Original Article

Which Domains of Social Support Better Predict Quality of Life of Women with Breast Cancer? A Cross-Sectional Study

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ABSTRACT

Objectives: The study aimed at investigating the specific role of social support types (SSTs) on quality of life (QoL) and its domains of women with breast cancer in Iran. **Methods:** In this cross-sectional study, a number of 223 women with breast cancer visiting three cancer centers of Tehran, Iran, participated from October 2014 to May 2015. Medical Outcome Study-Social Support Scale and Functional Assessment of Cancer Therapy-Breast Cancer were used for data gathering. Backward multiple regression was utilized, adjusted by age, education, and family size. **Results:** The study indicated positive correlations between all SSTs and QoL domains, whereas only positive social interaction (PSI) showed a significant association with physical well-being. PSI showed the only predictive performance in terms of all QoL outcomes, beyond the covariates. **Conclusions:** The study revealed the PSI as the most influential support type to enhance all domains of QoL of women with breast cancer.

Key words: Breast cancer, positive social interaction, quality of life, social support

Introduction

Cancer is one of the most common causes of mortality worldwide, leading to 8.8 million deaths up to 2015.[1] Studies have indicated that this trend will increase by 70% in the next two decades.[2] Breast cancer is the most prevalent cancer among women, which affected 2.5 million cases by 2015 worldwide.[3] According to the World Health Organization (WHO), the global mortality rate of breast cancer was 570,000 cases in 2015.[4] Among the total mortality rate of breast cancer in 2012, 44% of the cases were Asian, 9% were from North America, and 12% were from African countries.[5] In Asian countries, 639,824 cases were diagnosed with breast cancer in 2012.[6] In Iran, 4815

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women were also diagnosed with breast cancer from 1991 to 2014.[7] Some studies estimated the 1-, 2-, 3-, 10-year survival rate of breast cancer to be 95.8, 82.4, 69.5, 58.1 in Iran,[8] and the age-standardized mortality rate dramatically increased for 1.40–3.52/100,000 during 1994–2004.[9] It seems that this growing trend will increase the breast cancer-related morbidity among Iranian women about three times by 2035.[10]

Various physical, psychological, and social problems can affect the patients' quality of life (QoL), from the diagnosis to the end of treatment.[11] As a multidimensional construct, QoL addresses the physical, emotional, social, and functional domains of the patient's well-being.[12] It can be a prognostic factor among cancer patients,[13] and is also an essential factor in survival prognosis among breast cancer patients following the relapse.[14] Due to the increasing rate of breast cancer in Iran,[10] it is essential to pay more attention to address how the patient's QoL can be improved.

Patients need to cope with the demands of their conditions to achieve a more favorable QoL. Studies have suggested that psychosocial factors can significantly affect the QoL of patients with breast cancer.[15] Among these factors, a social network can provide patients with an information resource, which may help them to surpass their difficulties more effectively. The offered supports are useful to deal with cancer complications, which are mainly due to physical illnesses.[16] Furthermore, social support may enhance the improvement of severe complications, including depression,[17] posttraumatic stress disorder,[18] and anxiety,[19] in patients with breast cancer.

Based on the Medical Outcome Survey Social Support Scale (MOS-SSS) developed by Sherbourne and Stewart,[20] social support among medically ill persons encompasses four dimensions, including emotional/informational support (EIS), tangible or material support (TS), positive social interaction (PSI), and affectionate support (AS). EIS evaluates the perception of having the people on whom the patients can count to share their problems and obtain relevant information that helps them to face their challenges. TS represents the perceived materialistic aids provided for the person, such as preparing meals, accompanying the patient to the medical center, and overcoming daily barriers. PSI reflects the existence of people, by whom the patients can establish pleasant relationships. Finally, AS evaluates the perception of having people who make the person feel significant and loveable by expressing emotions and affections. In general, the scale assesses to what extent the individual realizes that he/she is supported in confronting different situations through the course of a disease.[20]

The relationship between social support and QoL, especially in patients with breast cancer is well-established.[21,22] For example, it has shown that social support could moderate,[23] or mediate,[24] the effects of the patients' difficulties on QoL. Patients with stronger social support have higher resilience and better QoL.[24] However, few studies have highlighted the specific role of different subtypes of social support on QoL.[25] Sherbourne and Stewart emphasized that each social support type (SST) can contribute differently to the various aspects of patients' lives.[20] Moreover, only few studies have addressed the Sherbourne and Stewart's conceptualization of social support among Iranian women with breast cancer. In addition, studies in Iran rarely have utilized the Functional Assessment of Cancer Therapy-Breast Cancer (FACT-B) to evaluate patients' QoL, which addresses various domains of QoL in cancer patients, including breast cancer-specific symptoms.[26] Therefore, the current study aimed at investigating the effects of different SSTs on each domain of QoL among Iranian women with breast cancer.

