

## Quality Of Life among Breast Cancer Patients During Adjuvant Chemotherapy

Mennat-Allah Hassan Sallam (1), Zeinab Abdelhamed Loutfi (2), Shima Saied Adam (3)

(1) Clinical instructor at Faculty of Nursing- Damanhur University

(2) Professor of Psychiatric Mental Health Nursing - Faculty of Nursing- Ain Shams University

(3) Lecturer of Psychiatric Mental Health Nursing - Faculty of Nursing- Ain Shams University

### Abstract

**Background:** Breast cancer (BC) is the most frequently diagnosed cancer and the leading cause of cancer deaths among females worldwide, more attention has been paid to the rapidly increasing prevalence of psychiatric problems happening in breast cancer patients, It is very important to take early measures to treat these psychosocial problems for breast cancer patients thus improving their quality of life. **Aim:** This study aimed to assess quality of life among breast cancer patients during adjuvant chemotherapy. **Design:** A descriptive research design was utilized. **Setting:** This study was conducted at Damanhur Oncology Center in the outpatient chemotherapy clinic. **Study subjects:** A convenient sample including one hundred and ten women with BC. **Tools:** 1) Socio-demographic interviewing sheet. 2) Quality of Life Instrument (breast cancer patient version). **Results:** The current study indicated that there were positive statistically significant correlations between total psychological domains and total physical domains also total QOL and total spiritual domains. Additionally, there were highly positive statistically significant correlations between total social domains and total physical domains, also between total QOL and total physical, total psychological and total social domains. **Conclusion:** Most patients with breast cancer have low total quality of life **Recommendation:** Designing and carrying out psychological intervention programs for patients with breast cancer.

**Keywords:** quality of life, breast cancer and adjuvant chemotherapy.

### Introduction:

In Egypt, cancer breast represents 18.9% of total cancer cases (32.04% in women and 2.2% in men) with an age-adjusted rate of 49.6 per 100 000 population. In its early treatable stage, cancer breast has a 97% probability of surviving 5 years. However, woman's likelihood of surviving 5 years decreases to 20% once it spreads to other body parts. Cancer incidence and mortality display strong geographic patterns worldwide and in Egypt. The environment where individuals live is increasingly recognized as important across the cancer control continuum, including the risk of cancer development, screening, diagnosis, treatment, and mortality (Gewaifel, Bahnasy, Kharboush & Elsharkawy, 2019).

Adjuvant chemotherapy might be given to try to kill any cancer cells that might have been left behind surgery or have spread but can't

be seen, even on imaging tests. If these cells were allowed to grow, they could form new tumors in other places in the body. Adjuvant chemo can lower the risk of breast cancer coming back (American Cancer Society, 2020).

**Quality of life (QOL)** is the general well-being of individuals and societies, outlining negative and positive features of life. It consists of the expectations of an individual or society for a good life. These expectations are guided by the values, goals and socio-cultural context in which an individual lives (Alborz, 2017).

All in all breast cancer patients experience physical symptoms and psychosocial distress that adversely affect their quality of life (QOL). QOL generally consists of a number of domains including physical functioning, psychological well-being (such as levels of anxiety and depression), and social support.

Their breast cancer experiences vary, but could include the following phases: diagnosis, primary treatment and its psychological management, special issues related to non-invasive breast cancer, recurrence, completing treatment and re-entry to normal living, survivorship, and palliation for advanced cancer (Sibhat, Fenta, Sander & Gebretekle, 2019).

In another point chemotherapy is one form of treatment that can cause physical and psychological problems that adversely affect patient QOL. Other effects of cancer include anger, grief, suffering, and pain. While adapting to cancer, many patients may have questions about their illness, but are apprehensive about speaking to their physician (Sibhat et al., 2019).

### **Significance of the study**

The psychological effects of cancer diagnosis and physical consequences associated with cancer treatment reduce the patients' quality of life. The diagnosis and treatment of cancer, impaired sleep and activity patterns, physical symptoms and impaired cognitive function, dysfunctions in social and individual tasks threaten the quality of life (Pitman, Suleman, Hyde & Hodgkiss, 2018).

Improving the quality of life of the patients with cancer is a research priority. It is also emphasized in the process of provision of care to patients with cancer. The quality of life in patients with cancer is evaluated to ensure the effectiveness of cancer treatment. The dimensions of quality of life include function, social, mental and emotional factors (Moser & Narayan, 2020).

