RESEARCH COMMUNICATION

Quality of Life among Breast Cancer Patients in Yemen

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Abstract

Objective: the objective of this study is to determine the quality of life among breast cancer patients in Yemen based on socio-demographic and clinical characteristics. Methodology: This study was designed as a cross-sectional study. The data collected from 106 female breast cancer patients who were chosen for recruitment from the outpatient in National Oncology Centre (NOC), Sana'a, Yemen from November 2008 to June 2011. Questionnaires were distributed to the patients during their visit to the outpatient clinics in the center. The instrument of this study consists of two parts: Socio-demographic and the Functional Assessment of Cancer Therapy-Breast (FACT-B) questionnaire. Regarding data analysis, means and SD of subscales were evaluated for descriptive purpose. Analysis of variance (ANOVA) was performed to compare the three groups regarding QOL subscales. Whereas, independent t-test was performed for comparing two groups regarding QOL subscales. Multiple linear regression using backward analysis was performed to obtain the final model for each domain. The final model was chosen depending on R2 and the p value of the model. A p value less than 0.05 is considered statistically significant. Results: A total number of 106 breast cancer patients were participated in this study. The majority of them were uneducated, unemployed with normal weight and had middle income (60.4%; 95.3%; 59.4%, 46.2%; respectively). As for clinical characteristics of the study participants; the majority of them had had no family history of breast cancer, have been diagnosed at least 2 years, were diagnosed at grade 3 and size of tumor greater than 2 cm (88.7%, 66.0%, 35.8%, 73.6%; respectively). The majority of them underwent mastectomy, radiotherapy, chemotherapy and tamoxifen therapy (85.8%, 63.2%, 94.3% and 62.3%; respectively). For univariate analysis, the present study has identified several factors includes family monthly income, BMI, educational status, years after diagnosis, histological grade radiotherapy and surgery that influence the QOL of breast cancer patients in Yemen. For multivariate analysis, years after diagnosis, family monthly income and radiotherapy were significantly associated with total QOL of the breast cancer patients (p=0.01, p=0.023, p=0.039; respectively). Conclusion: Family monthly income, BMI, educational status, years after diagnosis, histological grade radiotherapy and surgery were significantly influence the QOL of breast cancer patients in Yemen, in univariate analysis. For multivariate analysis, years after diagnosis, family monthly income and radiotherapy were significantly associated with total QOL of the breast cancer patients.

Keywords: Quality of life - Breast cancer - Yemen

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Introduction

Cancer is one of the major health problems worldwide with increasing frequency, especially with increased modernization, exposure to radiation and predisposition to large number of carcinogenic agents (Wu et al. 2003). Globally, breast cancer ranks first among cancers affecting women (Parker et al. 1996). Breast cancer has been considered the most common cancer seen in women; constituting 22% of all cases worldwide (El Saghir et al., 2007).

The Arab world has a total of 22 countries spread across Northern Africa and Western Asia, including the Middle East. Data from Arab countries on breast cancer vary according to region and country. Many Arab countries have witnessed great urban development and scattered industrialization. Political instability, military conflicts, and poor planning have kept the majority of the Arab peoples away from enjoying the medical advances of the second half of the twentieth century. Like many developing countries, they have had other health priorities such as control of infectious diseases and childhood illnesses. However, the World Health Organization (WHO) has recently acknowledged that non-communicable diseases have become a priority for health care in many developing countries (Al-Lawati et al. 1999, Saudi Arabia Cancer Registry 1998).

Profound demographic, socioeconomic, and behavioral

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changes have taken place in Eastern Mediterranean Region over the past three decades. Longevity has progressively increased, and there has been steady shift from traditional and rural ways of life to more urbanized and modern lifestyle. With modernization, life styles linked with physical inactivity, smoking, and new eating habits have emerged which promote non communicable diseases, including cancer (Alwan 1997).

