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Assessment of Depression and Anxiety in Breast Cancer Patients Undergoing Radiotherapy in Palestine

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Abstract

The aim of this study was to assess experienced depression and anxiety among early breast cancer patients during radiotherapy. Women who started radiotherapy for breast cancer ($n = 125$) were asked to answer two questionnaires: The Hospital Anxiety and Depression Scale (HADS) and Radiotherapy Categorical Anxiety Scale during radiation therapy. The highest mean for anxiety and depression was for those who received education more than BA ($SD = 3.2$) and those who received less than secondary education ($SD = 3.16$), respectively. Also, the highest mean for patients' number of children related with anxiety was for those who have more than three children ($SD = 2.87$), while for depression was ($SD = 3.01$). Anxiety and depression were also correlated to patient age where both showed the highest mean for those who aged between 31 and 40 ($SD = 2.89$), and those who are more than 51 years old ($SD = 3.15$), respectively. The highest anxiety and depression mean for treatment duration was for those treated for more than 3 months ($SD = 3.2$), and for those treated between 1 and 3 months ($SD = 3$), respectively. Some intervention may be needed to decrease the temporary anxiety and depression raised during radiotherapy for early-stage breast cancer patients.

Keywords Breast cancer · Radiotherapy · Anxiety · Depression

Introduction

The objective of cancer treatment is to cure cancer and prolong life, and when not possible, it is used in palliation [1]. Breast cancer among females is one of the most common cancer types worldwide, in which 1 out of 8 women could be diagnosed with the breast cancer during their lifetime [2]. Cancer treatment can be carried out by one of the three main modalities. These include surgery, radiotherapy, and chemotherapy. The chemotherapy is an intense treatment which has many side effects. The side effects of chemotherapy are well

documented and include nausea and vomiting, alopecia, peripheral neuropathy, and myelosuppression [3–5]. Even though chemotherapy may prolong survival rates for advanced cancer cases in a modest way [6], cytotoxic chemotherapy was unable to cure many metastasized cancers. The well-being of survivors is accompanied by problems which include physical symptoms and psychological reactions that can bring life disruption [7]. A 5-year-survival study on the contribution of cytotoxic chemotherapy shows that the contribution of curative and adjuvant chemotherapy in adults was around 2.3% in Australia and 2.1% in the USA [8]. Many factors can affect the mentality and psychological condition of patients undergoing radiation therapy. These include long treatment periods, hospitalizations, and the knowledge of having cancer. In the context of cancer, distress is defined as extending along a continuum ranging from common normal feelings of vulnerability, sadness, and fear to problems that can become disabling such as depression, anxiety and panic, social isolation, and spiritual crisis [9]. However, anxiety is the most commonly seen in cancer patients. It can occur in four forms: (1) situational anxiety, (2) disease-related anxiety, (3) treatment-related anxiety, and (4) exacerbation of pre-treatment anxiety disorder [10]. Despite the effect distress

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has on daily functioning, depression and anxiety in cancer patients are often underestimated [11]. Usually, breast cancer patients experience anxiety, depression, and fatigue months to years after being diagnosed with breast cancer [12]. The aim of this study was to assess experienced depression and anxiety among early breast cancer patients undergoing radiotherapy.

Methods

Approach

The study adopted the quantitative research method. The questionnaire is suitable for the exploratory nature of the research.

Population and Sample

The population of the study included all cancer patients attending Augusta Victoria Hospital radiotherapy division. The sample consisted of 125 female breast cancer patients, who provided their consent by completing the survey, as explained in the survey cover. This study was approved by the ethics committee of the Augusta Victoria Hospital in Jerusalem, Palestine. The demographic characteristics of the participants were as follows: level of qualification, number of children, age, and the duration of treatment. Respondents were between 20 and 60 years of age. Half (52.53%) of the participants were satisfied with their salary, and nearly 45.4% having more than three children. The inclusion criteria are (1) woman, 18 years of age and above, (2) diagnosed with breast cancer, (3) no history of mental disorder or dementia, (4) adequate knowledge of Arabic/English languages and satisfactory level of communication, and (5) consent to participate in the study. Any patient previously diagnosed with psychiatric condition was excluded from the study.

All patients were asked to answer two questionnaires: The Hospital Anxiety and Depression Scale (HADS) and Radiotherapy Categorical Anxiety Scale during radiotherapy. The prevalence of anxiety and depressive disorders were reported in percentage. The association between psychosocial, demographics, and anxiety and depression were analyzed by ANOVA test. A *p* value of less than 0.05 was considered statistically significant.

The reliability of the study tool was verified using Pearson correlation coefficient for questionnaire questions and parts. Additionally, the stability of the study tool was determined using Cronbach alpha. Results indicate that the study tool was suitable to apply on study population (Cronbach alpha = 0.81). The total number of collected and analyzed questionnaires was 125.

Statistical Analysis

Data statistical analysis was carried out using SPSS version 26.0 (IBM, Chicago, Illinois, USA). Means and standard deviations for every part of the questionnaire using one-way ANOVA and Pearson correlation coefficient were reported.

Results

The sample consisted of 125 breast cancer patients treated by radiation therapy at Augusta Victoria Hospital at Jerusalem. Table 1 shows study population and their demographic information, including educational qualification, number of children, age, and duration of treatment. According to educational qualifications, there were 36.8% patients who received less than secondary school education, while 59.2% of them received BA degree, and about 4% received further higher education beyond BA.