Methods

Research design and sampling

In this cross-sectional study, 223 patients were recruited from three hospitals in three cities of Iran between October 2014 and May 2015. The current study was derived from a larger research project investigating the psychosocial contributors to the QoL of women with breast Cancer (PS-BrC2015). The following inclusion criteria were considered: (1) patients with female gender, (2) diagnosed with breast cancer at least for a month, (3) the age of 18 years and over, and (4) the ability to communicate in Persian. Patients with a history of major psychiatric disorders or metastatic brain tumors were not included in the study. Data were collected by face-to-face interview.

Instruments

Socio-demographic and clinical information included age, marital status, educational status, occupation, economic status, comorbidity, a history of breast cancer, the time since cancer diagnosis, and types of treatment.

Quality of life

FACT-B was employed to assess the QoL.[27] FACT-B includes 36 questions, which assess five domains, including physical well-being (PWB, seven items), social/family well-being (SWB, seven items), emotional well-being (EWB, six items), functional well-being (FWB, seven items), and the breast cancer subscale (BCS, nine items). Items are scored on a 5-point Likert scale (0 = not at all, 1 = a little bit, 2 = somewhat, 3 = quite a bit, and 4 = very much). PWB, FWB, SWB, and EWB were summed up to achieve the

FACT-General (FACT-G) score. Finally, the FACT-B total score was obtained by adding FACT-G and BCS scores. The higher score in subscales or total score indicates better well-being and QoL. Previous evaluations of the original, as well as the Persian version of FACT-B, indicated their appropriate reliability and validity.[28]

Social support

MOS-SSS developed by Sherbourne and Stewart was adopted to assess the perceived social support.[20] MOS-SSS consists of 19 items. Eighteen items compose four SSTs, including EIS (eight items), AS (three items), PSI (three items), and tangible/instrumental support (TS, four items) and the one remaining item is the total score. The items are scored on a 5-point Likert scale from 1 to 5. EIS includes the expression of positive affect, empathetic understanding, encouraging the expressions of feelings, and offering advice, information, guidance, or feedback. AS involves the expressions of love and affection. PSI is having someone else to do different social activities with. Finally, TS consists of the provision of material aid or behavioral assistance. Scores of both measures were calculated as the average score of the subscale items, transformed to a zero-to 100-item scale, in which higher scores indicate more support.[20] The validity and reliability of MOS-SSS were found acceptable among different samples and cultures,[29-32] and also in Iran.[33]

Ethical approval

All the ethical issues were considered based on the Helsinki Declaration. Informed consent was obtained from the patients prior to the study. They were informed that their participation in the survey was voluntary, and their treatment process would not be affected by withdrawal from the study. The study was approved by the Ethics Committee of Tehran University of Medical Sciences, Tehran, Iran (Approval No. TUMS.1394.6049).

Statistical analysis

Descriptive analysis was performed to assess the sample characteristics using frequency and percentage as well as the mean, standard deviation, skewness, and kurtosis. No missing data were identified. The normal distribution of data was evaluated based on the standardized skewness to be below 3.29 for a medium sample size ($n < 300$).[34] Pearson product-moment coefficient was used to assess the correlations between variables. A series of simple and multiple linear regressions were used to analyze the predicting role of SSTs as an independent variable on QoL outcomes as a dependent variable. The recommendations were followed to examine the assumptions of regression.[35] Some demographic and clinical variables were tested to find out whether they show any correlation with the outcomes, to be included as covariate variables. Therefore, age, education, and family size were included as covariates.

Results

Sample characteristics

Table 1 shows the descriptive statistics of the sample characteristics and study variables. The age range of participants was 19–75 years, with a mean of 47.10 ± 9.10 years. The majority of participants were married (81.2%), unemployed (83.4%), and lived in rural areas (87.9%). The mean time since cancer diagnosis was 18.28 ± 5.02 weeks.