### **Aim of the Study:**

The aim of this study is assess quality of life among breast cancer patients during adjuvant chemotherapy.

### **Subjects and Methods:**

#### **Research design:**

A descriptive exploratory research design.

#### **Setting:**

The study was conducted at Damanhur Oncology Center in the outpatient chemotherapy clinic.

#### **Subjects:**

A convenient sample of all the available female patients (110) diagnosed with breast cancer was included in this study from the above mentioned setting.

#### **Inclusion criteria:**

1. Females 18 years and above.
2. Married.
3. Women who received chemotherapy.

#### **Tools for data collection:**

Data collected by;

#### **I. A structured interviewing questionnaire including 2 parts:**

**Part (1):** it was concerned with socio demographic characteristics of the patients under study such as age, educational level, place of residence, occupation and income **Part (2):** it was concerned with clinical data of the studied patients such as: past surgical history about mastectomy, receiving of radiotherapy, duration since starting of chemotherapy and family history.

#### **2- Quality of Life Instrument – (Breast Cancer Patient version):**

The standard tool is a 46 items ordinal scale. it was adopted from Ferrell, Dow and Grant (1995) to represent the four domains of quality of life including physical well being (8 items), psychological well being (22 items), social well being (9 items) and spiritual wellbeing (7 items), it was translated into Arabic language by the researcher and assessed by five experts; three experts from Psychiatric-Mental Health Nursing in and two experts from Medical-Surgical Nursing in Faculty of Nursing/ Ain Shams University and no modification was done after jury.

#### **❖ Scoring system:**

Scores are rated on an 11-point scale each point=1 degree (0=worst outcome to 10=best outcome) and subscale and total scores can be produced. From 0 to 6= low quality of life, and more than 6 to10= high quality of life. Subscales can be created for analysis purposes

by adding all of the items within a subscale and creating a mean score.

#### **Pilot study:**

A pilot study was carried out on 10% of patients from the study subjects to test the applicability, clarity, feasibility of the tools used and to determine the time needed for the fulfillment of the study tools. Patients who were included in the pilot study were included into the study sample because no modifications were done after conducting pilot study.

#### **Content, Face Validity and Reliability:**

##### **Content face validity:**

The tools were revised for content validity by a jury of three experts in Psychiatric-Mental Health nursing specialty and two of them in medical surgical nursing. No modifications were done.

##### **Reliability**

It was estimated by Cronbach's Alpha test, included the following values was 0.93

##### **Field work**

Data were collected within 3 months from the beginning of June 2020 to the end of August 2020. The aim and nature of the study

#### **Results:**

**Table (1):** shows that regarding the age of patients with breast cancer, their mean age was 44.4 and more than one third (34.5%) of them were in age group 50 years, and less than three fifths (58.2%) were Illiterate, more than three fifth (69.1%) of them were Housewife, more than half (53.6%) of them their family income was not enough. Also, the same table clarifies that more than three fifths (68.2%) live in rural area.

**Table (2):** Shows that, slightly more than three fifths (65.5%) of patients with breast cancer had no family history, and more than half (57.3%) of them did not receive radiotherapy. As regard Chemotherapy duration half of the study sample (50%) received chemotherapy for five years.

**Figure (1):** shows that the highest percentage (90.9%) of patients with breast cancer under study had low total quality of life, while only (9.1%) had high quality of life.

were explained by the researcher to all patients who were included in the study and got their approval to participate in the study prior to data collection. The researcher was attended to the setting 3 days per week in the morning shift at Damanhour oncology center.

The questionnaire form and the Quality of life instrument were filled by researcher. The time consumed to fill out all tools took from 20-30 minutes to be filled.

#### **Statistical Design:**

Data collected from the studied sample was revised and entered using personal computer (PC). Computerized data entry and statistical analysis were fulfilled using the Computer Software for Excel Program and Statistical Package for Social Sciences (SPSS) version 20. Data were presented using descriptive statistics in the form of frequencies, percentages, the arithmetic mean(X) and standard deviation (SD) for quantitative data. The variables were compared using chi square test (X<sup>2</sup>), Pearson correlation test (r test) and P-value to test association between the variables. Cronbach's Alpha test measures of internal consistency of the tool. Test of significance was used and regarding significance of the result.

