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Investigating the Survival Rate in Women with Breast Cancer in Iran

Arezoo Shayan[1], Hassan Ahmadinia[2], Soghra Rabiee[3], Sharareh Niksiar[4], Batul Khodakarami[4*]

[1]Assistant Professor, Department of Midwifery, Mother and Child Care Research Centre, School of Nursing and Midwifery, Hamadan University of Medical Sciences, Hamadan, Iran

[2]Department of Epidemiology and Biostatistics, School of Health, Hamadan University of Medical Sciences, Hamadan, Iran

[3]Endometrium and Endometriosis Research Centre, Hamadan University of Medical Sciences, Hamadan, Iran

[4]Faculty of Medicine, Hamadan University of Medical Sciences, Hospital & Health Care, Hamadan, Iran

ABSTRACT

Introduction: The study aimed to "Investigating Survival Rate in Patients Referring to Breast Cancer Registry Centre and Hamadan Oncology Centres".

Methods: The demographic data and pathologic findings of the patients were extracted from the Cancer Registry Centre of Hamadan province, and supplementary data were completed using a designed questionnaire through personal interviews with patients or their relatives. Information concerning the mortality registration program was used to determine the patient's life status and their death date.

Result: Of 107 cancer patients, 75 subjects were survived. The mean life span since the incidence of the disease until death was 37.5 months and for the rest of the patients (up to the end of the study), it was approximately 63 months. 56.1% were in the vicinity of the communications pole. The disease of 23% of the subjects exposed to waves, led to their death, and the survival rate of those exposed to communication waves was less than the other group. There was no significant difference in survival rates in terms of employment, education, and marriage (P>0.05). In urban residents, the disease of 27.6% has led to their death, while this ratio was 55.6% in the rural group. The survival rate in the two groups of rural and urban was significantly different (p=0.002) and the survival rate of the subjects who lived in the village was less than the other group.

Conclusion: Living in the village and being in the vicinity of the communication pole have been effective in reduced life span.

Key words: Breast cancer; Women; Survival

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Corresponding author: Batul Khodakarami
e-mail ✉: batulkhodakarami@protonmail.com
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INTRODUCTION

Breast cancer is referred to as the abnormal growth of breast tissue cells, which is divided into two main groups of invasive and carcinoma in situ [1]. This type of cancer in women accounts for about a third of all cancers [2]. According to global statistics, one in every 8 to 10 women suffers from breast cancer, accounting for about 23% of all cases of cancer and 14% of all deaths from cancers in this gender. It was estimated that nearly 1.5 million people were diagnosed with breast cancer in 2010 [3]. According to the World Health Organization (WHO) in 2009, breast cancer has killed 519,000 people annually [3]. The age of breast cancer in Iranian women is about one decade earlier than women in Western and developed countries [2,3]. The American National Cancer Society has estimated that among women under the age of 40 in this country, one out of every 225 people, and among sixty-year-old women, one out of every 22 people, and in cases of eighty-year-old women, one out of every 10 people suffer from this condition [2]. According to a review study in Iran, more than 30% of patients are under 30 years old [3]. According to the Health Ministry's Centre for Disease Control, breast cancer in women is ranked first among all ages. In 2009, the number of breast cancer patients in the country were 9186 (25.4% of all women's cancers) and in Hamadan Province, 161 cases (25.7% of all women's cancers) [4]. Breast cancer in young women has a more aggressive nature and a worse prognosis, and lack of its early diagnosis can lead to early death [5]. In a national

study that was conducted in 2008 on 6976 patients, a five-year survival rate of the patients registered in Iran's cancer registry system was estimated at 71%. Survival rates were 70%, 89%, 76.5%, and 58%in a study in Shiraz, Baqiyatollah Hospital, two university centres in Tehran and Semnan, respectively [6-11]. Several factors have been suggested as the factors affecting the survival rate in breast cancer. The higher stage of the disease, the greater number of the lymph nodes involved, type of tumour pathology, stage or severity of the tumour, negative receptors of estrogen and progesterone, age of premenopausal, receiving different types of treatments, economic status, physical condition, and fertility status, etc. are among the factors that are associated with less survival [12]. Investigating the survival rate of people can decrease the mental and psychological burden caused by the disease and increase people's awareness and the hope of a healthy life and improve the course of treatment. It can also be helpful for the therapist to choose the type of treatment and subsequent follow-ups, and on the other hand, the present study aimed at investigating the survival rate of women with breast cancer in Hamadan province.