Table 2 presents the results of the study variables. The mean TSS and SSTs were moderately high ranging from EIS (76.01 ± 26.05) to the AS (80.08 ± 24.06). The FACT-B

Table 1: Clinical and sociodemographic information of the study sample (n=223)

Characteristics	*n* (%)
Age (years), mean±SD	47.10±9.10
Education status	
Illiterate	21 (9.4)
Primary	51 (22.9)
Secondary	38 (17.0)
High school	80 (31.4)
University	43 (19.2)
Marital status	
Single	15 (6.7)
Married	181 (81.2)
Separated	3 (1.3)
Divorced	6 (2.7)
widowed	18 (8.1)
Employment status	
Employed	37 (16.6)
Unemployed	186 (83.4)
Place of living	
Urban	27 (12.1)
Rural	196 (87.9)
Household income level (n=178)	
Poor	93 (52.2)
Moderate	60 (37.3)
High	25 (14)
Family history of cancer	
Cancer	60 (26.9)
Other chronic disease	69 (30.9)
No family history	94 (42.2)
Treatment	
Chemotherapy	137 (61.4)
Radiotherapy	89 (39.9)
Mastectomy	156 (69.9)
Cancer peer group participation (yes)	44 (19.7)
Time since cancer diagnosis (weeks), mean±SD	18.28±15.02
Family size (n), mean±SD	4.42±2.06

Household income level calculated with sum of the patient's and husband's income. SD: Standard deviation

mean was obtained 90.32 ± 20.07. Because SWB and all social support variables violated the condition of normality, the two-step approach to achieve normally distributed data proposed by Templeton was applied.[36] This procedure uses the Factorial Rank Order in the first step, followed by reversing the new data into the normally distributed one. Following the procedure, all variables showed normal distribution (standardized skewness <3.29).

Paired correlations

As shown in Table 3, all SSTs were positively correlated with QoL outcome, except for EIS, AS, and TS with PWB ($P > 0.05$). The correlation coefficients ranged from $r = 0.16$ ($P < 0.05$) for TS and EWB to $r = 0.44$ ($P < 0.001$) for the PSI and SWB. TSS also showed no significant correlation with PWB ($P < 0.05$); however, it was correlated with the other QoL outcomes, ranging from $r = 0.43$ ($P < 0.001$) for SWB to $r = 0.19$ ($P < 0.01$) for BCS. The correlation between TSS and FACT-B was obtained $r = 0.35$ ($P < 0.001$).

Table 2: Descriptive statistics of study variables ($n=223$)

Variables	Minimum–maximum	Possible range	Mean±SD	Skewness (SE=0.16)	Kurtosis (SE=0.32)
PWB	0–28	0–28	17.01±6.71	−0.30	−0.77
SWB	0–28	0–28	18.71±4.89	−0.80	0.93
EWB	0–24	0–24	14.84±5.25	−0.44	−0.31
FWB	3–28	0–28	18.28±5.12	−0.52	−0.09
FACT-G	17–102	0–108	68.83±16.54	−0.52	−0.27
BCS	7–34	0–36	21.48±5.57	−0.08	−0.53
FACT-B	28–134	0–164	90.32±20.07	−0.37	−0.36
EIS†	0–100	0–100	76.01±26.05	−1.15	0.48
AS†	0–100	0–100	80.08±24.07	−1.23	0.86
TS†	0–100	0–100	80.07±24.71	−1.38	1.19
PSI†	0–100	0–100	78.03±25.95	−1.23	0.75
TSS†	0–100	0–100	77.70±23.70	−1.20	0.77

†The scores for social support are transformed into the scale of 0–100. SD: Standard deviation; SE: Standard error; PWB: Physical well-being; SWB: Social well-being; EWB: Emotional well-being; FWB: Functional well-being; FACT-G: Functional assessment cancer therapy-general; BCS: Breast cancer subscale; FACT-B: Functional assessment cancer therapy-breast cancer; EIS: Emotional-informational support; AS: Affectionate support; TS: Tangible support; PSI: Positive social interaction; TSS: Total social support

Table 3: Correlation matrix with Pearson's coefficients ($n=223$)

Variables	PWB	SWB	EWB	FWB	FACT-G	BCS	FACT-B
EIS	0.13	0.41***	0.21**	0.35***	0.35***	0.17**	0.34***
AS	0.13	0.43***	0.22**	0.35***	0.37***	0.19**	0.36***
TS	0.05	0.39***	0.16*	0.20**	0.25***	0.18**	0.25***
PSI	0.20**	0.44***	0.25***	0.38***	0.42***	0.21**	0.40***
TSS	0.12	0.43***	0.22**	0.34***	0.36***	0.19**	0.35***

*P<0.05 level; **P<0.001; ***P<0.0001 (two-tailed). EIS: Emotional-informational support; AS: Affectionate support; TS: Tangible support; PSI: Positive social interaction; TSS: Total social support; PWB: Physical well-being; SWB: Social well-being; EWB: Emotional well-being; FWB: Functional well-being; FACT-G: Functional assessment cancer therapy-general; BCS: Breast cancer subscale; FACT-B: Functional assessment cancer therapy-breast cancer

Regression results

The initial multiple regression using the Enter method to include all SSTs, adjusted by age, education, and family size, resulted in no significant results for SSTs. In addition, the variance inflation factors ranged from 2.88 to 5.24, suggesting multicollinearity between the variables, which was supported by their inter-correlations (ranging from $r = 0.72$ to 0.87, $P < 0.001$). Therefore, the backward method was employed as recommended by Field,[37] in which the conditional probability below 0.05 for inclusion and above 0.10 for exclusion was defined.

