

Factors Related to Return to Work in Women After Breast Cancer in Iran

Fatemeh Azarkish,¹ Khadijeh Mirzaii Najmabadi,^{2,*} Robab Latifnejad Roudsari,² and Fatemeh Homaei Shandiz³

¹Iranshahr University of Medical Sciences, Iranshahr, IR Iran

²Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences (MUMS), Mashhad, IR Iran

³Cancer Research Center, Faculty of Medicine, Mashhad University of Medical Sciences (MUMS), Mashhad, IR Iran

*Corresponding Author: Khadijeh Mirzaii Najmabadi, Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences (MUMS), Mashhad, IR Iran. Tel: +98-5118546025, Fax: +98-5118597313, E-mail: MirzaiiKH@mums.ac.ir

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Background: Most women are diagnosed with breast cancer (BC) when they are still at the appropriate age for employment. The increasing survival rates of patients with BC call for more attention to their ability to return to work.

Objectives: The aim of this study was to identify factors related to the return to work in Iranian women underwent BC treatment.

Patients and Methods: A total of 175 women with BC, who met the inclusion criteria, were enrolled in this cross-sectional study. The subjects were recruited from four hospitals affiliated to Mashhad university of medical sciences. These hospitals are oncology referral centers in eastern Iran. All records of employed women with BC were studied in four hospitals of Mashhad city, Iran, during 2000 - 2010. The researchers designed a questionnaire, which consisted of questions regarding social/demographic, health/disease, and work characteristics. The questionnaires were completed through interviews. Data were analyzed using SPSS software, version 11.5.

Results: The mean age of the patients at the time of interview was 44.3 ± 6.72 years. Mean age of "Return-to-work" group was 42.71 and "No return-to-work" group was 51.06. Most women (80%) were married. At the time of the interview, 80% had returned to work after a BC diagnosis. Older patients (OR = 0.796; 95% CI, 0.625 - 0.907, P = 0.002), and those with a great deal of work experience (OR = 0.861; 95% CI, 0.752 - 0.986, P = 0.030) were less likely to return to work. Also, women who had no pain or surgery scar (OR = 23.03; 95% CI, 4.53 - 117.02, P < 0.001) as well as those who had no lymphedema after the BC treatment were more likely to return to work (OR = 22.373; 95% CI, 4.04 - 23.892, P < 0.001).

Conclusions: The results of this study show the factors related to the return-to-work after BC treatment in working women in Mashhad city, Iran. These predictors should be taken into account in order to improve the patient's life quality.

Keywords: Return to Work; Breast Cancer; Women; Iran

1. Background

Most women are diagnosed with breast cancer (BC) when they are still at an employable age, and a good prognosis assures them of a long life expectancy after recovery from the disease (1). In the past few decades, the survival rate steadily has increased for most cancer patients (2).

Modern medicine facilitates not only an early diagnosis of cancer but also treatments that have fewer detrimental impacts on patients' daily lives and functions (3). At the same time, research has more clearly identified long-term medical and behavioral effects of cancer (4).

Cancer survivors view working as a vital part of their lives. In fact, it helps them normalize their lives and cope with the illness (5). While working, survivors regain a sense of control over their lives. Thus, working is believed to act as a coping mechanism for survivors in managing psychosocial tensions and economical aspects of the disease (4, 6).

The increasing survival rates in patients with BC have created a need for more research and advocacy into their

ability to return to work after cancer (7). Evidence shows that most employed BC survivors are able to return to work (3, 8, 9). However, survivors face difficulties at work due to physical or cognitive limitations (10). Return-to-work (RTW) can be considered a type of social recovery that enhances the patient's life quality (11).

Personal and medical factors greatly affect the return to work (12). Some research has claimed that there is no association between RTW in cancer survivors and their socio-demographic characteristics, such as age, gender, education, income and marital status (9).

Thus, a negative association exists between RTW and certain types of work, particularly manual work (7). In contrast, social support and an encouraging working environment facilitate the RTW process (13). Discretion during working hours and the amount of work were also positively related to RTW in cancer survivors (11).

Breast cancer and its attendant therapies may cause physical and mental issues that impede going back to work (14). Surgery and radiotherapy of regional nodes

may cause secondary effects, such as enema and other arm-related problems. Further, chemotherapy may cause fatigue and cognitive dysfunction (15). These secondary effects may influence working ability, even after the treatments are complete (5). In one study, women diagnosed with early-stage BC were absent from work for about 11.4 months, on average, due to the disease (9). It was confirmed that the treatment, especially chemotherapy, strongly contributed to absence (14).

