

Social, Demographical, and Clinical Correlates of Stigma in Iranian Breast Cancer Women

Hadi Zamanian

Qom University of Medical Science and Health Services

Mohammadali Amini-Tehrani (✉ amini.m.ali@ut.ac.ir)

Department of Psychology, Faculty of Psychology and Education, University of Tehran, Tehran

Mona Daryaafzoon

Islamic Azad University, Karaj Branch

Zahra Jalali

Tabriz University of Medical Sciences

Fatemeh Sabeghi

Islamic Azad University, Science and Research Branch

Sedighe Rahimdel

Islamic Azad University, South Tehran Branch

Bitah Tahmasbi

Iran University of Medical Sciences

Research Article

Keywords: Breast Cancer, Family, Spouse, Stigma

Posted Date: February 1st, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-154505/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Abstract

Background: This study aimed to assess the severity of disease-related stigma felt by Iranian women with breast cancer as well as to determine the contextual correlates of stigmatization.

Methods: This cross-sectional study included 223 breast cancer patients between October-2014 and May-2015, in Tehran, Iran. Eligible patients were asked to provide background data and to complete Stigma Scale for Chronic Illness 8-item (SSCI-8) questionnaire. Binomial logistic regression analysis was employed to identify stigmatized (SSCI-8 > 8) and heavily stigmatized (SSCI-8 >10) groups.

Results: A total of 58.3% (n=130) stated that they were stigmatized at least "rarely." In the multi-variable models in the total sample, living with spouse, Turkic ethnicity, family history of chronic diseases were the significant associations of stigmatization, while no variable was found to be associated with heavily stigmatization. In the sub-sample having the data of spouse's education (n=185), living with spouse, lower spouse's education, and family history of chronic diseases were the significant correlates of stigmatization; while, in terms of heavily stigmatization, only the lower spouse's education was the significant indicator.

Conclusions: Stigmatization tails women with breast cancer especially those living with their poorly educated husbands which call for dyadic interventions.

Background

Breast cancer is the second most common cancer in the world with 2.4 million cases being diagnosed from 1999 to 2015 and owing to its prevalence, is the leading cause of cancer-related death among women [1], though by no means falls into the category of most fatal cancers [2]. In Iran, breast cancer is also estimated to be the most common cancer of women [3] and is predicted to have a five-year survival rate of 68% which is much lower than those of developed countries of USA, Europe and Japan with 80 to 90% [4], where the lifetime risk is approximated to be 4.5 percent [5]. The advancements in early detection, diagnosis, treatment and rehabilitation of breast cancer patients, as well as the efforts made to improve the clinical practice and patients' quality of life, all mitigate the suffering imposed by this condition at large [6, 7]. However, cancer stigma still continues to cast its drastic influence on the lives of the afflicted [8, 9] and has been raised by both researchers and patients as one of their major concerns [10].

Although, when compared to other cancers' epidemic of stigma, breast cancer-stigma has not yet become something of an epidemic [11], this may yet better fit the concept of "silent epidemic" [12]. As a social phenomenon intertwined with personal psychological features, stigma targets the identity of the individuals carrying the label of certain conditions [13]. Stigma can subject the patients to shame, anxiety, depression and workplace discrimination and reduce their overall quality of life [14, 15]. Help-seeking behaviors of patients with self-discovered or newly diagnosed cancer are also hampered by perceived stigma. For instance, stigma was found to be acting as a barrier to American black women's participation in routine screening, early detection and genetic testing programs [16], as well as a notable contributing factor to self- or other-imposed social exclusion among Hong Kong Chinese women [17].

Several unpleasant stories of stigma are reflected in a wide array of studies conducted in different countries, indicating that the concern of breast cancer stigma is not confined to any particular nation, socioeconomic or cultural background [18-20]. Recently, Trusson and Pilnick [21] urged against a sort of "pink positivity" and revealed some narrations inconsistent with the positive public image surrounding breast cancer in the UK. In some cases, the overflowing positivity was not spontaneous or effortless at all. Instead, they were forced into the minimization of their struggles in order not to get ostracized by society. They also stated that the stigma of breast cancer was avoided by patients with the cost of withdrawal from social support.

Previous research urged the need for finding patients at risk of feeling stigmatized [22] and given the factors specific to each cancer, emphasized on approaching the stigma of each cancer under the general umbrella of cancer stigma in a more distinct manner [13]. Among Iranian urban population, there are negative attitudes around cancer and cancer patients, with most of the respondents in a study reporting their unwillingness to disclose their condition to others if they were ever diagnosed with cancer [23]. In this regard, the working Iranian breast cancer women have shared their contradictory experiences of disease self-disclosure, where about 28% of them were faced with unsatisfactory consequences afterwards, making them change their perception of others and seek distance from people [24]. Moreover, Iranian women who discovered their breast cancer themselves indicated that the very nature of stigmatized cancer of breast as an incurable disease and as the herald of losing femininity made them feel fearful, intimidated and anxious [25]. Bou Khalil [26] has addressed this "silent epidemic" [12] of breast cancer stigma, in the sense that despite its paralyzing impact on the lives of countless patients, it has not yet received due attention. In his review of studies from eleven Middle Eastern countries including Iran, breast cancer was shown to be largely mixed with social stigma and misconceptions. Therefore, this study aimed to explore the social, demographic, and clinical features of Iranian breast cancer women, which could better indicate the risk of stigmatization experienced by the patients.

Methods

Setting and Sampling

The study was conducted between Oct 2014 and May 2015 at three cancer centers in Tehran, Iran, as a part of a study on health issues concerning breast cancer patients (PS-BrC2015). Inclusion criteria involved a confirmed cancer diagnosis of more than one month, age 18 years or older, and the ability to communicate in Persian. Patients who had a history of a psychiatric condition, or had metastatic brain disease were excluded. Data were collected by face-to-face interview. Only one of 224 patients who had initially consented to follow the study protocol, voluntarily withdrew from participating in the remainder of the study. All methods were carried out in accordance with relevant guidelines and regulations.