Table 4 shows the results of multiple regression analysis, indicating the effects of each SST on QoL outcomes. EIS could not contribute to the prediction of any QoL outcome ($P > 0.10$). Furthermore, AS only remained in the models predicting SWB ($\beta = 0.18$, $P > 0.05$) and FWB ($\beta = 0.20$, $P > 0.05$), in accordance with the regression inclusion/exclusion criteria ($P < 0.10$). In addition, TS reversely predicted PWB ($\beta = -0.18$, $P < 0.05$) and FWB ($\beta = -0.21$, $P < 0.05$), although it showed no significant zero-order correlation with PWB ($P > 0.05$; Table 3) and positive zero-order correlation with SWB ($P < 0.001$). However, PSI showed the best performance in predicting all QoL outcomes with positive effects on PWB ($\beta = 0.31$, $P < 0.01$), SWB ($\beta = 0.29$ $P < 0.01$), EWB ($\beta = 0.25$, $P < 0.001$), FWB ($\beta = 0.35$, $P < 0.01$), FACT-G ($\beta = 0.40$, $P < 0.001$), BCS ($\beta = 0.21$, $P < 0.01$), and FACT-B ($\beta = 0.39$, $P < 0.001$).

Discussion

The current study addressed the need to highlight the specific role of SSTs on different QoL domains in women with breast cancer. The results indicated the relatively high social support in patients. Some other studies in Iran also have shown that Iranian patients with cancer have received high levels of social support.[38] Patients with breast cancer in other countries also have received different levels of social support. For example, in Nepal, patients have received poor social support,[39] moderate levels in China,[24] whereas high levels of social support have been reported for African-American women with breast cancer in the USA.[40] The higher rates of social support provided for Iranian patients indicate a supportive environment, in which the patients may experience fewer complications. The moderate associations between SSTs and QoL outcomes indicated a clinical significance of 6% for TS to 19% for PSI in predicting patients' overall QoL.

Particular to the study findings, PSI showed the best performance in predicting QoL domains. Specifically, PSI was found with a better functional relationship with QoL domains, both in terms of zero-order correlations and

Table 4: Multiple regression predicting quality of life outcomes via social support types (n=223)

IV	DV													
	PWB		SWB		EWB		FWB		FACT-G		BCS		FACT-B	
	β	ΔR^2_{adj}	β	ΔR^2_{adj}	β	ΔR^2_{adj}	β	ΔR^2_{adj}	β	ΔR^2_{adj}	β	ΔR^2_{adj}	β	ΔR^2_{adj}
AS	-	0.04	*0.18*	0.19		0.05	*0.20*	0.14		0.17		0.03		0.16
TS	−0.18*						−0.21*							
PSI	0.31**		0.29**		0.25***		0.35**		0.40***		0.21**		0.39***	

*P<0.05; **P<0.01; ***P<0.0001. Bolded βs are statistically significant. Italic βs are statistically non-significant, which remained, remains in the model due to P<0.10. Multiple regression was used with backward method, including EIS, AS, TS, PSI as independent variables with age, education, and family size as covariates. EIS could not remain in any model, which is excluded from the table. IV: Independent variables; DV: Dependent variables; EIS: Emotional-informational support; AS: Affectionate support; TS: Tangible support; PSI: Positive social interaction; PWB: Physical well-being; SWB: Social well-being; EWB: Emotional well-being; FWB: Functional well-being; FACT-G: Functional assessment cancer therapy-general; BCS: Breast cancer subscale; FACT-B: Functional assessment cancer therapy-breast cancer; ΔR^2_{adj}: Change in adjusted R^2 in reference to the covariate variables

regressions. Importantly, only PSI could exert a positive effect on PWB, and the associations with other QoL domains relatively exceeded those of the TSS. Some other studies also reported the same results indicating PSI as the main SST in QoL of women with breast cancer.[25]

PSI refers to being accompanied by some people to do different social activities that might be fun and pleasurable for the person. Having such people is useful for women with breast cancer to experience less distress and anxiety, which may enable the patient to forget cancer temporarily. On the other hand, the pain experienced by women with breast cancer may affect their perceptions of TS, because the received behavioral and material supports could not reduce their perceived physical pain.[25] This finding might explain the reason why there were no significant associations between the SSTs and PWB, while PSI surpassed. In other words, fewer physical problems can result in more socializing space.