Breast in females, was the most frequent sites of malignancies in the Republic of Yemen (Al-Thobhani et al., 2001). In Yemen, the magnitude of the problem of breast diseases is not yet known (Al-Thobhani et al., 2006).The republic of Yemen lacks a national cancer registry and there are no reliable data available. However the WHO estimated 16000 breast cancer cases in Yemen annually (Bawazir et al. 1998, Ghouth et al., 2006). In 2008, prevalence rate of breast cancer in Yemen between 2001 and 2005 estimated to be 42.4 per 100,000 women (Abdulla Saleh & Aziz Alsafi 2008). In 2009, average of breast incidence rate in Yemen 20.9 (1261 cases) according to Current Worldwide Breast Cancer 2011 (Salim et al., 2009). Despite breast cancer in Yemen is lower than in developed countries; the difference may be attributable to the difficulties in getting accurate data and to under-reporting of cases. The recent study showed that half of women with newly diagnosed breast cancer in Yemen are younger than 50 years as in developing countries (Salim et al., 2009). Advanced disease of breast cancer is very common in Yemen (Salim et al., 2009). The republic of Yemen requires a national cancer registry and there are no reliable data available (Ghouth et al., 2006). Although a further wave of articles on QOL exploring with different disease groups, there is no previous study in Yemen. Therefore, we decided to carry out a study that would allow us to evaluate the QOL and affecting factors on it among breast cancer patients in Yemen.

Materials and Methods

This study was designed as a cross-sectional study. The data collected from 106 female breast cancer patients who were recruitment from the outpatient in National Oncology Centre (NOC), Sana'a, Yemen from November 2008 to June 2011. Women were included in this study if they were able to speak Arabic language, older than 18 years old. Excluded from this study were those women who had other malignancies, those who presented with metastasis. Women who were terminally ill and women who had severe physical, cognitive or psychiatric illnesses also excluded in this study. Questionnaires were distributed to the patients during their visit to the outpatient clinics in the center. The protocol of this study was approved by the ethics committee of Management and Science University (MSU), Malaysia. The instrument of this study consists of two parts: Part one is socio-demographic data such as age, marital status, family history of breast cancer. The second part is: The Functional Assessment of Cancer Therapy-Breast (FACT-B) questionnaire (version 4) was designed to capture patients' perspective on the impact of breast cancer treatment on their quality of life. The FACT-B, a 36- item instrument measured on 5-point rating scales, includes measures for physical, social/family, emotional, and functional wellbeing. The FACT-B also includes a collection of items assessing breast cancer-related concerns pertaining to various QOL domains. Two items tap into emotional concerns (worried about risk of breast cancer in the family members and worried about effects of stress on the illness). Three other items focusing on body image-related concerns (feeling self-conscious about the way one dressed, and feeling like a woman). Regarding reliability, validity, and responsiveness to clinical change of the FACT instruments have been demonstrated extensively (Brady et al. 1997, Cella et al. 1993, Cella et al. 1995, Fairclough & Cella 1996). The questionnaire translated into Arabic language. Regarding data analysis, sub scores of the FACT-B were computed according to the instructions (all subscales are scored such that high values mean high QOL). Means and SDs of subscales were evaluated for descriptive purpose. Analysis of variance (ANOVA) was performed to compare the three groups (race, years after diagnosis, marital status, BMI, educational status, income and histological grade) regarding QOL subscales. Whereas, independent t-test was performed for comparing two groups (age, employment status, chemotherapy, radiotherapy, Tamoxifen, surgery and tumor size) regarding QOL subscales. Multiple linear regression using backward analysis was performed to obtain the final model for each domain. The final model was chosen depending on R2 and the p value of the model. A p value less than 0.05 is considered significant.

Results

A total number of 106 breast cancer patients were participated in this study. The majority of the participants were less than 55 years old (67.9%). The majority of them were Illiterate and unemployed (60.4%; 95.3%; respectively). The majority of them were within normal weight (59.4%) and had middle income (46.2%) (Table 1).

As for clinical characteristics of the study participants; the majority of them had had no family history of breast cancer (88.7%) and have been diagnosed at least 2 years (66.0%). The majority of the participants were diagnosed at grade 3 and size of tumor greater than 2 cm (35.8%, 73.6%; respectively). The majority of them underwent mastectomy, radiotherapy, chemotherapy and tamoxifen therapy (85.8%, 63.2%, 94.3% and 62.3%; respectively) (Table 2).

Regarding the relationships between socio-demographic characteristics and QOL, educational level, BMI and family monthly income were significantly associated with QOL among breast cancer patients in Yemen. However, age and occupation were not significantly influence QOL (Table 3).