METHODS

This study was conducted during the years 2016-2017 on all breast cancer patients who had a history of cancer in the Hamadan Cancer Registry Centre from 2005until the end of 2015 through a descriptive cross-sectional method. Patients or their first-degree relatives were invited to attend a personal interview at the health centre. In order to do the analysis, the survival for each subject referred to the time of disease incidence until the time of entering the study, and the death of subjects was considered as an EVENT. As a result, the study population included all the people who had been diagnosed with breast cancer during the years 2005 to 2015, whether they were dead or still alive. The inclusion criteria were women with breast cancer, regardless of the type of disease and type of treatment, and a resident in Hamadan and the exclusion criteria were lack of willingness to participate in the study, lack of cooperation of the relatives of the deceased patient, and uncertainty about the patient's place of residence. In this study, using the information available in the cancer registry centre of the province, a list of all patients with breast cancer was extracted, then they after making a phone call with the patients and gaining their consent, the coordination necessary for a personal interview with them was carried out at the health centre or the patient's place of residence, and the data required were completed through a designed questionnaire. Cases such as patient's dissatisfaction to continue the cooperation or location uncertainty were excluded from the study. At the same time, sampling was done through available methods at all centres of oncology and breast cancer clinics of Hamadan, and the questionnaires were completed by the subjects' consent. In the case of the deceased patients, the information required was obtained through first-degree relatives.

A total of 107 patients were identified and examined, and their stage of cancer was between 4 and 1, among whom 48.6% were in stage 2. The names and initial information of the patients, including demographic data and data related to the disease, and pathological findings were extracted from the information existing in the Cancer Registry Centre of the province, and the supplementary data were completed using a questionnaire designed by personal interviews with patients or their first-degree relatives.

The data collection tool was a questionnaire containing demographic information of patients Also, mortality registration program was used to determine the patient's life status and their death date. The survival rate of the patients was considered one, three and five years from the time of diagnosis of cancer until death. For this purpose, the history of diagnosis and confirmation of breast cancer was considered as the starting date and date of the patient's death because of cancer was considered as the termination time. It should be noted that the location of communication poles was identified at the city level, and in the interviews, the people were asked to give the address of their place of residence, hence the subjects living in the vicinity of communication poles were identified. Information about the date of diagnosis of cancer was extracted from the pathology diagnostic sheet. Information about the time of the patient's death was determined through telephone follow-up as well as using the death record of the province.

In order to assess the validity of the questionnaire, the comments of 10 experts were selected. Also, the reliability of the questionnaire was obtained as 0.75 using Cronbach's alpha. To analyse survival data, Cox regression test was used. Using SPSS 21 software, all statistical analyses were estimated and reported at a 95% confidence level.

RESULTS

In this study, the information on 107 patients with breast cancer during the years 2005 to 2015were investigated. Using the two variables of the age of incidence of cancer and the current age of the subjects (in case of death, the age at death), the duration patients were suffering cancer was calculated. The outcome in this study was considered the period of time the patients died due to cancer. Using this information, the survival rates of the subjects in different groups were calculated and compared in terms of some variables. Using the Kaplan Meier method and the Log Rank test, the survival rates of cancer patients in different groups were calculated and compared. Of 107 people with cancer, 32 died from the disease, and the rest survived. 68.2% were married; 89.7% were housewives; 47.7% were illiterate, and 56.1% were in the vicinity of communication poles. The stage of cancer in 48% of the subjects was in Grade 2. In 37.2% of the subjects, the

body mass index (pre-infection) was obese and in 37.2% of the subjects, the current body mass index was also obese (Table 1).