**Table (3):** shows that there were highly statistically significant relations between socio-demographic characteristics of patient with breast cancer under study and total QOL in which  $p \leq 0.001$

**Table (4):** shows that there were highly statistically significant relations between clinical data of patient with breast cancer under study and total QOL in which  $p \leq 0.001$

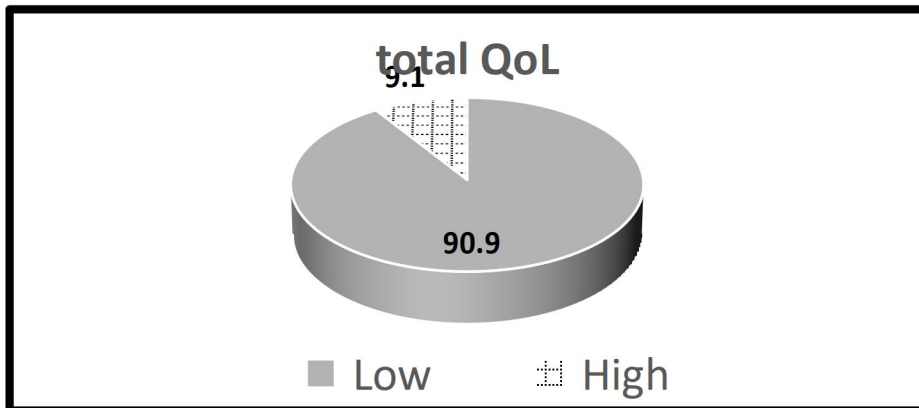
**Table (5):** shows that there were positive statistically significant correlations between total psychological domains and total physical domains also total QOL and total spiritual domains. Additionally, there were highly positive statistically significant correlations between total social domains and total physical domains, also between total QOL and total physical, total psychological and total social domains.

**Table (1):** Frequency and percentage distribution of socio-demographic characteristics of patients with breast cancer under study (n=110).

Items	Number (No.)	Percentage (%)
<b>Age</b>		
From 20 to less than 30 years	7	6.4
From 30 to less than 40 years	30	27.3
From 40 to less than 50 years	35	31.8
50 years and above	38	34.5
Mean±SD	44.4±11.4	
<b>Level of Education</b>		
Illiterate	64	58.2
Primary education	16	14.5
Secondary education	26	23.6
University education	4	3.6
<b>Job</b>		
Employee	28	25.5
Pension	4	3.6
Housewife	76	69.1
Student	2	1.8
<b>Family income</b>		
Not Enough	59	53.6
Enough	51	46.4
<b>Place of residence</b>		
Rural	75	68.2
Urban	35	31.8

**Table (2):** Clinical data of patients with breast cancer under study (n=110).

Items	Number (No.)	Percentage (%)
<b>family history</b>		
No	72	65.5
Yes	38	34.5
<b>Radiotherapy</b>		
No	63	57.3
Yes	47	42.7
<b>Chemotherapy duration</b>		
1to less than 6 months	31	28.2
6 months to less than year	18	16.4
1year to less than 5 years	55	50
5 years and above	6	5.5
Mean±SD "months"		19.2±18.6

**Figure (1):** Total quality of life of patients with breast cancer under study (n=110).

**Table (3):** Relation between socio-demographic characteristics and Total QOL of patients with breast cancer under study (n=110).

Items	Total QOL		X <sup>2</sup>	P value
	Low quality of life	High quality of life		
<b>Age</b>				
From 20 to less than 30 years	6.5	0	2061.85	.000**
From 30 to less than 40 years	24.5	2.7		
From 40 to less than 50 years	30	1.8		
50 years and above	30	4.5		
<b>Level of Education</b>				
Illiterate	53.6	4.5	243.930	.000**
Primary education	14.6	0		
Secondary education	19.1	4.5		
University education	3.7	0		
<b>Job</b>				
Employee	25.5	0	250.602	.000**
Pension	3.6	0		
Housewife	60	9.1		
Student	1.8	0		
<b>Family income</b>				
Not Enough	44.5	9.1	93.111	.000**
Enough	46.4	0		
<b>Place of residence</b>				
Rural	61.8	6.4	86.952	.000**
Urban	29.1	2.7		