Regarding the relationships between clinical characteristics and QOL, years after diagnosis, histological grade, type of surgery and radiotherapy were associated with QOL among breast cancer patients in Yemen. However, family history of breast cancer, size of tumor, chemotherapy and tamoxifen were not significantly influence QOL (Table 4). For social well being and

Table 1. Socio-demographic Characteristics of the Study Participants and QOL

Variables	PWB Mean (SD)	SWB Mean (SD)	EWB Mean (SD)	FWB Mean (SD)	BCS Mean (SD)	TQOL Mean (SD)
Age						
<55	14.8±7.7	17.8±5.3	14.8±4.5	13.3±5.7	22.2±7.0	83.2±22.8
≥55	13.5±7.6	17.8±5.0	14.4±4.4	11.1±6.2	20.1±5.6	77.0±21.6
	p=0.387	p=0.982	p=0.633	p=0.081	p=0.136	p=0.193
Educational status						
Non						
Primary	12.6±7.7	16.4±5.5	14.5±4.2	11.2±5.9	21.9±7.0	76.7±23.3
Secondary	17.0±6.9	20.2±3.8	14.6±4.4	14.5±6.0	21.0±5.3	87.4±19.1
Tertiary	19.4±4.2	18.8±2.9	15.8±3.9	15.4±4.9	21.3±4.3	90.9±16.3
	15.0±8.5	20.8±3.5	15.0±5.2	14.4±5.3	20.7±8.8	86.1±24.2
	p=0.013	p=0.003	p=0.839	p=0.031	p=0.929	p=0.084
Occupation						
Employed	16.0±10.7	18.4±5.1	12.4±6.0	12.4±5.9	22.2±11.3	81.4±35.7
Non-employed	14.3±7.5	17.8±5.1	14.8±4.4	12.6±6.0	21.5±6.4	81.2±21.9
	p=0.645	p=0.804	p=0.239	p=0.924	p=0.818	p=0.989
BMI						
Under-weight	9.7±7.1	15.5±6.1	12.7±3.9	9.9±5.5	176.3±5.9	65.3±19.5
Normal weight	15.7±7.3	18.4±4.7	14.8±4.3	13.5±5.9	23.1±6.6	85.7±21.4
Overweight	15.5±7.6	18.3±4.8	16.4±4.9	12.8±5.9	21.3±5.6	84.4±21.1
	p=0.005	p=0.055	P=0.023	p=0.052	p=0.002	p=0.001
Family Monthly income (YR)						
No income	18.9±5.4	17.4±3.8	17.5±4.8	16.2±4.9	27.2±5.1	97.2±17.7
<10000	9.3±5.7	13.3±6.3	13.4±3.5	9.7±6.0	19.5±6.5	65.4±20.2
10000-30000	14.1±7.6	18.0±4.6	14.1±4.2	12.0±5.7	20.6±5.9	78.9±20.2
>30000	16.8±7.8	20.7±3.1	15.5±4.9	14.3±1.0	22.6±7.5	90.2±22.4
	p=0.002	p= 0.001	p=0.066	p=0.010	p=0.013	p=0.001

PWB, Physical well-being; SWB, Social well-being; EWB, Emotional well-being; FWB, Functional well-being; BCS, Breast cancer Subscales; TQOL, Total Quality of Life

educational level; the Post Hoc test showed that the different exist between non and primary (p=0.032). For social well being and years after diagnosis; the post Hoc test showed that the different exist between those in the category 1-2 years and those with more than 5 years after diagnosis (p=0.026). For physical well being and BMI; the post Hoc test showed that the different exist between those under weight and normal weight (p=0.006). For emotional well being and BMI; the post Hoc using Scheffe, the different exist between underweight and over weight (p=0.024). For physical well being and family monthly income; the Post Hoc test showed that the different exist between no income and <10,000 (p=0.013); and between 30,000 and <10,000 (p=0.009). For functional well-being and family monthly income; the Post Hoc test showed that the different exist between no income and <10,000 (p=0.032) in one hand and in the other hand no income and 10,000-30,000 (p==0.039). For overall QOL and Family monthly income; the Post Hoc test showed that the different exist between no income group and <10,000 (p=0.002). For functional well being and histological grade; the Post Hoc test showed that the different exist between grade one and two (p=0.042);

For total QOL, years after diagnosis, family monthly income and radiotherapy were significantly associated with total QOL of the breast cancer patients (p=0.01, p=0.023, p=0.039; respectively). For years after diagnosis, women in the category > 2 years after diagnosis had on average of 10.5 points lower compared to those women in the other category. This means that those women in the category 1-2 years had higher scores of total QOL than women in the other category. Family monthly income was significantly associated with total QOL of the participants. Lower income women had on average of 10.9 points lowered total QOL scores compared to the higher income women. This means that higher income women had higher total QOL scores than lower income women. Women underwent radiotherapy had on average of 9.1 points higher total QOL scores compared to those women who did not underwent radiotherapy (Table 5).