Table 1: Frequency distribution of some of the features of the patients with breast cancer.

Variable	Variable levels	No.	Percent
Patient's life status	alive	75	70.1
	dead	32	29.9
Marital status	married	73	68.2
	single	13	12.1
	widow	21	19.6
Employment status	employed	11	10.3
	housewife	96	89.7
Educational level	illiterate	51	47.7
	below high school diploma	27	25.2
	high school diploma	16	15
	university education	13	12.1
Exposed to waves (communication pole)	yes	60	56.1
	no	47	43.9
Cancer level	1	32	29.7
	2	52	48.6
	3	20	18.9
	4	3	2.7
Type of current treatment	chemotherapy	2	1.3
	chemotherapy and radiotherapy	105	98.7
Follow-up intervals	regular	80	74.4
	irregular	27	25.6
Initial body mass index	underweight	4	3.8
	natural	34	32.1
	overweight	29	26.9
	obese	40	37.2
Current body mass index	underweight	4	3.8
	natural	38	35.9
	overweight	25	23.1
	obese	40	37.2

Approximately the disease of 23% of those exposed to waves (near the communication pole) led to their death, while this ratio is almost 9% in the other group. According to the results of the Log Rank test, subjects exposed to communication waves have less survival rate than the other group. The mean survival rate in the exposed group (in the vicinity of communication pole) was approximately 7.5 years, and in the other group, it was 11 years, which means that at least 50% of cancer patients exposed to waves will die within 7.5 years.

According to the results of the Log Rank test, the survival rate was not significantly different between the two groups of employed and housewife (P>0.05). However, with respect to the mean survival time and the survival chart of the two groups, survival was higher in the housewives than the employed ones.

According to the results of the study, the survival rates of cancer patients in different groups were not significantly different in terms of marital status and educational level. This shows that these variables have had no significant effect on the survival rate of individuals. The charts below show the survival of different groups. According to this chart, although different groups have different mean

survival time, their differences are not statistically significant (Figure 1).

Approximately 27.6% of the subjects living in the city have died of their disease, while this proportion in the rural population group is 55.6%. According to the results of the Log Rank test, subjects living in the village had fewer survival chances than the other group, and the difference was significant (P=0.002). The mean survival rate for the subjects living in villages and subjects living in cities has been 3 and 11 years, respectively, which means that at least 50% of the cancer patients living in the village have died within 3 years. However, this index gained in the other group was 11years (Figure 2).

Cox regression analysis was used to calculate the risk ratio in different groups. First, using the univariate Cox regression, the hazard ratio (HR), along with the confidence interval, the hazard ratio is obtained for each of the variables, and then the variables that are meaningful are included in the Cox multivariate model, and the modified hazard ratio is obtained. About HR ratio in a univariate model, the risk of death from cancer in subjects living in rural areas is roughly 4 times higher than the subjects in urban areas. Also, the risk of death for those exposed to radiation is approximately 2.3 times more compared to other cancer patients. Moreover, the risk of death in cancer patients who are widowed or single is higher than married ones.

Then the variables whose significant level was less than 0.2 were included in the Cox multivariate model. In this way, three variables of residence, being exposed to radiation and marital status have been included in the multivariate model (Table 2).

Of 107 subjects with cancer, 32 died from the disease, and the rest (74 subjects) survived. On average, patients who died during the study period had survived for 37.5 months (3.1 years) since the incidence of the disease. This index was approximately 63 months (5.2) years old for the rest of the patients (From the incidence of the disease until the end of study) (Table 3).