**Table (4):** Relation between clinical data and Total QOL of patients with breast cancer under study (n=110).

Items	Total QOL		X <sup>2</sup>	P value
	Low	High		
<b>Family history</b>				
No	58.2	7.3	95.848	.000**
Yes	32.7	1.8		
<b>Radiotherapy</b>				
No	51.8	5.5	93.654	.000**
Yes	39.1	3.6		
<b>Chemotherapy duration</b>				
1 to less than 6 months	22.7	5.5	1324.65	.000**
6 months to less than year	16.4	0		
1 Year to less than 5 years	46.3	3.6		
5 years and above	5.5	0		

**Table (5):** Correlation matrix between total quality of life domains of patient with breast cancer under study (n=110).

Quality of life domains		total physical	total psychological	total social	total spiritual
total psychological	r test	.216*			
	P value	.023			
total social	r test	.293**	.418**		
	P value	.002	.000		
total spiritual	r test	.160	-.174	-.028	
	P value	.095	.068	.768	
total QOL	r test	.597**	.807**	.696**	.200*
	P value	.000	.000	.000	.036

**Discussion:**

Quality of life (QOL) is therefore, considered an important prognostic factor in improving breast cancer treatment and an important endpoint in cancer clinical trials (Berkowitz, Thompson, Zibecchi, Lee, Streja, Berkowitz & Attai, 2021). Therefore, this study was carried out to assess QOL among breast cancer patients during adjuvant chemotherapy.

In relation to patient's age, the present study showed that, more than one third of the patients' age was 50 years and above. These findings may be related to the fact that, age related changes was one of the risk factors of breast cancer as early age at menarche, late age at menopause, and late age at first full-term pregnancy are linked to a modest increase in the risk of developing breast cancer.

This finding was in line with the results of Lei (2018) that more than one third of

patients were at 50-59 years old, While come in contrast with **Abdel Bary, AlHassanin, Waheid, Shehata, Emam, Morad and ElBassuoni (2014)** that the minority of patients age (13%) their age ranged from 50-60 and half of patients' age ranged from 40 to less than 50 years old.

**Dano, Hénon, Sarr, Ka, Ba, Badiane and Monneur (2019)** and **Abdulrahman, Rahman (2012)** in their study reported that patients were significantly younger (median age: 45 years).

Although, age has greatest effect on breast cancer patients quality of life outcome, there are other factors that should be taken into account that deserve health professionals' attention, such as educational level, occupation and family income. In relation to the level of education and residence area, the findings of this study illustrated that more than half of studied patients were illiterate, more than two third of them came from rural areas. This corroborates the fact that the higher the educational level the greater the insertion of these women in the labor market, and consequently, the greater knowledge about prevention methods and early detection (**De Castro, Nunes Garcia, Marcondes, da Silva, Andriele, de Paula & PuchalskiKalinke, 2018**).

The result of the current study may be due to that illiterate patients had little or no knowledge related to the disease process and how to cope with chemotherapy side effects for enhancing their quality of life. In addition to more educated patients may require less time and attention from the health care team members who provide information about medical treatment and follow-up care, compared to less educated patients. These findings are consistent with **Hassan, Taye, Gizaw and Hussien (2019)** who revealed that highest percentage of the studied patients were unable to read and write, and came from rural areas, with inadequate income and more than half of them were housewife. According to **Rosa and Radünz (2013)**, low educational level may be tied to low socioeconomic status. That was also the finding of the present study.

Furthermore, **Sharma and Purkayastha (2017)** in their study reported that more than half of the studied patients belonged to the rural background and about 60% of patients were uneducated. This may be attributed to many reasons such as; lack of the awareness of the importance of education, insufficient family income to seek medical care and lack of facilities. Additionally, women with less education and those who are unemployed reside in a poor area, or are uninsured or under-insured are more likely to be diagnosed at later stages, and are less likely to receive optimal cancer care. They also may have poorer health status and face greater health risk factors than people living in urban areas.

These results were not consistent with **Al Zahrani, Alalawi, Yagoub, Saud and Siddig (2019)**, who reported in their study that the highest percentage of study patients (42.7%) had a secondary school education and minority (4.2%) had no schooling. As well as **Chen, Li, Wang, Liu, and Chen (2018)** in their study reported that more than half (50.8%) of their study patient live in urban areas and were urban employee.