Instruments

Sociodemographic and clinical characteristics of the patients were assessed in the form of a checklist including age, marital status, ethnicity, house type, housemate, residency, geographical location, employment status, household income, work suspension, insurance status, family size, father's death, mother's death, father's education, mother's education, spouse's education, patient's education, number of children, metastasis, time since diagnosis, chemotherapy, history of mastectomy, history of radiotherapy, hospitalization, self-reported history of major medical or psychological disorders, family history of chronic diseases, menstruation pattern, body mass index (BMI), and accumulative childhood/ adulthood adverse experiences, including having had an unhappy childhood, few friendships, serious conflicts with family of origin as well as having experienced serious punishments, emotional abuse and loss of first-degree family members.

The Stigma Scale for Chronic Illnesses 8-item version (SSCI-8) [27] was used to assess the experienced stigmatization. This short-form instrument was essentially developed for patients with neurological conditions in USA as its population of interest. SSCI-8 encompasses two forms of enacted and internalized stigma within a unidimensional construct. The eight items on a five-point Likert type scaling in the range of "never", "rarely", "sometimes", "often", and "always", yields a raw total stigma score of 8 to 40. The original scale includes three items for internalized stigma (e.g. "I felt embarrassed about my illness.") and the remaining five addressing enacted stigma (e.g. "Because of my illness, some people seemed uncomfortable with me."). The scale showed acceptable reliability and validity among US neurological population with the Cronbach's alpha of 0.89 for the total scale. In the current dataset, the Cronbach's alpha for enacted stigma, internalized stigma, and total stigma was 0.837, 0.725, and 0.866, respectively, indicative of adequate internal consistency reliability. The scale has been validated in another publication on the same dataset [28]. To assess stigmatization experienced by breast cancer patients, two dichotomous variables were defined based on the total score, in which the patients labeled with *un-stigmatized* if they reported all the eight items as "Never" i.e. SSCI-8's score = 8 versus *stigmatized* if they reported at least one experience i.e. SSCI-8's score ≥ 9 , and *fairly stigmatized* if they related to up to three of the statements i.e. SSCI-8's score ≤ 10 versus *heavily stigmatized* if they reported three or more stigmatizing experience i.e. SSCI-8's score ≥ 11 .

Data Analysis

Descriptive analysis was used to report the sample characteristics and stigmatization experiences. Univariate and multivariate binomial logistic regression, which estimates the probability that a characteristic is present, was employed to find the stigma risk factors. To reach the best model, the variables with higher rates of missing data (i.e. cancer stage, income level, and time since diagnosis) were excluded from the logistic analysis modelling. Twenty missing data for BMI (0.09%) was imputed by the median of the non-stigmatized and stigmatized patients separately, using the single imputation method. The recommendations suggested for model-building were employed to determine the proper covariates composing the best model [29, 30]. First, the univariate logistic regression including the nominal variables was carried out to identify the stigmatized group. The prospective correlates were included if they could identify the stigmatized group with $P < 0.250$. Then, three sets of models were further estimated: 1) univariate model concerning heavily stigmatized group, 2) multivariate model concerning stigmatized group, 3) multivariate model concerning heavily stigmatized group. In addition, there were 38 missing data corresponding to spouse's education, including 35 patients with single marital status and three with missing value; thus, the whole sample irrespective of the spouse's education ($n=223$) and the sole subsample with available data regarding the spouse's education ($n = 185$) were tested as two separate multivariate models. P -value < 0.10 was considered for significance level.

Results

Sample Characteristics

Table 1 presents the sociodemographic and clinical characteristics of the sample. The mean age of the sample was 47.10 ± 9.10 , ranging from 19 to 75 years old. They were mostly married (81.2%), unemployed (83%) and of Fars (63%) or Turkic (26%) ethnicity. The majority had a poor educational background (77.8%), received chemotherapy (61.4%) and underwent mastectomy (70%).

The rate of Stigmatization

Figure 1 presents the statements of SSCI-8 with respect to the ratings of the patients, along with the descriptive statistics of enacted, internalized and total stigma experienced by patients. The mean of total stigma was 11.75 ± 5.56 , from the attainable score range of 8 to 40, which showed a very low rate of stigmatization in the sample. This was also true for both enacted and internalized stigma with mean scores of 6.99 ± 3.44 and

4.77±2.63, respectively. Overall, this indicates that Iranian breast cancer women had experienced a very negligible amount of stigma in association with their condition.

As it is further illustrated in figure 1, about 41.7% (n=93) reported that neither they experienced any sort of enacted stigmatization nor did they internalize the stigma of their condition. However, 58.3% (n=130) of the sample reported that they experienced stigmatization from at least “rarely” up to a more frequent basis of “always” in their course of the disease. Of them, 12% (n=27) had experiences of being avoided by people, 10.7% (n=24) felt that they were abandoned by others, 11.2% (n=25) stated that some people turned their faces away from them, 21.6% (n=48) felt embarrassed by their illness, 14.9% (n=34) stated that there were some people who seemed to feel uncomfortable at the patients’ problems, 21.5% (n=48) were in the shame of their physical limitations, 8% (n=18) were treated unkindly, and 17.9% (n=40) were treated by other people as if the fault of disease lied with the patients. Patients reported these experiences in a frequency range of *sometimes* to *always*, indicating that there were a considerable number of women who were still under influence of stigmatization.