In 2006, the population of Iran was 70,495,789, including 34,629,420 female citizens (16). According to Iranian Cancer Society statistics, 3,645 new cases of invasive BC were diagnosed from 1998 to 2002 (17). In Iran, BC affects women at least one decade earlier than their counterparts in developed countries (18). In Tehran, in 1998, the breast cancer-induced mortality rate was 5.8 per 100,000 women. A total of 7,762 women died of BC in over 18 provinces of Iran in 2001 (19).

Regardless of all adverse consequences of chemotherapy, today, many patients aim to lead a fruitful life (20). The increasing survival rates of patients with BC call for more attention to their ability to return to work (9). A better understanding of the RTW process and its predictors for women with BC can enable caregivers to improve patients' working life quality after recovery (12). Most studies on BC have used a quantitative approach (6, 21). However, in Iran, no quantitative or qualitative study has been carried out on RTW factors that influence women who have been diagnosed with BC at an employable age (18, 22, 23).

2. Objectives

The aim of this study was to identify factors related to the RTW after BC treatment in women in Mashhad City, Iran.

3. Patients and Methods

This cross-sectional study was conducted on 175 working women with BC in four hospitals of Imam Reza, Ghaem, Omid, Mehr and Imam Reza Charity Center affiliated to Mashhad University of Medical Sciences, Mashhad, Iran, the referral centers of oncology in eastern regions of Iran, to determine factors related to RTW in working women with BC during 2000 - 2010. Razavi Khorasan Province is in north-eastern of Iran, and has a population of ~ 5.9 million (Statistical Center of Iran). The hospitals included in this study are cancer treatment centers in Khorasan Razavi province, which serve as referral sites for cancer patients in northeast of Iran. All BC records of employed women were studied at four hospitals in Mashhad city, Iran, between 2000 and 2010. Women were included in the study if they met the following inclusion criteria: i) They were Iranian nationals; ii) They could speak and complete the interview; iii) They were within the age range of 20 - 60 years; and iv) They were employed for at least six months before the diagnosis of BC. Patients were excluded if (a) they were housewives, (b) they did

not have governmental jobs or (c) they retired after their diagnosis (Figure 1, flow diagram of the study). This study was approved by the ethics committee of Mashhad University of Medical Sciences (registration code: 910215). Written consents were obtained from many of the subjects, and in case the participants were not present at the hospital, verbal consents were obtained.

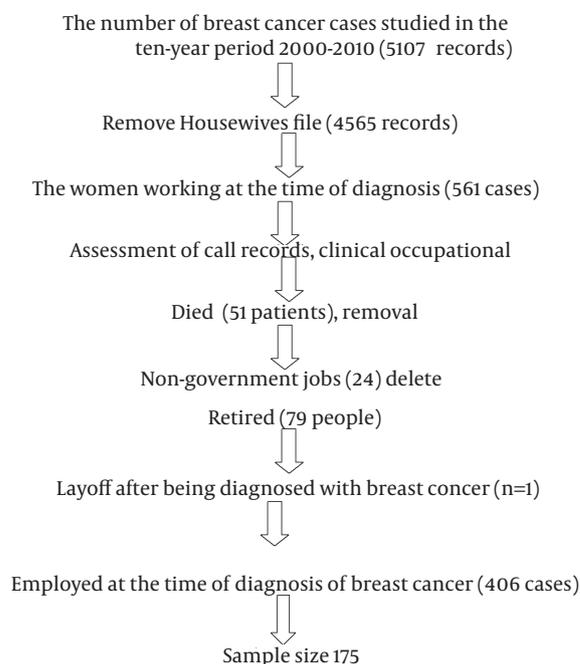


Figure 1. Flow Diagram of the Study

In this study, conducted during 2000 - 2010, study population consisted of all women with BC. The subjects were selected based on the inclusion and exclusion criteria. By using a sample size formula, the size of each group was estimated to be 34 subjects. In the "no return-to-work" group, sampling was continued until reaching the desired sample size, and a total of 175 subjects were enrolled.

$$(1) \quad n = \frac{(z_{1-\frac{\alpha}{2}} + z_{1-\beta})^2 \times [p_1(1-p_1) + p_2(1-p_2)]}{(p_1 - p_2)^2}$$

$05/0 = \alpha$, $96/1 Z_{1-\alpha/2} = 1/96, 2/0 = \beta$, $86/0 Z_{1-\beta} = 0/86$, $p_1 = 34\%$, $p_2 = 66\%$.

The researcher-made questionnaire consisted of socio-demographic characteristics, health/disease status, and work conditions. In order to design the questionnaire, 10 faculty members and 10 patients were consulted.

To assess validity of the questionnaire in this study, we used qualitative content analysis. Questionnaires were sent to ten specialists in the field of the study and the material was revised and improved according to the feedbacks received. In order to ensure the collection of data from medical records, a peer researcher extracted the data and reported the consistency of the data (all data

were collected by one researcher).