Regarding family income and occupation, the present study pointed that, more than half of the studied patients' had insufficient family income per month and the highest percentage of them were housewives. This may be explained by high proportion of the studied patients were illiterate and came from rural areas with increased poverty and unemployment. These finding was matched with **Franzoi, Schwartzmann, de Azevedo, Geib, Zaffaroni and Liedke (2019)** in their study denoted that, the greatest numbers of patients were housewives and more than half of them had insufficient family income. Where patients presenting a lower family income presented significantly more stage III, while a higher family income was associated with more stage I and early diagnosis.

Although, family history of breast cancer is an established risk factor for breast cancer and is used to identify women at higher risk, the current study pointed that, more than two third of patients with breast cancer had no family



history. This finding may be related to the fact that older age is a strong risk factor for breast cancer.

The finding of this study contradicted with the finding of **Braithwaite, Miglioretti, Zhu, Demb, Trentham-Dietz, Sprague and Breast Cancer Surveillance Consortium (2018)** who confirmed in their study that first-degree family history remained an important risk factor for breast cancer even among women older than 75 years and that breast density did not significantly modify the association except perhaps in women with fatty breasts and that a first-degree family history led to an absolute increase in 5-year risk of breast cancer ranging from 1.2 to 10.3 percentage points depending on breast density status and age.

Regarding radiotherapy treatment, the present study findings revealed that more than half of the studied patients did not receive radiotherapy treatment. These findings were consistent with **Raof, Yacoub, Asaad and Al-Hadithi (2015)** who portrayed that patients on chemotherapy are more badly affected in some domains of quality of life, compared to those on radiotherapy and concluded that the emotional domain of QOL was the least affected, while the social and functional domains were the most badly affected ones among cancer patients, whether they were treated with radiotherapy or chemotherapy and **Xiao et al. (2016)** in a prospective study of quality of life in breast cancer patients undergoing radiation therapy concluded that radiation therapy did not worsen QOL in breast cancer patients.

Concerning chemotherapy duration the present study portrayed that half of the studied patients received chemotherapy for five years which may be correlated with poor quality of life. These findings were contradicted with **Lavdaniti, Owens, Liamopoulou, Marmara, Zioga, Mantzanas and Vlachou (2019)** who reported that chemotherapy duration since treatment, and recurrence status had no impact on quality of life of breast cancer patients.

Concerning total quality of life, the present study findings revealed that, the highest percentage of the patients with breast cancer under study had low total quality of life, and

only (9.1 %) had high quality of life. These findings were matched with **Zargani, Nasiri, Hekmat, Abbaspour and Vahabi (2018)** in their survey on the relationship between religiosity and quality of life in patients with breast cancer revealed that, the highest percentage of the studied patients had low total QOL and only one third of them had high QOL.

On the other hand, **Al Zahrani et al. (2019)** study reported increased scores for the physical, spiritual, psychological and social well-being subscales and total QOL among their study patients. While, **Shafaie, Mirghafourvand and Amirzehni (2019)** in their study identified that the mean total score of quality of life in patients under treatment for breast cancer was at a moderate level.

As regard the relation between socio-demographic characteristics and physical wellbeing of patients with breast cancer under study, the present study showed that there were highly statistically significant relations between socio-demographic characteristics of patient with breast cancer under study and their physical wellbeing. These come in consistent with **Karthiskeyan, Jummani, Prabhu, Manoor and Supe (2012)**.

Concerns the relation between socio-demographic characteristics and psychological wellbeing the studied patients' present study illustrates that there were highly statistically significant relations between socio-demographic characteristics of the studied patient and psychological wellbeing.

These findings partially come in consistence with **Sun, Hung, Yao, Fu, Tsai and Chiang (2021)** who stated that educational level and monthly significantly predicted depression in breast cancer patients because the more educated an individual is the better able they will be in sourcing information about a variety of issues including health related issues like breast cancer. Occupational status, that is being currently employed or unemployed did not predict depression in breast cancer patients.

Regarding the relation between socio-demographic characteristics and social wellbeing of the studied patients, the present study indicated that there was a statistically significant relation between occupation and social wellbeing, and highly statistically significant relations between age, level of education, family income, and place of residence of them and social wellbeing in which  $p \leq 0.001$ .