Correlates of Stigmatization

As the univariate models are summarized in Table 2, having more children (OR = 1.23, 95%CI = [1.03, 1.47]), lower education of father (OR = 1.69, 95%CI = [.99, 2.90]), lower education of spouse (OR = 3.39, 95%CI = [1.82, 6.31]), being of Turkic ethnicity (OR = 1.91, 95%CI = [1.00, 3.65]), being unemployed (OR = 1.82, 95%CI = [.90, 3.71]), living with spouse (OR = 1.92, 95%CI = [1.00, 3.66]), lower education of patient (OR = 1.92, 95%CI = [.98, 3.78]), higher BMI (OR = 1.06, 95%CI = [.99, 1.22]), menstrual irregularities (OR = 1.30, 95%CI = [.95, 1.78]), previous hospitalization (OR = 1.63, 95%CI = [.95, 2.80]), radiotherapy (OR = 1.75, 95%CI = [1.00, 3.04]), and life history ≥ 2 (OR = 1.72, 95%CI = [.99, 3.01]) significantly associated with the stigmatized group. However, only lower education of father (OR = 1.68, 95%CI = [.97, 2.91]), lower education of spouse (OR = 2.84, 95%CI = [1.55, 5.21]), and radiotherapy (OR = 1.60, 95%CI = [.93, 2.76]) remained as the significant correlates of higher stigma.

Table 3 reports the multi-variable models for the total sample and the subsample merely confined to the patients whose data regarding their spouse’s education was available. In the total sample (n=223), the Turkic ethnicity (OR = 1.94, 95%CI = [.93, 4.03]), living with spouse (OR = 2.15, 95%CI = [1.03, 4.50]), and family history of chronic diseases (OR = 1.69, 95%CI = [.92, 3.10]) were the significant correlates of stigmatization, while no variable was found to be associated with heavily stigmatization. After exclusion of patients with missing data regarding their spouse’s education, in the remaining subsample (n=185), lower education of spouse (OR = 3.23, 95%CI = [1.48, 7.04]), living with spouse (OR = 3.57, 95%CI = [1.10, 11.55]), and family history of chronic diseases (OR = 2.18, 95%CI = [1.06, 4.50]) were the significant correlates of stigmatization. BMI was also a weak yet significant correlate of the latter group (OR = 1.07, 95% CI = [.99, 1.15]). In terms of heavily stigmatization in this subsample, only the lower education of the spouse surfaced as the significant correlate (OR = 2.85, 95%CI = [1.39, 5.86]).

Discussion

This study aimed to evaluate the demographic, social, and contextual factors indicating or contributing to the experience of stigmatization among Iranian breast cancer women. This sample of Iranian women mainly consisted of less educated patients from low-income families. Somewhat congruent with existing studies on cancer stigma, our study showed a polarized rate of stigmatization among Iranian breast cancer women, with 4 in 10 patients reporting no experiences of stigma, and 6 in 10 patients reporting a low to high levels of stigma experience. Using different instrument for assessment of stigma and not exclusively addressing breast-cancer stigma, over 30% of Korean cancer survivors were found holding stereotypical views of themselves [14] and about 18% of Turkic cancer patients felt socially excluded [31]. More than a quarter of Iranian cancer patients are reported to have negative attitude towards cancer [32] and 17.4% of general public have acknowledged their discomfort with being around cancer patients [23]. Although the majority of patients in our study were never or rarely subjected to stigma, a notable proportion of them reported to be stigmatized on a more frequent basis, ranging from sometimes to always.

Among the latter, there was a high rate of internalized stigma both in the forms of embarrassment of illness and physical limitations caused by either surgery or side effects of medical treatment such as weight gain [33]. Treatment of breast cancer entails salient physical alterations that negatively affects patients’ self-esteem and psychosexual functioning. A considerable proportion of Polish breast cancer women were found to be embarrassed of being naked in the presence of their partners. Patients survive cancer at the expense of disfigured body, ensuing emotional strains and finally falling victim to stigmatization [34]. Triggered by their disturbed body image and with a threatened identity, they tend to resort to negative marital coping efforts such as self-blaming and avoidance [35]. Among statements related to enacted stigma, being blamed for disease by other people was the most popular one that our patients had agreed with.

In a conceptually similar study on Indian women, verbal abuse, social alienation, blaming attitudes and mistreatment by their husband, family and community at large comprised the most common manifestations of breast cancer stigma [19]. Unlike lung cancer with the widely known and avoidable risk factor of smoking that has made the afflicted patients -sometimes erroneously- easy targets for blame, in the absence of explicit lifestyle-related cancer-risk behaviors, general public rarely makes such assumptions about breast cancer [13, 22]. While women with breast cancer might be in part spared from this aspect of blame, they still have to handle the insecurity and discomfort of all their surrounding people when they are confronted with somewhat incurable disease and overwhelmed by their shattered view of a *just-world* [11, 36].

As an alarming finding of current study, wives of poorly educated husbands as well as those living together with their husbands were evidently more vulnerable to stigmatization. Marital issues were always of utmost concern in lives of breast cancer patients [35, 37]. Patients aside, their partners are also menaced by the diagnosis and experience great deal of emotional strain while trying to come to terms with what has befallen them and adapting to the burden of caregiving and added household responsibilities [38]. However, given the criticality of spousal relationships in providing patients with support and maintaining their overall wellbeing, unmet needs of these women, ensuing marital tensions or even worse being directly stigmatized by their partners would be the recipe for a full-blown psychological catastrophe [38, 39]. Not unexpectedly, cancer patients receiving a poor-quality care from their caregivers are more prone to internalize the stigma [13]. Meanwhile, psychosocially advantaged partners seem to be more efficient in tackling the challenges [40], for instance, Iranian Turkman breast cancer patients with highly educated spouses were found to have improved medical adherence [41]. With the same rationale, poor educational background of husbands in GAZA has been frequently associated with misconceptions about breast cancer screening programs that would ultimately jeopardize their wives' health [42]. It is of an especial concern in societies where an overwhelming majority of men are ignorant of cancer symptoms and the importance of a timely diagnosis, and yet hold the key to the health-related decisions of their spouses [43]. Similarly lower education of spouse was proved to be a strong predictor of hopelessness among Turkic breast cancer women [44]. By the same token, poor education, low-income, belonging to ethnic minorities, spouse role obligations and previous experiences of prejudice all acted as constraints delaying the help-seeking behavior of American women with self-discovered cancer symptoms [45]. These studies are in complete accordance with our findings where belonging to ethnic minorities (i.e. Turkic women) and living together with poorly educated husband were strong predictors of stigmatization.