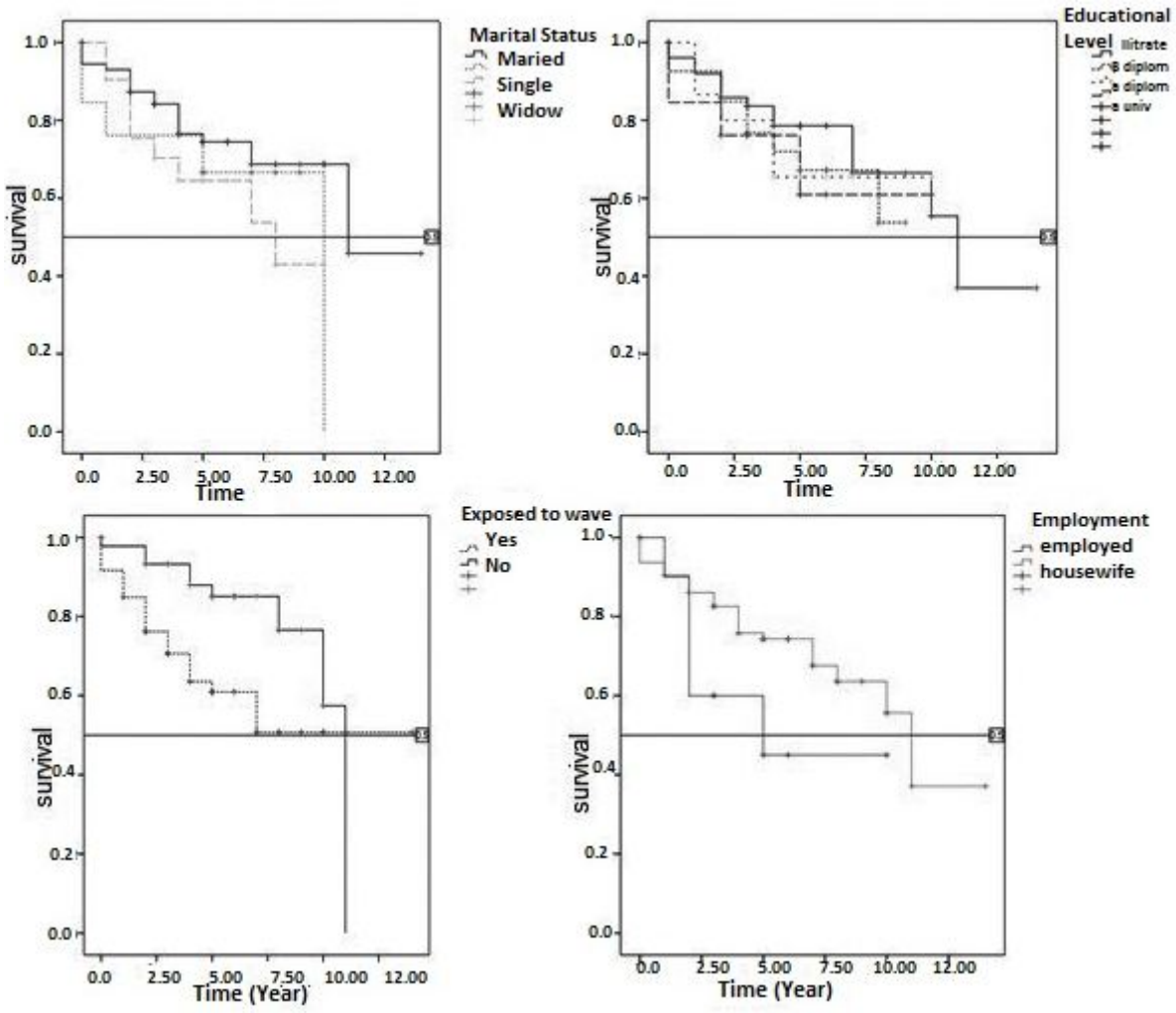

Figure 1: Comparison of the survival rates of the two groups based on exposure to radiation, employment status, marital status and educational level in subjects with breast cancer (living or dead).