These findings were in congruent with **Heuser, Halbach, Kowalski, Enders, Pfaff and Ernstmann (2018)**, who showed in their study that a significant differences between patient age groups, occupation, level of education and monthly income and social wellbeing in relation to return to work and social activities.

Concerning the relation between socio-demographic characteristics and spiritual wellbeing domains of the studied patients, the current study findings illustrated that there was a statistically significant relation between place of residence and spiritual wellbeing, a highly statistically significant relations between age, level of education, job, and family income of them and spiritual wellbeing.

These findings were in line with **Al-Naggar, Nagi, Ali and Almuasli (2011)** in their study and revealed that high household income is associated with a better and higher QOL of patients with breast cancer in each and every QOL domain and that a higher socioeconomic status, level of education has been linked to many aspects of better care of patients such as the prompt treatment, access to comprehensive rehabilitation, taking leave of absence from work and having less worry about financial constraint and improved spiritual wellbeing.

Regarding the relations between clinical data and QOL domains of the studied patients, the present study revealed that there were highly statistically significant relations between clinical data of breast cancer patients under and physical, social, psychological and spiritual wellbeing. These findings come in contradiction with **Yan, Yang, Hao, Yang,**

**Quan, Wang and Yuan (2016)** in their study reported that in relation to the associations between clinical data and QOL measures those patients receiving chemotherapy reported lower scores of quality of life in relation to physical, emotional, psychological and spiritual well-being and total quality of life.

Concerning the relationship between socio-demographic characteristics and overall quality of life of the studied breast cancer patients; the present study revealed that, there were highly statistically significant relations between socio-demographic characteristics of the studied patient and the total QOL.

These findings was supported by **Chen, Li, Wang, Liu and Chen (2018)** who stated that, age, residence, educational level, employment status, were significant predictors for overall quality of life and that, better QOL scores were found in patients with stable job security, who were more likely to seek access to information and resources for problem solving and they could be more compliant with the therapeutic regime because they had little problem in financial difficulties and felt more secure.

As well as **Konieczny, Cipora, Sygit and Fal (2020)**, reported in their study that age, marital status, education and financial situation influenced the QOL of women with breast cancer and that in the care of women with breast cancer, attention should be paid to the individualization of the therapeutic process, with particular emphasis on psychotherapy and support by social services.

On the other hand, **Kanayamkandi (2017)** in their study reported that QOL had no association with age, ethnicity, religion, education, occupation or socio-economic status of participants and showed that majority of Breast cancer patients had poor QOL.

**Arndt, Merx, Stegmaier, Ziegler and Brenner (2015)** in their study emphasized that demographic factors (age, education, and marital status) did not differ from one another and indicated that younger women may suffer

poorer QOL following a breast cancer diagnosis. In addition another study conducted by **Oliveira, Costa, Manzoni and Cabral (2014)**, who researched the measuring properties of quality of life questionnaires in Brazilian women with breast cancer, found a negative relationship between age, physical and emotional well-being.

Also, **MahmoudSaadoon (2020)** study reported that no statistical significant relationship was found between quality of life and residence & occupation of breast cancer women. Also, **Stavraka, Ford, Ghaem-Maghami, Crook, Agarwal and Gabra (2012)** who noticed that there was no major difference in QOL outcomes and occupation, stage, histology, and co-morbidities.

Based on the present study findings, it can be concluded that, the research question was answered through the previous mentioned discussion of results which revealed that, adjuvant chemotherapy has a significant effect on quality of life for different domains. Also there was positive association between the quality of life and socio-demographic characteristics of the studied breast cancer patients.

### **Conclusion:**

The results of this study concluded that: Most patients with breast cancer during chemotherapy have low total QoL. Also, there is a significant relations between socio-demographic characteristics of patient with breast cancer QOL.

### **Recommendations**

**Based on the results of the current research, the following suggestions are proposed:**

- Health educational program should be given for patients with breast cancer about periodic follow up and compliance with treatment to improve their quality of life.
- Designing and carrying out psychological intervention programs for patients with breast cancer.
- Further studies are recommended to identify factors affecting quality life of patient with breast cancer.

- Further researches about life style of patients with breast cancer.