Our study also revealed that a history of familial chronic diseases could increase the likelihood of stigmatization. It can be inferred that a positive family medical history adds an air of social vulnerability to the mix of marital tension with poorly educated spouse. Thus, partners of women with breast cancer need to be provided with tailored informational support which enables them to better cope with emerging issues and effectively support their family [46]. Higher BMI, albeit weekly, associated with the stigmatized group which might be attributable the additional disturbance of self-image and shame brought about by this side effect of medication [17, 33].

A number of background and clinical features that despite not making the cut for the final models, were found to be fairly correlated with stigma. Disadvantageous educational and employment status of patient or their 1st degree family member render these patients vulnerable to discriminatory treatment. Attending the exhaustive radiation therapy sessions on a regular basis as well as getting admitted to hospital not only demoralizes patients but also creates plenty of occasions to encounter prejudiced treatment in healthcare settings. It has been reported that Iranian breast cancer patients tend to rely heavily on supports from their own family and 95% of them receive support from siblings, children and friends [24]. In this sense, having more children -as a form of social support- may be protective against stigma, however, meeting their needs may also be overtaxing on their already improvised resources. Moreover, the diagnosis of cancer brings changes in dynamics of a household and the very nature of a mother-child relationship. In other words, the mere diagnosis of cancer might surpass the child's ability to assimilate, let alone unburdening his mother of her stress-riddled life. Similarly, patients who have underwent more than two major life events may lack the psychological resources essential for tackling another hurdle. All in all, whenever faced with a hurdle (i.e. cancer) that is likely to exceed the resources of a well-intentioned intimate partner, immediate family members, friends and even one's own self, help must be sought from professionals interested in public education.

Despite seemingly low rates of stigma experienced by breast cancer patients, its grave impact on various domains of patients is evident. In our study, poor educational background of father and husband, living together with husband and belonging to ethnic minorities were among the main contextual indicators of stigmatization. Collectively, the diagnostic and therapeutic advancements of medical practice should be augmented by psychosocial and individual interventions to effectively emend the misconceptions associated with breast cancer, promote sense of cooperation among patients and their partners as well as to enhance the support offered by caregivers of these patients to ultimately improve the overall quality of life of the patients and their families [47]. It seems that tailored educational interventions are needed to raise awareness of poorly educated spouses of the cancer patients and to provide them with support essential for a successful cope with the burden of complex situation they are faced with. It is worth mentioning that, the amount of social support breast cancer patients receive from family or friends affects the all-cause mortality risk of these patients [37]. Given the decisive role of knowledge and education of caregivers on the quality of their relationship with patients, the concepts of spouse-education and public-education need to receive due attention.

There are a number of limitations that should be taken into consideration for the interpretation of the results. This sample might not be a suited representative of Iranian breast cancer women and causal inferences are limited by its cross-sectional design. We suggest that future researches address the vulnerability of women to internalize the enacted stigma. For this purpose, specific domains of stigmatism experienced by women need to be evaluated using more comprehensive instruments. Moreover, more research is needed to find out the pathways through which social and contextual factors aggravate the negative aura of breast cancer both in society at large and in the lives of individuals. In addition, interventional and longitudinal studies are to be conducted with the purpose of confirming the substantial role of raising public awareness, improving public attitude towards cancer and especially educating the illiterate and low-educated spouses on health-related aspect of disease, as well as refining the misperceptions of patients themselves in decreasing the rate of cancer-stigma.

Declarations

Ethics approval and consent to participate

The study protocol was approved by ethics committee of Tehran University of Medical Sciences, Tehran, Iran. Verbal informed consent was obtained from the participant.

Consent for publication

Not Applicable.

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available but are available from the corresponding author on reasonable request.

Competing interests

None.

Funding

Nil.

Authors' contributions

HZ: Conceptual design, methodology, and supervision. MAT: Data analysis, manuscript draft, data curation. MD: conceptual design and data collection management. ZJ: Data interpretation and write-up. FS, SR, BT: Data collection and data entry. All authors reviewed the manuscript and contributed intellectually. The final manuscript was approved by all authors.

Acknowledgements

The authors would like to express their deepest gratitude to the participants for their kind engagement.

