journal Psychosomatic Res*, **46**, 437-43.

Hashemian M, Aminshokravi F, Hidarnia A, et al (JPMA). Farsi version of the Multidimensional Health Locus of Control and God Locus of Health Control Scales: validity and reliability study among Iranian women with a family history of breast cancer. *JPMA*, **64**, 1057.

Hauken MA, Holsen I, Fismen E, et al (2015). Working toward a good life as a cancer survivor: a longitudinal study on positive health outcomes of a rehabilitation program for young adult cancer survivors. *Cancer Nursing*, **38**, 3.

Hellquist B, Duffy SW, Abdsaleh S, et al (2011). Effectiveness of population-based service screening with mammography for women ages 40 to 49 years. *Cancer J*, **117**, 714- 22.

Iskandarsyah A, de Klerk C, Suardi DR, et al (2014). Health locus of control in Indonesian women with breast cancer:

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a comparison with healthy women. *Asian Pac J Cancer Prev*, **15**, 9191.

Koenig HG, Larson DB, Larson SS (2001). Religion and coping with serious medical illness. *Ann Pharmacother*, **35**, 352-9.

Korpershoek C, Bijl JV (2011). Selfefficacy and its influence on recovery of patients with stroke: A systematic review. *J Adv Nurs*, **67**, 1876-94.

Lagana L, Fobair P, Spiegel D (2014). Targeting the psychosexual challenges faced by couples with breast cancer: can couples group psychotherapy help. *J Women's Health Care*, **3**, 2167-0420.

Lin Y-H, Tsai E-M, Chan T-F, et al (2009). Health Promoting Lifestyles and Related Factors in Pregnant Women. *Chang Gung*, **32**, 650-61.

Mann T, de Ridder D, Fujita K (2013). Self-regulation of health behavior: Social psychological approaches to goal setting and goal striving. *Health Psychol*, **32**, 487.

Meraviglia M, Stuifbergen A (2011). Health promoting behaviors of low income cancer survivors. *Clin Nurse Specialist*, **25**, 118-24.

Mishra SI, Scherer RW, Snyder C, et al (2015). The effectiveness of exercise interventions for improving health-related quality of life from diagnosis through active cancer treatment. oncology nursing forum. *Onc Nurs Society*, 33-53.

Moon SH, Lee DT, Son Y (2013). Adherence to health-related lifestyle behavior recommendations and association with quality of life among cancer survivors and age-matched controls in Korea. *Asian Pac J Cancer Prev*, **14**, 2949-54.

Mousavi SM, Gouya MM, Ramazani R, et al (2009). Cancer incidence and mortality in Iran. *Ann Oncol*, **20**, 556-63.

Naughton MJ, Weaver KE (2014). Physical and mental health among cancer survivors. Should I get screened?, **75**, 283-6.

Nazik E, Nazik H, Ozdemir F, et al (2014). Social support and quality of life in Turkish patients with gynecologic cancer. *Asian Pac J Cancer Prev*, **15**, 3081-6.

Pender NJ, Murdaugh CL (2006). Health promotion in nursing practice. 5th ed. Upper Saddle River (NJ): Pearson Education.

Phillips SM, McAuley E (2015). Associations between self-reported post-diagnosis physical activity changes, body weight changes, and psychosocial well-being in breast cancer survivors. *Supportive Care Cancer*, **23**, 159-67.

Pongthavornkamol K, Wanavarodom P, Sareeso P, et al (2014). Improving health-promoting behaviors and quality of life through breast cancer support groups for Thai women. *Pacific Rim Int J Nurs Res*, **18**, 125-37.

Radloff LS (1977). The CES-D scale a self-report depression scale for research in the general population. *Appl Psychol Measurement*, **1**, 385-401.

Rızalar S, Altay B (2010). Early diagnosis practices for women with breast cancer. *J Fırat Hlth Services*, **5**, 73-87.

Rosenstock IM, Strecher VJ, Becker MH (1988). Social learning theory and the health belief model. *Health Education Q*, **15**, 175-83.

Rottenberg Y, Litwin H, Manor O, et al (2014). Prediagnostic self-assessed health and extent of social networks predict survival in older individuals with cancer: A population based cohort study. *J Geriatric Oncol*, **5**, 400-7.

Rugbjerg K, Mellemkjaer L, Boice JD, et al (2014). Cardiovascular disease in survivors of adolescent and young adult cancer: a Danish cohort study, 1943-2009. *J Natl Cancer Inst*, **106**, 110.

Şahin ZA, Tan M, Polat H (2013). Hopelessness, depression and social support with end of life Turkish cancer patients. *Asian Pac J Cancer Prev*, **14**, 2823-8.

Schiavon CC, Vieira FG, Ceccatto V, et al (2015). Nutrition Education Intervention for Women With Breast Cancer: effect on nutritional factors and oxidative stress. *J Nutrition Education Behavior*, **47**, 2-9.

Schytt E, Lindmark G, Waldenstrom U (2005). Physical symptoms after childbirth: prevalence and associations with self-rated health. *Br J Obstet Gynaecol*, **112**, 210-7.

Shaheen Al Ahwal M, Al Zaben F, Khalifa DA, et al (2014). Depression in patients with colorectal cancer in Saudi Arabia. *Psycho-Oncol*, (Epub ahead of print).

Sotelo JL, Musselman D, Nemeroff C (2014). The biology of depression in cancer and the relationship between depression and cancer progression. *Int Review Psychiatry*, **26**, 16-30.

Stewart S, Pearson S, Luke CG, et al (1998). Effects of a homebased intervention on unplanned readmissions and out-of hospital deaths. *J Am Geriatr Soc*, **46**, 174-80.

Swinney JE (2002). African Americans with cancer: the relationships among self-esteem, locus of control, and health perception. *Res Nursing Health*, **25**, 371-82.

Thaewpia S, Clark MJ, Howland LC, et al (2012). Factors Predicting Health Promoting Behaviors among Older Pregnant Thais. *Pacific Rim Int J Nurs Res*, **16**, 113-23.

Travier N, Fonseca-Nunes A, Javierre C, et al (2014). Effect of a diet and physical activity intervention on body weight and nutritional patterns in overweight and obese breast cancer survivors. *Medical Oncol*, **31**, 1-11.

Walker SN, Sechrist KR, Pender NJ (1987). The health-promoting lifestyle profile: development and psychometric characteristics. *Nursing Res*, **36**, 76-81.

Wallston KA, Stein MJ, Smith CA (1994). Form C of the MHLC scales: a condition-specific measure of locus of control. *J Personality Assessment*, **63**, 534-53.

Wallston KA, Wallston BS, DeVellis R (1978). Development of the multidimensional health locus of control (MHLC) scales. *Health Educ Behavior*, **6**, 160-70.

Weinert C (1988). Measuring social support: Revision and further development of the Personal Resource Questionnaire. *Measurement Nursing Outcomes*, **1**, 309-27.

White M, Elander G (1992). Translation of an instrument. Scandinavian *J Caring Sci*, **6**, 161-4.

World Health Organization (2014). Breast cancer:prevention and control,WHO 2014.Available at:http://www.who.int/cancer/detection/breastcancer/en/index1.html. [Last accessed 2013 January 3].

Yi M, Kim J (2013). Factors influencing health-promoting behaviors in Korean breast cancer survivors. *Eur J Oncol Nurs*, **17**, 138-45.

Yoo MS, Lee H, Yoon JA (2009). Effects of a cognitive-behavioral nursing intervention on anxiety and depression in women with breast cancer undergoing radiotherapy. *J Korean Acad Nurs*, **39**, 157-65.