Furthermore, the findings showed that although TS did not have any significant effect on PWB and had a positive zero-order correlation with FWB; it negatively predicted the patients' PWB and FWB in the presence of PSI. Although this reverse effect can be attributed to the relatively high inter-correlation between these two variables, this was not the case for their SSTs and PSI. It might indicate that, while the other SSTs were held constant, TS did not show any effect on PWB and showed a positive impact on FWB. However, the extent to which the patients engage in PSI is associated with having a better PWB, which in turn leads to receiving lesser instrumental support by patients. In other words, the more engaging in PSI, the more a given patient needs assistants to compensate her PWB; thus, lower TS became a representative of a better PWB. It has indicated that when the patients' physical problems, such as pain, become chronic, they suffer from several psychological and social issues.[41] On the other hand, it seems that the patients who try to have or already have the opportunity to experience more positive affects in their lives through social interactions, in case of the available and accessible social support, may find the effectiveness of positive affect in managing (or coping with) their physical condition.[42,43]

In general, these results showed that although different types of social support can be a good predictor for QoL domains in Iranian patients with breast cancer, the role of experiencing more positive interactions with people could be the only indicator for a better QoL in different domains, even in the physical domain, including PWB and BCS. This finding was differently reflected in a study on Iranian women with breast cancer,[44] showing a relatively high correlation between depressive mood and social support. Therefore, one of the ways to alleviate the patients' health is by emphasizing a more salutogenic approach in socio-emotional interventions to expand the patients' positive experiences during their course of illness.[45] Put differently, although the disease, especially cancer, connotes *darkness* in the patients' lives, the findings suggested approaching the patients' QoL positively. Thus, interventions may adopt the broaden-and-build theory of positive emotion, employing the patients' close and safe relationships to reconstruct their personal resources, ranging from physical and intellectual to psychological and social resources.[46]

It should be noted that PSI may evoke a *shared* feeling of an elevated mood,[47,48] which might benefit the patients with some physical effects, including decreased pain.[49] Psychologically speaking, the intimate interactors (e.g., friends) in a social context tend to mimic smiles and empathize with the expressed happiness.[50] Thus, the nature of reciprocity in such quality times may provide a fruitful ground for broadening the positive effects of PSI. For example, patients who perceive their social relationships stronger, utilize more active copings, manifesting a "fighting spirit" during the early stages of breast cancer.[51] In addition, patients may find interpersonal positive reframing as a partnered coping mechanism to improve their condition.[52] Therefore, given the importance of the positive interpersonal atmosphere in the enhancement of patients' QoL, health practitioners may want to provide their patients with group or couple therapies as well as family and couple psychoeducation interventions to prevent the QoL reduction through the course of the disease and also indicate the positive influence of patients' relationships on their lives.

Limitations and recommendation

This study was conducted on a sample selected from the Capital city of Iran. Therefore, the results cannot be generalized to the whole Iranian population with breast cancer. More importantly, male patients constitute a tiny fraction of patients with breast cancer, with <1% of the diagnosed patients and a 5-year survival rate of 64% in Iran.[53] Some studies revealed that men living with breast cancer perceived a lack of support services as the barriers to receiving adequate care.[54] Thus, future studies may investigate male breast cancer patients in terms of social support to provide more male-specific knowledge in the field. Also, the cross-sectional design of the study hindered the causal inference, mostly in terms of PSI. Thus, future longitudinal studies are needed to investigate the patients' social support to specify the direction of functional relationship with patients' outcome, and how any improvement in patients' condition might feed their opportunities to receive social support, especially in the form of PSI. Besides, in the current study, the differences in cancer stage were not considered that could moderate the results. Hence, further studies should consider the differences between early stages of cancer or the later stages regarding the functional relationships between social support and QoL. In addition, future studies are recommended to investigate the mechanism through which the perceived social support can influence the patients' QoL, considering the psychological implications of the current study.

Conclusions

The results showed that Iranian women with breast cancer received relatively high social support. Also, the findings indicated PSI as the most influential SST, predicting all QoL domains in women with breast cancer. Besides, PSI showed a better PWB and BCS, suggesting a bi-directional relationship between QoL and social engagement. Finally, this study suggested using a salutogenic approach in providing interventions to enhance the patients' QoL.

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Conflicts of interest

There are no conflicts of interest.

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