References

1. Fitzmaurice C, Allen C, Barber RM, Barregard L, Bhutta ZA, Brenner H, et al. Global, regional, and national cancer incidence, mortality, years of life lost, years lived with disability, and disability-adjusted life-years for 32 cancer groups, 1990 to 2015: a systematic analysis for the Global Burden of Disease study. *JAMA Oncol.* 2017;3(4):524-48.
2. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer.* 2015;136(5):E359-86.
3. Zamanian H, Eftekhari-Ardebili H, Eftekhari-Ardebili M, Shojaeizadeh D, Nedjat S, Taheri-Kharamah Z, et al. Religious coping and quality of life in women with breast cancer. *Asian Pac J Cancer Prev.* 2015;16(17):7721-5.
4. Katanoda K, Matsuda T. Five-year Relative Survival Rate of Breast Cancer in the USA, Europe and Japan. *Japanese Journal of Clinical Oncology.* 2014;44(6):611-.
5. Mohammadbeigi A, Mohammadsalehi N, Valizadeh R, Momtaheni Z, Mokhtari M, Ansari H. Lifetime and 5 years risk of breast cancer and attributable risk factor according to Gail model in Iranian women. *J Pharm Bioallied Sci.* 2015;7(3):207-11.
6. Loh SY, Musa AN. Methods to improve rehabilitation of patients following breast cancer surgery: a review of systematic reviews. *Breast Cancer (Dove Med Press).* 2015;7:81-98.
7. Moshfeghi K, Mohammadbeigi A. Comparison the effects of two educational methods on knowledge, attitude and practices of arak physicians about breast cancer. *Pak J Biol Sci.* 2010;13(18):901-5.
8. Gokler-Danisman I, Yalcinay-Inan M, Yigit I. Experience of grief by patients with cancer in relation to perceptions of illness: The mediating roles of identity centrality, stigma-induced discrimination, and hopefulness. *J Psychosoc Oncol.* 2017:1-21.
9. Wilson K, Luker KA. At home in hospital? Interaction and stigma in people affected by cancer. *Soc Sci Med.* 2006;62(7):1616-27.
10. Tripathi L, Datta SS, Agrawal SK, Chatterjee S, Ahmed R. Stigma Perceived by Women Following Surgery for Breast Cancer. *Indian J Med Paediatr Oncol.* 2017;38(2):146-52.
11. Guly LM, Youssef F. Attribution of Blame for Breast and Lung Cancers in Women. *J Psychosoc Oncol.* 2010;28(3):291-301.
12. Brinker NX, Winston C. *Winning the race: Taking charge of breast cancer.* Irving, TX: Tapestry Press; 2001.
13. Knapp S, Marziliano A, Moyer A. Identity threat and stigma in cancer patients. *Health Psychol Open.* 2014;1(1):2055102914552281.
14. Cho J, Choi E-k, Kim SY, Shin DW, Cho B-L, Kim C-h, et al. Association between cancer stigma and depression among cancer survivors: a nationwide survey in Korea. *Psycho-oncology.* 2013;22(10):2372-8.

15. Stergiou-Kita M, Qie X, Yau HK, Lindsay S. Stigma and work discrimination among cancer survivors: A scoping review and recommendations: Stigmatisation et discrimination au travail des survivants du cancer : Examen de la portée et recommandations. *Can J Occup Ther*. 2017;84(3):178-88.
16. Jones CE, Maben J, Jack RH, Davies EA, Forbes LJ, Lucas G, et al. A systematic review of barriers to early presentation and diagnosis with breast cancer among black women. *BMJ Open*. 2014;4(2):e004076.
17. Lam WWT, Fielding R. The evolving experience of illness for Chinese women with breast cancer: A qualitative study. *Psychooncology*. 2003;12(2):127-40.
18. Meacham E, Orem J, Nakigudde G, Zujewski JA, Rao D. Exploring stigma as a barrier to cancer service engagement with breast cancer survivors in Kampala, Uganda. *Psychooncology*. 2016;25(10):1206-11.
19. Nyblade L, Stockton M, Travasso S, Krishnan S. A qualitative exploration of cervical and breast cancer stigma in Karnataka, India. *BMC Womens Health*. 2017;17(1):58.
20. Mutebi M, Edge J. Stigma, survivorship and solutions: Addressing the challenges of living with breast cancer in low-resource areas. *S Afr Med J*. 2014;104(5):383.
21. Trusson D, Pilnick A. Between stigma and pink positivity: women's perceptions of social interactions during and after breast cancer treatment. *Sociol Health Illn*. 2017;39(3):458-73.
22. Else-Quest NM, LoConte NK, Schiller JH, Hyde JS. Perceived stigma, self-blame, and adjustment among lung, breast and prostate cancer patients. *Psychol Health*. 2009;24(8):949-64.
23. Badihian S, Choi EK, Kim IR, Parnia A, Manouchehri N, Badihian N, et al. Attitudes toward cancer and cancer patients in an urban Iranian population. *Oncologist*. 2017;22(8):944-50.
24. Najmabadi KM, Azarkish F, Latifnejadroudsari R, Shandiz FH, Aledavood SA, Kermani AT, et al. Self-disclosure of breast cancer diagnosis by Iranian women to friends and colleagues. *Asian Pac J Cancer Prev*. 2014;15(6):2879-82.
25. Khakbazan Z, Roudsari RL, Taghipour A, Mohammadi E, Pour RO. Appraisal of breast cancer symptoms by Iranian women: entangled cognitive, emotional and socio-cultural responses. *Asian Pac J Cancer Prev*. 2014;15(19):8135-42.
26. Bou Khalil R. Attitudes, beliefs and perceptions regarding truth disclosure of cancer-related information in the Middle East: a review. *Palliat Support Care*. 2013;11(1):69-78.
27. Molina Y, Choi SW, Cella D, Rao D. The Stigma Scale for Chronic Illnesses 8-Item Version (SSCI-8): Development, Validation and Use Across Neurological Conditions. *International Journal of Behavioral Medicine*. 2013;20(3):450-60.
28. Daryaafzoon M, Amini-Tehrani M, Zohrevandi Z, Hamzehlouyan M, Ghotbi A, Zarrabi-Ajami S, et al. Translation and Factor Analysis of the Stigma Scale for Chronic Illnesses 8-Item Version Among Iranian Women With Breast Cancer. *Asian Pac J Cancer Prev*. 2020;21(2):449-55.
29. Zhang Z. Model building strategy for logistic regression: purposeful selection. *Annals of Translational Medicine*. 2016;4(6):111.
30. Bursac Z, Gauss CH, Williams DK, Hosmer DW. Purposeful selection of variables in logistic regression. *Source Code Biol Med*. 2008;3:17-.
31. Yılmaz M, Dişsiz G, Demir F, Iriz S, Alacacioglu A. Reliability and Validity Study of a Tool to Measure Cancer Stigma: Patient Version. *Asia-Pacific journal of oncology nursing*. 2017;4(2):155-61.
32. Hasan Shiri F, Mohtashami J, Nasiri M, Manoochehri H, Rohani C. Stigma and Related Factors in Iranian People with Cancer. *Asian Pacific journal of cancer prevention : APJCP*. 2018;19(8):2285-90.
33. Pedersen B, Groenkaer M, Falkmer U, Mark E, Delmar C. "The ambiguous transforming body"—A phenomenological study of the meaning of weight changes among women treated for breast cancer. *Int J Nurs Stud*. 2016;55:15-25.
34. Tarkowska M, Głowacka-Mrotek I, Nowikiewicz T, Monastyrska-Waszak E, Gastecka A, Goch A, et al. Sexual functioning and self-esteem in women after mastectomy - a single-centre, non-randomised, cross-sectional study. *Contemporary oncology (Poznan, Poland)*. 2020;24(2):106-11.
35. Fang SY, Lin YC, Chen TC, Lin CY. Impact of marital coping on the relationship between body image and sexuality among breast cancer survivors. *Support Care Cancer*. 2015;23(9):2551-9.
36. Lucas T, Alexander S, Firestone I, Lebreton JM. Belief in a just world, social influence and illness attributions: evidence of a just world boomerang effect. *J Health Psychol*. 2009;14(2):258-66.
37. Kroenke CH, Michael Y, Tindle H, Gage E, Chlebowski R, Garcia L, et al. Social networks, social support and burden in relationships, and mortality after breast cancer diagnosis. *Breast Cancer Res Treat*. 2012;133(1):375-85.
38. Campbell-Enns H, Woodgate R. The psychosocial experiences of women with breast cancer across the lifespan: a systematic review protocol. *JBI Database System Rev Implement Rep*. 2015;13(1):112-21.
39. Comez S, Karayurt O. We as Spouses Have Experienced a Real Disaster!: A Qualitative Study of Women With Breast Cancer and Their Spouses. *Cancer Nurs*. 2016;39(5):E19-28.
40. Shor V, Grinstein-Cohen O, Reinshtein J, Liberman O, Delbar V. Health-related quality of life and sense of coherence among partners of women with breast cancer in Israel. *Eur J Oncol Nurs*. 2015;19(1):18-22.