Discussion

This study investigated the QOL of breast cancer patients in Yemen to determine the quality of life among breast cancer patients based on socio-demographic and clinical characteristics. In univariate analysis, the present study has identified several factors includes family monthly income, BMI, educational status, years after diagnosis, histological grade radiotherapy and type of surgery that influence the QOL of breast cancer patients in Yemen.

Obesity is closely linked to a variety of chronic diseases such as diabetes mellitus, hypertension, coronary heart disease, gall-bladder disease, sleep apnea and respiratory problems, and many chronic diseases which may be associated with lower QOL. Concerning the body mass index (BMI), there was a significant association between the BMI and the overall QOL among breast cancer patients in Yemen. This result is consistent with other study in which obesity is associated with a poor

Table 2. Clinical Characteristics of the Study Participants and QOL

Variables	PWB Mean (SD)	SWB Mean (SD)	EWB Mean (SD)	FWB Mean (SD)	BCS Mean (SD)	TQOL Mean (SD)
Family History of breast Cancer						
Yes	16.6±7.5	17.0±4.2	15.0±3.3	14.5±5.3	19.0±5.5	82.3±13.3
No	14.0±7.6	17.9±5.2	14.5±4.5	12.3±5.9	21.8±6.7	80.7±23.2
	p=0.265	p=0.593	p=0.720	p=0.234	p=0.173	p=0.718
Years after diagnosis						
1-Feb	15.4 ± 7.5	18.8 ±4.1	14.6±4.6	13.6 ± 5.7	21.8 ± 6.5	84.3 ± 21.0
2-May	13.5 ± 7.4	16.5 ± 5.9	14.7 ±4.4	11.2 ±6.0	20.7 ±7.3	76.9 ± 25.2
>5 years	8.4 ± 8.1	13.4 ± 7.3	15.1 ±3.4	8.1 ± 5.4	22.8 ±6.3	67.9 ± 19.4
	p=0.055	p=0.008	p=0.962	p=0.021	p=0.683	p=0.088
Histological grade						
Grade 1	12.5±8.1	17.5±5.2	13.7±4.8	11.0±5.9	21.1±7.3	76.1±23.2
Grade 2	16.1±7.4	18.1±5.6	15.9±4.4	14.6±5.5	21.9±7.2	86.7±23.2
Grade 3	14.5±7.2	17.8±4.7	14.4±4.0	12.2±5.9	21.7±5.5	80.8±20.5
	p=0.160	p=0.915	p=0.128	p=0.037	p=0.874	p=0.149
Size of tumor						
<=2cm	13.3±8.4	18.1±3.9	14.2±5.4	12.8±6.6	22.2±7.9	80.9±26.3
>2cm	14.8±7.3	17.7±5.5	14.8±4.1	12.5±5.7	21.3±6.2	81.3±21.1
	p=0.370	p=0.672	p=0.556	p=0.832	p=0.568	p=0.933
Type of surgery						
Mastectomy	14.6±7.2	17.6±5.3	15.1±4.4	12.5±5.8	22.1±6.6	82.1±22.5
Lumpectomy	13.1±10.1	18.8±3.3	12.1±4.1	13.4±7.0	18.0±6.0	75.6±22.5
	p=0.478	p=0.406	p=0.015	p=0.570	p=0.024	p=0.297
Radiotherapy						
Yes	14.9±9.2	18.2±5.0	15.6±4.0	13.5±5.7	21.9±6.3	84.3±22.1
No	13.7±7.9	17.3±5.3	13.2±4.7	11.1±6.0	20.5±7.2	75.9±22.2
	p=0.447	p=0.352	p=0.008	p=0.046	p=0.282	p=0.064
Chemotherapy						
Yes	14.2±7.5	17.8±5.1	14.6±4.4	12.3±5.7	21.4±6.7	80.5±22.2
No	18.5±8.8	17.0±5.5	15.8±6.0	17.1±8.2	24.0±5.3	92..5±26.0
	p=0.184	p=0.682	p=0.533	p=0.056	p=0.368	p=0.209
Tamoxifen						
Yes	14.2±7.7	18.0±4.8	15.2±4.4	12.8±5.7	21.5±6.9	82.1±23.2
NO	14.4±7.6	17.4±5.6	13.8±4.5	12.3±6.3	21.6±6.3	79.7±21.5
	p=0.974	p=0.521	p=0.102	p=0.713	p=0.971	p=0.578