The questionnaire included demographic characteristics, health/disease status, and work conditions (e.g., age, marital status, education level, pain and edema in hands after surgery, occupational status, work experience, and RTW). Demographic and work-related data were collected via interviews, and disease-related data were extracted from medical records at the hospitals. In order to gain reliability of questionnaire in this study, test-retest method with 10 day interval was used in which 10 women were asked to complete the questionnaire. The correlation coefficient was calculated to be 85%. The reliability of questions, extracted from medical records, was also examined by test-retest, based on the evaluators' interpretations. The correlation coefficient was calculated to be 89%. The main finding of this study was RTW one year after BC treatment. Return-to-work was defined according to patients' positive response to a question concerned with their occupational status. The statistical analyses were made using the SPSS

software, version 11.5. Basic descriptive statistics including mean, standard deviation (SD), and frequencies were measured. Statistical tests such as the independent t-test and chi-square test were used. Regression logistic analysis was used to determine factors (socio-demographic, disease and work variables) related to the RTW after treatment of BC in working women in Iran.

4. Results

Table 1 lists the characteristics of the participants. The mean age of sampling at the time of interview was 44.3 ± 6.72 years, but the mean age of the RTW group was 42.71 years and "no return to work" group was 51.06 years. More than 74% of the participants had a college degree. Job experiences in return to work and "no return to work" groups were 17.47 and 25.23 years, respectively. Only a small proportion of women (10 women, <10%) did not respond to the questionnaire. Data related to all patients were available, except for the missing cases.

Table 1. Characteristics of Employed Women Breast Cancer Survivors

Variable	"Return-to-work" group	"No return-to-work" group	P Value
Age, y ^a	42.71 ± 6.07	51.06 ± 4.7	< 0.001
Education			< 0.001
No college degree	26 (18.6)	18 (51.4)	
College degree	114 (81.4)	17 (48.6)	
Experience, y ^a	17.47 ± 7.02	25.23 ± 5.75	< 0.001
Marital status			0.201
Married	121 (86.4)	33 (94.3)	
Single	19 (13.6)	2 (5.7)	
Physical health before the diagnosis of breast cancer			0.406
Average/poor/very bad	4 (2.9)	2 (5.7)	
Excellent/very good	136 (97.1)	33 (94.3)	
Mastectomy			0.618
Yes	98 (70)	26 (74.3)	
No	42 (30)	9 (25.7)	
Support of husband			0.292
Yes	108 (77.1)	24 (68.6)	
No	32 (22.9)	11 (31.4)	
Support of Colleagues			0.820
Yes	73 (52.1)	19 (54.3)	
No	67 (47.9)	16 (45.7)	
Support of boss/manager			0.104
Yes	120 (85.7)	26 (74.3)	
No	20 (14.3)	9 (25.7)	
Sick leave			0.530
Yes	125 (89.3)	33 (94.3)	
No	15 (10.7)	2 (5.7)	
Pain in scar surgery			< 0.001
Yes	15 (10.7)	24 (68.6)	
No	125 (89.3)	11 (31.4)	
Lymphedema			< 0.001
Yes	23 (16.4)	22 (62.9)	
No	117 (83.6)	13 (37.1)	

^a Values are presented as mean ± SD.

Job experiences in the RTW and “no return to work” groups were 17.47 and 25.23 years, respectively. Most women were married (80%), and more than 94% reported very well to excellent health before their BC diagnoses. More than 70% of the patients had undergone a mastectomy. Most women reported receiving support from their husbands, colleagues and managers/bosses after their diagnoses. Less than 10% had refrained from using sick leave after learning of their BC. The difference in pain during scar surgery, lymphedema and heavy lifting was statistically significant between the two groups ($P < 0.001$). Most of the women were teachers. The mean duration of sick leave was 104.35 ± 99.23 days. At the time of the interview, 80% had returned to work after their treatments. Among the women who had returned to work, over 80% had resumed their previous job, but 9.2% had changed job responsibilities, 7.1% had decreased their working hours and 3.7% had increased their hours and responsibility. Moreover, 92% of the women who had returned to work reported experiencing fatigue. Older patients (OR = 0.796; 95% CI, 0.625 - 0.907, $P = 0.002$), and high-work experience (OR = 0.861; 95% CI, 0.752 - 0.986, $P = 0.030$) were less likely to return to work. Women who had supportive managers or bosses were more likely to return to (OR = 22.47; 95% CI, 2.470 - 74.55, $P < 0.001$). Finally, women who had experienced no pain during scar surgery (OR = 23.03; 95% CI, 4.53 to 117.02, $P < 0.001$) or lymphedema after treatment of BC (OR = 22.373; 95% CI, 4.04 to 23.892, $P < 0.001$) were more likely to return to work (Table 2).