41. Charkazi A, Samimi A, Razzaghi K, Kouchaki GM, Moodi M, Meirkarimi K, et al. Adherence to recommended breast cancer screening in Iranian turkmen women: the role of knowledge and beliefs. *ISRN Prev Med*. 2013;2013:581027.
42. Abu-Shammala BI, Abed Y. Breast Cancer Knowledge and Screening Behavior among Female School Teachers in Gaza City. *Asian Pac J Cancer Prev*. 2015;16(17):7707-11.
43. Al-Amoudi SM, Abduljabbar HS. Men's knowledge and attitude towards breast cancer in Saudi Arabia. A cross-sectional study. *Saudi Med J*. 2012;33(5):547-50.
44. Oztunc G, Yesil P, Paydas S, Erdogan S. Social support and hopelessness in patients with breast cancer. *Asian Pac J Cancer Prev*. 2013;14(1):571-8.
45. Facione NC, Miaskowski C, Dodd MJ, Paul SM. The self-reported likelihood of patient delay in breast cancer: new thoughts for early detection. *Prev Med*. 2002;34(4):397-407.
46. Cheng T, Jackman M, McQuestion M, Fitch M. 'Knowledge is power': perceived needs and preferred services of male partners of women newly diagnosed with breast cancer. *Support Care Cancer*. 2014;22(12):3175-83.
47. Hashemi M, Taleghani F, Kohan S, Yousefi A. Iranian caregivers, silent mediums in caring for relatives suffering from cancer. *Iran J Nurs Midwifery Res*. 2014;19(7 Suppl 1):S83-90.

Tables

Table 1. Sociodemographic and Clinical Information of the Study Sample (<i>N</i> = 223)		
Variables	Valid n (%)	
Age	47.10 ± 9.10, 19 to 75 years old	
< 45	84	37.7
≥ 45	139	62.3
BMI	27.78 ± 4.74	
Time since diagnosis	18.28 ± 15.02	
Marital Status		
Unmarried	42	18.8
Married	181	81.2
Housemate		
Spouse	167	74.9
Non-spouse	56	25.1
Geographical location		
Urban	196	87.9
Rural	27	12.1
Employment Status		
Unemployed	186	83.4
Employed	37	16.6
Insurance coverage		
Yes	203	91.0
No	20	9.0
Household level of Income		
Poor	93	52.2
Moderate	60	37.3
High	25	14
Ethnicity		
Fars	141	63.2
Turkic	57	25.6
Others	25	11.2
Father's Education		
Illiterate	127	57.00
Literate	96	43.00
Mother's Education		
Illiterate	138	61.9
Literate	85	38.1
Spouse's Education		
Secondary school or lower	107	48.00
Above secondary school	116	52.00
Patient's Education		
Lower than diploma	181	81.2

Above diploma	42	18.8
Chemotherapy Status		
Finished Chemotherapy	75	33.6
Ongoing Chemotherapy	62	27.8
No Chemotherapy	86	38.6
Surgery History		
Partial Mastectomy	79	35.4
Total Mastectomy	77	34.5
No Surgery	67	30.0
Radiotherapy		
No	134	60.1
Yes	89	39.9
Patient History of Major Psychological disorders		
No	169	75.8
Yes	54	24.2
Family history of chronic disease		
No	94	42.2
Yes	129	57.8
Pattern of Menstruation		
Regular	68	30.5
Irregular	52	23.3
Menopause	103	46.2
Life History \geq 2: n = 86 (38.6%)		
Unhappy childhood	40	19.1
Loss of a first-degree family member	81	38.8
Narrow circle of friends	55	26.3
Strong religious belief	82	39.2
Experience of severe punishment	18	8.6
Severe emotional/physical abuse	15	7.2
Experience of conviction	3	1.4
Severe familial conflict	14	6.7
<i>Note.</i> BMI: Body mass index.		