### **References**

- Abdulrahman, G. O., & Rahman, G. A. (2012):** Epidemiology of breast cancer in Europe and Africa. *Journal of cancer epidemiology*, 2012.
- Al Zahrani, A. M., Alalawi, Y., Yagoub, U., Saud, N., & Siddig, K. (2019):** Quality of life of women with breast cancer undergoing treatment and follow-up at King Salman Armed Forces Hospital in Tabuk, Saudi Arabia. *Breast Cancer: Targets and Therapy*, 11, 199.
- Alborz, A. (2017):** The nature of quality of life: A conceptual model to inform assessment. *Journal of policy and practice in intellectual disabilities*, 14(1), 15-30.
- Al-Naggar, R. A., Nagi, N. M., Ali, M. M., & Almuasli, M. (2011):** Quality of life among breast cancer patients in Yemen. *Asian Pac J Cancer Prev*, 12(9), 2335-41.
- American Cancer Society (2020):** Breast Cancer Facts and Figures 2019-2020, 3-5 Atlanta, Ga: American Cancer Society.
- Arndt V, Merx H, Stegmaier C, Ziegler H, Brenner H. (2015):** Persistence of restrictions in quality of life from the first to third year after diagnosis in women with breast cancer. *J Clin Oncol*, 23:4945-53.
- Braithwaite, D., Miglioretti, D. L., Zhu, W., Demb, J., Trentham-Dietz, A., Sprague, B., & Breast Cancer Surveillance Consortium. (2018):** Family history and breast cancer risk among older women in the breast cancer surveillance consortium cohort. *JAMA internal medicine*, 178(4), 494-501.
- Chen, Q., Li, S., Wang, M., Liu, L., & Chen, G. (2018):** Health-related quality of life among women breast cancer patients in eastern China. *BioMed research international*, 2018.
- Dano, D., Hénon, C., Sarr, O., Ka, K., Ba, M., Badiane, A., & Monneur, A. (2019):** Quality of Life during Chemotherapy for Breast Cancer in a West African Population in Dakar, Senegal: A Prospective Study. *Journal of global oncology*, 5, 1-9.

- De Castro, R., Nunes Garcia, S., Marcondes, L., da Silva, J., Andriele, F., de Paula, A., & PuchalskiKalinke, L. (2018):** Impact on the quality of life of women with breast cancer undergoing chemotherapy in public and private care. *Investigacion y educacion en enfermeria*, 36(1).
- Fangel, L. M. V., Panobianco, M. S., Kebbe, L. M., Almeida, A. M. D., & Gozzo, T. D. O. (2013):** Quality of life and daily activities performance after breast cancer treatment. *Acta Paul Enferm.*, 26(1), 93-100.
- Ferrell, B. R., Dow, K. H., & Grant, M. (1995):** Measurement of the quality of life in cancer survivors. *Quality of life Research*, 4(6), 523-531.
- Ferrell, B., Dow, K., and Grant, M. (2012):** Quality of Life breast cancer patient version (QOL-BC). National medical center and beckman research institute.
- Franzoi, M. A., Schwartzmann, G., de Azevedo, S. J., Geib, G., Zaffaroni, F., & Liedke, P. E. (2019):** Differences in breast cancer stage at diagnosis by ethnicity, insurance status, and family income in young women in the USA. *Journal of racial and ethnic health disparities*, 6(5), 909-916.
- Gewaifel, G., Bahnasy, M., Kharboush, I., & Elsharkawy, O. (2019):** Geospatial analysis of breast cancer in Alexandria: application of a novel public health tool. *The Egyptian Journal of Community Medicine*, 37(2), 27-36.
- Hassan, A. M., Taye, G., Gizaw, M., & Hussien, F. M. (2019):** Quality of life and associated factors among patients with breast cancer under chemotherapy at Tikur Anbessa specialized hospital, Addis Ababa, Ethiopia. *PloS one*, 14(9), e0222629.
- Heuser, C., Halbach, S., Kowalski, C., Enders, A., Pfaff, H., & Ernstmann, N. (2018):** Sociodemographic and disease-related determinants of return to work among women with breast cancer: a German longitudinal cohort study. *BMC health services research*, 18(1), 1-10.
- Kanayamkandi, J. SS, (2017):** Quality of life among breast cancer patients: a cross sectional study. *International Journal of Community Medicine and Public Health* 4(3):686.
- Konieczny, M., Cipora, E., Sygit, K., & Fal, A. (2020):** Quality of Life of Women with Breast Cancer and Socio-Demographic Factors. *Asian Pacific journal of cancer prevention: APJCP*, 21(1), 185.
- Lavdaniti, M., Owens, D. A., Liamopoulou, P., Marmara, K., Zioga, E., Mantzanas, M. S., & Vlachou, E. (2019):** Factors influencing quality of life in breast cancer patients six months after the completion of chemotherapy. *Diseases*, 7(1), 26.
- Lei, Y. (2018):** Changes in Lifestyle Factors Before and After Breast Cancer Diagnosis and Their Association with Health-related Quality of Life (Doctoral dissertation).
- MahmoudSaadoon, O. H. M. (2020):** The Relationshipbetween Socio-demographic Characteristics and Qualityof Life among Breast CancerWomen Undergoing Adjuvant Chemotherapy.
- Moser, E. C., & Narayan, G. (2020):** Improving breast cancer care coordination and symptom management by AI driven predictive toolkits. *Breast (Edinburgh, Scotland)*, 50, 25–29. <https://doi.org/10.1016/j.breast.2019.12.006>
- Oliveira, I. S., Costa, L., Manzoni, A. C., & Cabral, C. (2014):** Assessment of the measurement properties of quality of life questionnaires in Brazilian women with breast cancer. *Brazilian journal of physical therapy*, 18(4), 372-383.
- Pitman, A., Suleman, S., Hyde, N., & Hodgkiss, A. (2018):** Depression and anxiety in patients with cancer. *Bmj*, 361.
- Raof, A. M., Yacoub, S. E., Asaad, Y. A., & Al-Hadithi, T. S. (2015):** Quality of life among cancer patients treated with chemotherapy or radiotherapy in erbil city an evaluation study. *Cancer ClinOncol*, 4(19), 10-5539.
- Rosa, L. M. D., & Radünz, V. (2013):** Do sintoma ao tratamento adjuvante da mulher com câncer de mama. *Texto & Contexto-Enfermagem*, 22(3), 713-721.
- Shafaie, F. S., Mirghafourvand, M., & Amirzehni, J. (2019):** Predictors of quality of life in patients with breast cancer. *Indian journal of palliative care*, 25(1), 73.
- Sharma, N., & Purkayastha, A. (2017):** Factors affecting quality of life in breast