Table 2. Logistic Regression Analysis of Return to Work (RTW) After Treatment of Breast Cancer in Working Women Survivors^a

Variable	OR	95% CI	P Value
Age, y	-0.263	0.625 - 0.907	0.002
Experience, y	-0.150	0.752 - 0.986	0.030
No pain in scar surgery	3.137	4.53 - 117.02	< 0.001
No lymphedema	3.118	4.04 - 23.892	< 0.001
Manager/boss support	3.313	2.470 - 74.55	< 0.001

^a Abbreviations: OR, Odds Ratio; CI, Confidence interval.

5. Discussion

This study analyzed predictors of RTW in employed Iranian women after a BC treatment. During a period of ten years (2000 - 2010), 80% of employed women from the study sample returned to work after having BC. Our descriptive results are comparable to those of most studies, particularly to Roelen's, in which 88% of the respondents returned to work, indicating that a number of women choose to work following their BC diagnoses (1, 3, 8, 24). Other studies reported a rate of work resumption between 64% and 88% (6, 14, 21, 25). In 2006, Bouknight and colleagues reported an 82% RTW rate for women with BC at 12 months postdiagnosis and 83% at 18 months. Maun-

sell and colleagues reported a rate of 79% at three years after BC diagnosis; Satariano and colleagues reported 72% at three months after BC diagnosis, and Johnsson confirmed that 84% RTW rate is for that diagnosis with early-stage BC (21, 26-28).

Age may influence RTW after BC because older working women may decide that they do not need to return to their careers. Our results are similar to those of other studies (27, 29) in which older patients were less likely to return to work compared to younger patients.

In this study, the RTW rate was higher in women under 45 years of age. It was also higher for women with a college degree, with more than 15 years of work experience, with no pain during scar surgery and with no lymphedema. The literature shows that moral support from work colleagues has an overall positive effect on RTW, albeit not a significant one (6, 10). A study by Maunsell and Kennedy showed that some women diagnosed with BC prefer to devote themselves to their personal lives and thus stop working. These changing priorities previously have been studied previously (5, 26). After reassessing their priorities, some women choose to lower their professional responsibilities and devote more time to their families and to themselves (22). In our study, support from the husband, colleagues and managers failed to influence RTW after BC diagnosis. However, in a review, Spelten and colleagues reported that a supportive work environment seemed to facilitate return to work (6). This difference in findings could be attributed to the cultural differences between countries. The rate of heavy lifting at work before diagnosis of BC was high in patients who returned to work. It appears that changes in responsibility and working hours reflect the nature of their occupation.

A German study conducted a broader analysis of the effects of auxiliary dissection on women's quality of life: five years after diagnosis, 38% still complained of lymphedema or of limited arm mobility, which was negatively associated with their quality of life (29). Balak and colleagues showed that patients with shoulder function impairment resumed their work about two months later than those without any complaints (9). The factors of RTW identified here should help us to optimize the support provided to patients. This optimization involves informing, reassuring and guiding patients using early and multidisciplinary management.

Managers must be made aware of the importance of the challenges faced by BC patients. Patients can maintain a link with their work environment if each person at work is aware of the issues that women encounter after BC treatment, challenges that extend beyond medical difficulties. This involves a perspective change for all parties involved and a real willingness to reintegrate people who have had cancer. Additional information is needed on initiating an early work resumption support process that will take into account both the person and her environment. The study was conducted during 2000 - 2010. Therefore, this study can demonstrate the long-term effects of

BC treatment. The findings demonstrate and highlight the importance of "RTW" after BC. Policy makers and legislators need to pay exclusive attention to the long-term effects of BC by considering these factors in employment legislations of Iran. Our findings may help physicians, nurses, supervisors, health educators, health promoters and policy makers determine the predictors that should be considered to improve women's working lives. Several limitations are noted in this study. First, the study sample may not be representative of BC survivors from all parts of the country, since the subjects were employed women, recruited from a specialized oncology center. Second, our study sample was restricted to employed women; thus, they were younger and healthier, compared to the rest of female population.

Finally, the decision to continue to work during illness or to return to work at the end of treatment is important in the quality of life of women with BC. Aside from the economic prejudice, being kept away from one's job can be damaging to one's self-esteem and impair both quality of life and health status. Such conditions, unfortunately, can lead to social isolation.

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Authors' Contributions

Study concept and design: Fatemeh Azarkish, Khadijeh Mirzaii Najmabadi, Robab Latifnejad Roudsari. Data Gathering: Fatemeh Azarkish, Fatemeh Homaei Shandiz. Interpretation: Fatemeh Azarkish, Khadijeh Mirzaii Najmabadi, Drafting of the manuscript: Fatemeh Azarkish, Khadijeh Mirzaii Najmabadi, Robab Latifnejad Roudsari.

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