PWB, Physical well-being; SWB, Social well-being; EWB, Emotional well-being; FWB, Functional well-being; BCS, Breast cancer Subscales; TQOL, Total Quality of Life

QOL in patients with and without breast cancer (Conde et al. 2005). A study from China showed that BMI was significantly associated with overall QOL (Lu et al. 2007). Patients who exercise regularly maintain normal body weight. This is supported by a study conducted by McNeely and colleagues (2006) that identified exercise as a promising approach to improve QOL in breast cancer patients.

As far as family monthly income is concerned, low socioeconomic status and poverty are considered the risk factors of cancer disease; inadequate education, unemployment, chronic malnutrition, higher smoking rates, psychosocial stress, and noxious environmental agents are all associated with poverty (Kagawa-Singer 1995). This study showed that there was a significant association between family monthly income and the overall QOL. Our previous study showed that family monthly income significantly influences overall QOL (Redhwan et al. 2008). The finding is consistent with a previous study conducted by Ganz et al. (2002) which reported that income was a significant predictor of QOL. Merkin and colleagues (2002) also reported that low income led to limited availability of primary preventive measures and of detecting breast cancer at an early stage in the disease. This present finding was also consistent with the finding by Uzun and others (2004) who showed that women with moderate income had better overall QOL. The same finding was also reported by Esbensen and others (2004) who showed that poor economy was associated with low QOL. The family income was significantly influencing the overall QOL as reported by Pandey et al. (2006). Such finding was reinforced with another study from China which showed income was significantly associated with overall QOL (Lu et al. 2007). This probably because income might have had interactive effects. Our result, however, was in contrast with a study conducted by Pinar and others (2003) which reported that no effect of financial status was found on QOL.

Educational level significantly influence the physical well being, Social well being, emotional well being, functional well being among breast cancer patients in Yemen. This result was constant with the previous studies that showed a significant relationship between the level of education and the QOL (Moody & McMillan 2003). Other findings were reported by Engel and colleagues (2003) among German breast cancer patients. Pinar and others (2003) also reported that university-educated patients had the highest QOL scores. The same finding

was reported by Uzun and others (2004) who noted that women who had college education showed better overall QOL. In Denmark, Peuckmann and his colleagues (2007) reported that poor QOL was significantly associated with short education. These are the possible explanations for the higher QOL among more educated patients. Rustoen and co-workers (1999) found that the educated cancer patients had greater satisfaction with medical interaction and had better QOL than uneducated patients. Women with low levels of education and income were less likely to be screened for breast cancer, would delay seeking care in the presence of symptoms, and were diagnosed in later stages of the disease (Bofill 2003; Naomi et al. 1999; Petro 2001). More educated patients required less time and attention from the health team members who provided information regarding patients' medical treatment and follow-up care, compared to time required of health care team members from less educated patients (Golant et al. 2003). A further finding reported by Pandey and others stated that education was found to be significantly helping a patient cope with breast cancer (Pandey et al. 2006).

In this study, there was a significant association between the histological grade and QOL. This result was consistent with the results found by Isikhan and colleagues (2001) who indicated that cancer patients who were diagnosed early had better QOL than cancer patients whose disease were diagnosed at late histological grade. Furthermore, Uzun and others (2004) reported that women who had histological grade I had better overall QOL. A further finding which went along with the previous one was reported by Pandey and others (2006), stating that the histological grade was found to influence functional well-being and breast specific scales. The result of present study, however, was inconsistent with findings of some other studies. For example, Casso and colleagues (2004) indicated that there was no relationship between the histological grade and the QOL. Moreover, a study by Janz and colleagues (2005) also showed that there were no meaningful differences in QOL between cancer histological grades at diagnosis. In addition, a study from China showed that the histological grade was not significantly associated with overall QOL (Lu et al. 2007). In a recent study, Rabin et al. (2008) and Redhwan et al (2008) reported that histological grade did not show any association with QOL.