- cancer patients: a descriptive and cross-sectional study with review of literature. *Journal of Mid-life Health*, 8(2), 75.
- Sibhat, S. G., Fenta, T. G., Sander, B., & Gebretekle, G. B. (2019):** Health-related quality of life and its predictors among patients with breast cancer at Tikur Anbessa Specialized Hospital, Addis Ababa, Ethiopia. *Health and quality of life outcomes*, 17(1), 1-10.
- Stavraka C., Ford A., Ghaem-Maghami S., Crook T., Agarwal R., Gabra H.(2012):** A study of symptoms described by ovarian cancer survivors. *GynecolOncol*; 125(1):59–64.
- Sun, F. K., Hung, C. M., Yao, Y., Fu, C. F., Tsai, P. J., & Chiang, C. Y. (2021):** The effects of logotherapy on distress, depression, and demoralization in breast cancer and gynecological cancer patients: a preliminary study. *Cancer nursing*, 44(1), 53-61.
- Wang, L., Xu, H., Zhang, X., & Fang, P. (2017):** The relationship between emotion regulation strategies and job search behavior among fourth-year university students. *Journal of adolescence*, 59, 139-147.
- Xiao, C., Miller, A. H., Felger, J., Mister, D., Liu, T., & Torres, M. A. (2016):** A prospective study of quality of life in breast cancer patients undergoing radiation therapy. *Advances in radiation oncology*, 1(1), 10-16.
- Yan, B., Yang, L. M., Hao, L. P., Yang, C., Quan, L., Wang, L. H., ...& Yuan, J. M. (2016):** Determinants of quality of life for breast cancer patients in Shanghai, China. *PloS one*, 11(4), e0153714.
- Zargani, A., Nasiri, M., Hekmat, K., Abbaspour, Z., & Vahabi, S. (2018):** A survey on the relationship between religiosity and quality of life in patients with breast cancer: A study in iranianmuslims. *Asia-Pacific journal of oncology nursing*, 5(2), 217.