Table 2. Univariate Logistic Regression Models Predicting Stigmatization (N = 223)							
Variables	Non-stigmatized versus Stigmatized			V	Lower stigma versus Higher stigma		
	P	OR	95%C.I.		P	OR	95%C.I.
Number of Sisters (n)	.144	1.13	[0.96, 1.32]		.305	1.09	[.93, 1.27]
Number of Children (n)	.026	1.23	[1.03, 1.47]		.601	1.04	[.89, 1.23]
Social Participation Frequency (n)	.183	.88	[.72, 1.06]		.993	1.00	[.83, 1.21]
Father's education (Lower)	.057	1.69	[.99, 2.90]		.064	1.68	[.97, 2.91]
Spouse's education (Lower) n = 185	<.001	3.39	[1.82, 6.31]		.001	2.84	[1.55, 5.21]
Ethnicity (Fars)	.122		Reference		.368		
Turkic	.051	1.91	[1.00, 3.65]		.174	1.54	[.83, 2.87]
Others	.319	1.56	[.65, 3.78]		.500	1.35	[.57, 3.18]
Employment Status (unemployed)	.098	1.82	[.90, 3.71]		.479	1.30	[.63, 2.72]
Housemate (spouse)	.048	1.92	[1.00, 3.66]		.286	1.40	[.76, 2.57]
Marital Status (married)	.120	1.77	[.86, 3.62]		.475	1.28	[.65, 2.52]
Patient's education (lower)	.059	1.92	[.98, 3.78]		.170	1.65	[.81, 3.39]
Age (≥ 45)	.165	1.48	[.85, 2.55]		.414	1.26	[.72, 2.20]
Family chronic disease history (yes)	.112	1.55	[.90, 2.66]		.417	1.25	[.73, 2.16]
Patient major psychological history (yes)	.154	1.60	[.84, 3.03]		.308	1.38	[.74, 2.56]
BMI	.075	1.06	[.99, 1.22]		.986	1.00	[.95, 1.06]
Pattern of Menstruation (irregular)	.096	1.30	[.95, 1.78]		.213	1.22	[.89, 1.67]
Hospitalization history (yes)	.076	1.63	[.95, 2.80]		.615	1.15	[.67, 1.96]
Mastectomy history (yes)	.168	1.27	[.91, 1.77]		.399	1.16	[.83, 1.61]
Radiotherapy (yes)	.049	1.75	[1.00, 3.04]		.091	1.60	[.93, 2.76]
Life history (n ≥ 2)	.056	1.72	[.99, 3.01]		.521	1.20	[.69, 2.07]

Note. Bolded values indicate significant results (P < .10). S.E: Standard error. OR: Odds ratio. CI: Confidence interval. BMI: Body mass index.

Table 3. Multiple Logistic Regression Model Predicting Stigmatization (N = 223)															
Variables	Total Sample						Sample with Spouse's education data								
	Non-stigmatized versus Stigmatized ^a			f	Low stigma versus high stigma ^b			f	Non-stigmatized versus Stigmatized ^c			f	Low stigma versus high stigma ^d		
	P	OR	95%C.I.		P	OR	95%C.I.		P	OR	95%C.I.		P	OR	95%C.I.
Number of Sisters (n)	.359	1.087	[.909, 1.301]		.578	1.050	[.884, 1.248]		.285	1.119	[.910, 1.377]		.454	1.076	[.889, 1.302]
Number of Children (n)	.249	1.150	[.906, 1.460]		.692	.960	[.785, 1.174]		.555	1.109	[.787, 1.562]		.560	.928	[.721, 1.194]
Social Participation Frequency (n)	.208	.878	[.717, 1.075]		.869	1.016	[.836, 1.235]		.102	.828	[.661, 1.038]		.702	.960	[.777, 1.185]
Father's education (Lower)	.415	1.292	[.698, 2.391]		.199	1.484	[.813, 2.711]		.585	1.221	[.596, 2.500]		.304	1.418	[.729, 2.760]
Spouse's education (Lower)									.003	3.225	[1.477, 7.044]		.004	2.852	[1.387, 5.862]
Ethnicity (Fars)	.199		Reference		.423		Reference		.313				.353		
Turkic	.078	1.935	[.930, 4.027]		.218	1.531	[.777, 3.016]		.386	1.498	[.601, 3.733]		.825	1.096	[.485, 2.477]
Others	.512	1.395	[.515, 3.773]		.478	1.401	[.552, 3.558]		.169	2.339	[.697, 7.850]		.149	2.135	[.762, 5.983]
Employment Status (unemployed)	.912	.950	[.381, 2.367]		.775	1.143	[.458, 2.851]		.887	1.091	[.327, 3.642]		.882	1.089	[.356, 3.329]
Housemate (spouse)	.042	2.149	[1.027, 4.496]		.434	1.306	[.670, 2.546]		.034	3.567	[1.101, 11.553]		.651	1.230	[.501, 3.024]
Patient's education (lower)	.677	1.213	[.488, 3.014]		.467	1.405	[.562, 3.512]		.827	.878	[.274, 2.814]		.827	.881	[.283, 2.740]
Age (≥ 45)	.985	.993	[.487, 2.027]		.868	1.061	[.528, 2.131]		.664	1.204	[.520, 2.786]		.487	1.315	[.607, 2.848]
Family chronic disease history (yes)	.090	1.691	[.922, 3.101]		.309	1.357	[.753, 2.445]		.034	2.184	[1.059, 4.501]		.446	1.292	[.668, 2.498]
Patient major psychological history (yes)	.818	1.089	[.527, 2.249]		.761	1.109	[.567, 2.169]		.333	1.558	[.635, 3.827]		.412	1.385	[.637, 3.012]
BMI	.139	1.049	[.985, 1.118]		.897	.996	[.936, 1.059]		.079	1.068	[.992, 1.150]		.903	.996	[.927, 1.069]
Pattern of Menstruation (irregular)	.914	1.022	[.689, 1.517]		.523	1.133	[.772, 1.665]		.733	1.085	[.678, 1.736]		.367	1.223	[.790, 1.893]
Hospitalization history (yes)	.391	1.391	[.654, 2.958]		.639	.843	[.412, 1.723]		.505	1.347	[.561, 3.238]		.429	.724	[.325, 1.612]
Mastectomy history (yes)	.628	1.106	[.736, 1.664]		.839	1.042	[.700, 1.552]		.357	1.261	[.770, 2.065]		.669	1.104	[.701, 1.741]
Radiotherapy	.250	1.572	[.727, 3.231]		.134	1.740	[.843, 3.231]		.451	1.415	[.574, 3.231]		.341	1.469	[.666, 3.231]