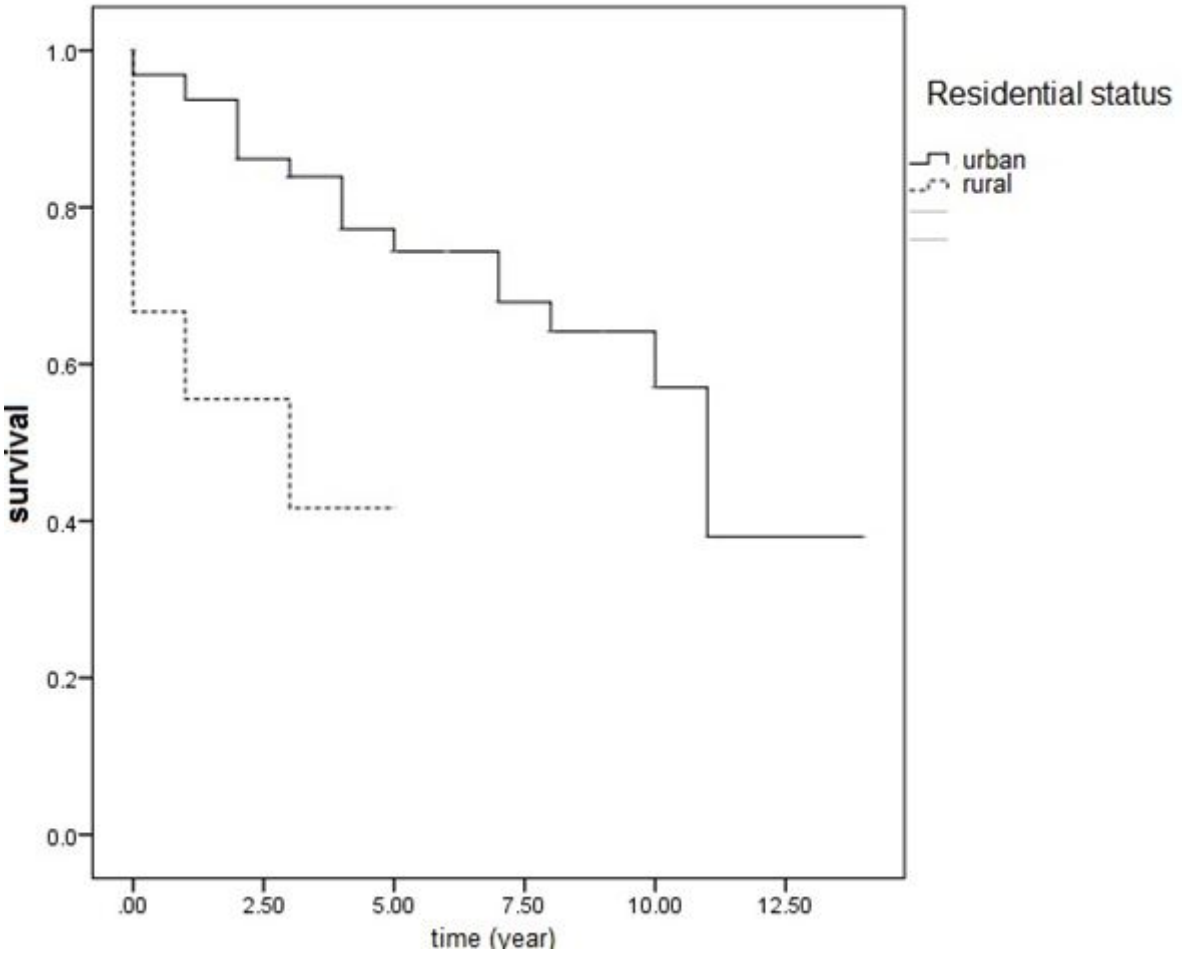

Figure 2: Survival rates for the subjects with breast cancer based on their residential status.

Table 2: Multivariate and univariate Cox regression in order to investigate the relationship of different factors with the survival rate of patients.