In this study, there was a significant association between the type of surgery and functional well being and emotional well being. Similar findings by Cohen and colleagues (2000) stated that women who underwent lumpectomy had better QOL than women who underwent mastectomy. The mastectomy compared to lumpectomy affects the body image and sexuality of the women. The post-operative period of breast cancer is generally associated with increased amount of physical discomfort and pain. This, therefore, reflects the functional aspects, such as the inability to work, trouble meeting the needs of the family, work being less fulfilled, etc. (Pandey et al. 2006). Surgical procedures following the diagnosis of breast cancer was considered an emotional and distressing experience and had a significant impact on women's QOL (Alferi et al. 2001; Harcourt & Nichola 2001). Redhwan et al. 2008 reported that there was no significant association between the type of surgery and QOL. Similar findings were also reported elsewhere. One such finding was reported by Ganz and colleagues (1992) as well as by Pozo and colleagues (1992) who showed no significant difference in the QOL between patients receiving lumpectomy or mastectomy. This was consistent with a study conducted by Wapnir and colleagues (1999) in which they showed that lumpectomy was not associated with better QOL. Janni and colleagues (2001) reported that there was no significant association between type of surgery and QOL. Other study conducted by Nissen and colleagues (2001) reported that lumpectomy and mastectomy did not differ significantly with regards to QOL. Ganz and colleagues (2004) stated that there was no significant association between the type of surgery and QOL of patients. Another study from China showed that the type of surgery was not significantly associated with QOL (Lu et al. 2007). Chang and colleagues (2007) found that the QOL did not differ significantly between women who had lumpectomy and those who had a mastectomy.

For multivariate analysis, years after diagnosis, and radiotherapy were significantly associated with total QOL of the breast cancer patients. This study reported that there is a significant association between family monthly income and the overall QOL among breast cancer patients in Yemen. The finding of this study is consistent with previous studies which reported that income was a significant predictor of QOL (Redhwan et al. 2008; Ganz, et al. 2002; Kagawa-Singer 1995). Similar finding was reported also in other studies which reported that income was significantly associated with overall QOL (Conde et al. 2005; Esbensen et al. 2004). In addition, Merkin and others reported that low income led to limited availability of primary preventive measures and detecting breast cancer at an early stage in the disease (Merkin et al. 2002). However Pinar et al (2003) reported that there is no effect of financial status was found on QOL.

For years after diagnosis, women in the category > 2 years after diagnosis had on average of 10.5 points lower compared to those women in the other category. This means that those women in the category 1-2 years had higher scores of total QOL than women in the other category. Regarding time since diagnosis to QOL assessment, there was a significant association between this factor and FWB and SWB. The same finding was reported by Cohen et al. (2000) who stated that the time since surgery was associated with QOL. This may be due to the ability of women to overcome the physical and psychological burden imposed by the illness and its treatment. In contrast, Holzner and others reported that women in the group 2-5 years after diagnosis had better QOL than women in the group > 5 years (Holzner et al. 2001).

As far as radiotherapy is concerned, there was significant association between radiotherapy and QOL in terms of EWB and FWB. Such findings were in constant with other studies with regards to radiotherapy. For example, Whelan and co-workers (2000) who conducted a study in Canada reported that there was a significant difference in overall QOL between irradiated and non-

irradiated patients during the acute period. A study from China showed that radiotherapy was significantly associated with overall QOL (Lu et al. 2007). The contrast finding was reported by Pinar and others (2003) who observed no effect of type of radiotherapy treatment on QOL. Cui and colleagues (2004) found no association between QOL and radiotherapy treatment. Another finding that the present study went along with was reported by Janz and others (2005) who stated that no meaningful difference was detected in QOL depending on the radiation received.

In conclusion, family monthly income, BMI, educational status, years after diagnosis, histological grade radiotherapy and surgery were significantly influence the QOL of breast cancer patients in Yemen, in univariate analysis. For multivariate analysis, years after diagnosis, family monthly income and radiotherapy were significantly associated with total QOL of the breast cancer patients.

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