(yes)		3.397]		3.593]		3.485]		3.242]	
Life history (n ≥ 2)	.149	1.608	[.844, 3.064]	.716	1.120	[.608, 2.064]	.377	1.413	[.656, 1.805]

Note. R_{CS}^2 : Cox & Snell R^2 . R_N^2 : Nagelkerke R^2 . Chi-square test (χ^2) pertains to Hosmer and Lemeshow test. Bolded values indicate significant results ($P < .10$). S.E: Standard error. OR: Odds ratio. CI: Confidence interval. BMI: Body mass index.

a. $RCS2 = .15$, $RN2 = .21$, $\chi^2 [8] = 4.378$, $P = .072$

b. $RCS2 = .08$, $RN2 = .10$, $\chi^2 [8] = 8.53$, $P = .384$

c. $RCS2 = .23$, $RN2 = .32$, $\chi^2 [19] = 49.76$, $P < .001$

d. $RCS2 = .11$, $RN2 = .14$, $\chi^2 [19] = 20.92$, $P = .341$

Figures

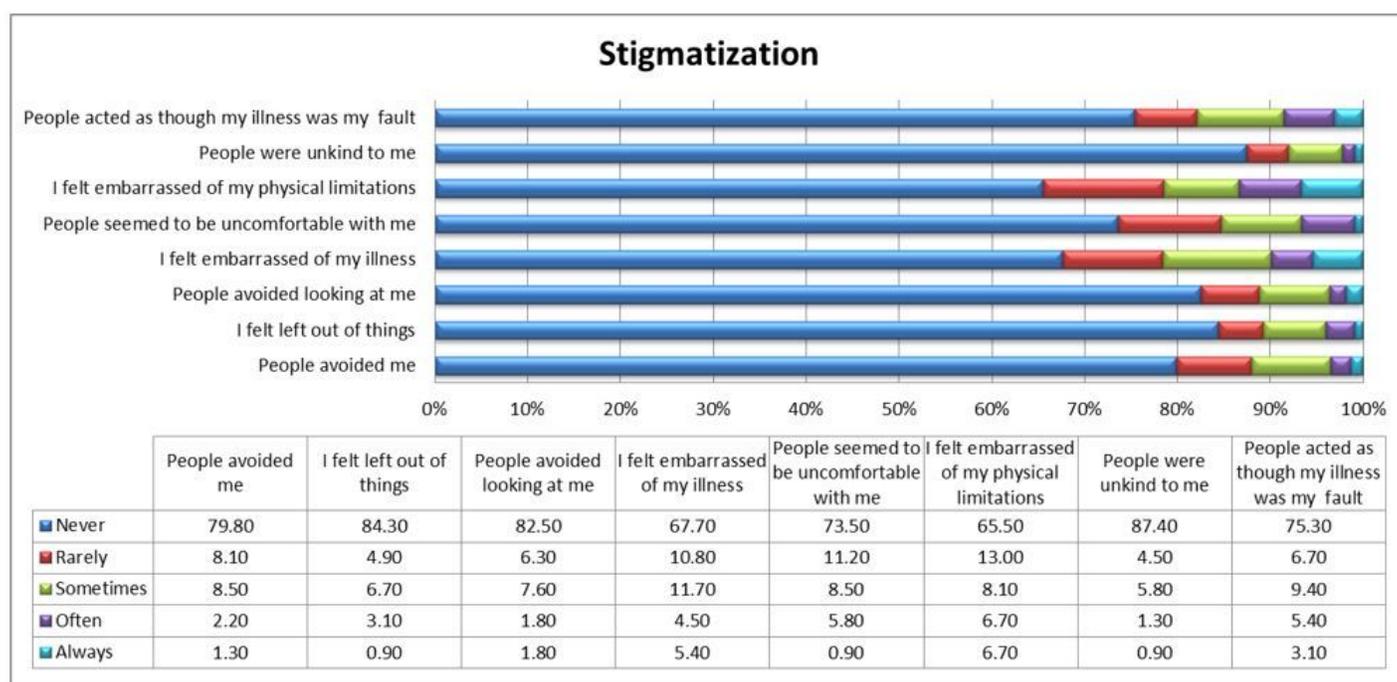


Figure 1

The rate of stigmatization reported by the Iranian breast cancer patients on the Stigma Scale for Chronic Illness 8-item (SSCI-8, Molina et al, 2013).