Variable	Variable levels	Univariate analysis		Multivariate analysis	
		HR (95% CI)	P-value	HR (95% CI)	P-value
Residential status	Urban	1	-	1	-
	rural	4.01 (1.5-10.72)	0.006	3.18 (1.14 – 8.87)	0.027
Presence of communication pole in the vicinity of residential place	No	-	-	1	-
	yes	2.34 (1.08-5.06)	0.032	1.91 (0.85-4.27)	0.119
Marital status	Married	1	-	-	
	single	1.64(0.61-4.47)	0.329	-	
	widow	1.81 (0.81-4.08)	0.152	-	
Employment status	Housewife	1	-	1	-
	employed	2.07 (0.79-5.41)	0.139	1.96 (0.74-5.19)	0.173
Educational level	illiterate	1	-	-	
	below diploma	1.40 (0.60-3.28)	0.444	-	
	high school dip.	1.29 (0.46-3.63)	0.626	-	
	university education	1.60 (0.52-4.89)	0.42	-	

Table 3: The mean years of survival (diagnosis until the end of the study or until death).

SD	Mean	max.	min.	No.	Life Status	
2.7	5.22	14	0	74	mean life span for a year	Alive
32.42	62.75	168	0	74	mean life span for a month	-
2.89	3.12	11	0	32	mean life span for a year	Dead
34.71	37.5	132	0	32	mean life span for a month	-

DISCUSSION

The present study aims at investigating the survival rate the women suffering from breast cancer registered in the breast cancer registry of Hamadan province. The personal and nutritional information obtained from the patients was as follows. Of 107 subjects with cancer, 32 died from the disease, and the rest (75 subjects) survived. On average, patients who died during the study period could survive for 37.5 months (3.1 years) since the disease was diagnosed. This indicator was approximately 63 months (5.2 years) for the rest of the patients (diagnosis until the end of the study). Yazdani et al. showed that during the follow-up period, 337 (18.9%) patients died from breast cancer and 1448 (81.1%) survived [13]. In Abdollahi et al. study the survival rate without recurrence was 54.8%, on 1329 cases in Iran [14]. In Dong et al. study it was demonstrated that the survival rates of 1, 3, 5, and 10 years for the 1381 patients were 94.91%, 88.64%, 80.64%, and 56.17%, respectively, and the of median survival period was 154.87 months [15].

Of the total number of subjects, most were married, housewife, and illiterate, and there were poles of communication near their place of residence. Subjects living in the village had less survival rate than the other group. Almost 39% of people near the telecommunication rack have been killed, while the proportion in the other group is 19%. According to the LouGrunch test, people who were close to the telecommunication rack were less likely to survive than those who were not close to the telecommunication rack. According to the latest figures provided by the Cancer Research Centre on carcinogens in the country, cancer cell phone ranges are mobile. No extensive articles have been published on the impact of telecommunication towers on breast cancer in Iran. Approximately 27.6% of the people living in the city died, while the ratio was 55.6% in those who lived in the village, and according to the results of the Lugargnack test, those who lived in the village were more likely than others to live in the village, have survived less. In a study by Badran et al., 1,495 women with breast cancer were among whom 1086 (72.64%) were rural and 409 (27.36%) were urban residents [16]. The reasons for the increased risk of cancer in rural women can be attributed to the following reasons. In a study, it was shown that mobility in rural women is lower than urban women, which can be attributed to rural change and the decline in agricultural activity and livestock breeding and shortage Features and cultural factors. The effect of physical activity on the incidence of breast cancer has been demonstrated in various studies [17-19]. And it can be said that post-operative care has been of lower quality in the residents of the village. Also, the high likelihood of death in villagers can be the cost of post-treatment treatments and lack of follow-up by them, the weakness of post-chemotherapy care, and especially the quality of the type of nutrition [20].

CONCLUSIONS

The results showed that living near the communication poles and low quality of the economic and social status, physical and mental factors, nutritional quality and culture, and mobility and environmental factors can be effective in the development of breast cancer. Therefore, efforts to raise the level of health and nutrition information of families and encouraging mobility and breast-feeding, training how to do breast self-examination and timely screening through training at health centres, media and schools can be very effective on early diagnosis and prevention of cancer. Avoiding a single life and encouraging marriage is very effective in preventing stress and anxiety and having a prolonged life.

LIMITATION OF THE STUDY

It is better the study performs with a larger sample size and throughout the country for more comprehensive results.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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