Results reveal that most of the sample (59.2%) were secondary school qualified. The majority of them (34.4%) are within the age groups 51 and above; 42% received radiation treatment for about 3 months. As for the number of children each patient has, it was noted that 14.4% of patients have no children, 3.2% have one child, 17.6% have two children, and 64.8% have more than three children. Regarding patient age, 11.2% fell in the age range between 23 and 30 years old, 28.8% in the 31–40 age range, 25.6% in the 41–50 age range, and 34.4% were older than 51 years old. As for the radiation

Table 1 Demographic characteristics of participants (*n* = 125)

Characteristic	Frequency	Percentages (%)
Qualification		
Less than secondary school	46	36.8
Secondary school—MA	74	59.2
Higher than MA	5	4.0
Number of children		
None	18	14.4
One	4	3.2
Two	22	17.6
Three or more	81	64.8
Age		
20–30	14	11.2
31–40	36	28.8
41–50	32	25.6
More than 51	43	34.4
Duration of treatment		
Less than a month	30	24.0
One to 3 months	53	42.4
More than 3 months	42	33.6

treatment duration, 24% of patients had less than a month duration, while 42.2% of patients received radiation treatment for a period between 1 and 3 months.

Table 2 shows that the highest mean for anxiety correlated with educational qualification was for those who received education more than BA (SD = 3.2), while for depression was for those who received less than secondary education (SD = 3.16). Additionally, the highest mean for patients' number of children related with anxiety was for those who have more than three children (SD = 2.87), while for depression was (SD = 3.01). As for patient age correlation with anxiety, the highest mean was for those who aged between 31 and 40 (SD = 2.89), and for depression, the highest mean was for those who are more than 51 years old (SD = 3.15). The treatment duration shows that the highest anxiety mean was for those treated for more than 3 months (SD = 3.2), while the highest depression mean was for those treated between 1 and 3 months (SD = 3).

The result reveals that there were no significant differences found in the level of depression for all variables, whereas there was a significant difference in the level of anxiety with the duration of treatment, especially for treatments over 3 months. The total depression point (SD = 2.94) was higher than the anxiety (SD = 2.78) for breast cancer patients undergoing radiation therapy. There were differences between patients' responses with treatment duration variable, and it was significant for those treated for more than 3 months (p value < 0.04). Table 3 shows a positive correlation between anxiety and

Table 3 Correlation between patients' anxiety and depression

Anxiety/depression	Pearson correlation	Sig
	0.683	0.00

depression, meaning that, whenever anxiety increases, depression increases and vice versa.

Discussion

The current study assessed the level of psychological distress of breast cancer patients undergoing radiotherapy in Palestine. Our study showed substantial levels of depression and anxiety among cancer patients undergoing radiotherapy. Results show that depression was generally higher than anxiety among Palestinian breast cancer patients treated with radiation therapy, which could be due to the beliefs that cancer is fatal and because about 50% of the respondents diagnosed with breast cancer were in younger age group (below 40s), which could be linked to high levels of depression [13, 14]. In addition to the difficulty in reaching the only available radiation therapy facility located in Jerusalem for Palestinian people (Augusta Victoria Hospital), it needs a patient from the West Bank to obtain an Israeli permit to enter and reach any facility within Jerusalem, which is not easy to apply for and not always guaranteed to get.

Table 2 Comparison of depression and anxiety scores in treated patients using mean scale and subscale scores of one-way ANOVA

Characteristic	Anxiety mean \pm SD	Anxiety significance	Depression mean \pm SD	Depression significance
Qualification				
Less than secondary education	2.81 \pm 0.94	0.49	3.16 \pm 0.85	0.06
Secondary education—MA	2.73 \pm 0.78		2.81 \pm 0.77	
Higher than MA	3.20 \pm 1.23		2.68 \pm 1.01	
Number of children				
None	2.84 \pm 0.47	0.20	2.83 \pm 0.60	0.22
One	2.53 \pm 0.35		2.17 \pm 0.96	
Two	2.45 \pm 0.61		2.90 \pm 0.85	
Three or more	2.87 \pm 0.98		3.01 \pm 0.84	
Age				
20–30	2.47 \pm 0.50	0.45	2.77 \pm 0.92	0.19
31–40	2.89 \pm 0.62		2.88 \pm 0.82	
41–50	2.73 \pm 0.87		2.78 \pm 0.75	
More than 51	2.83 \pm 1.08		3.15 \pm 0.82	
Duration of treatment				
Less than a month	2.59 \pm 0.70	0.04	2.76 \pm 0.87	0.39
One to 3 months	2.68 \pm 0.80		3.00 \pm 0.68	
More than 3 months	3.05 \pm 0.98		2.99 \pm 0.95	
Total	2.78 \pm 0.86		2.94 \pm 0.82	

The study also shows that the least educated patients are more susceptible to get depressed, which could pertain to limited or lack of knowledge about cancer and possible health effects after receiving radiation therapy sessions. Additionally, results show that patients who have many children are more depressed and anxious due to their possible fear and continuous thinking about their children's future.

Moreover, older cancer patients are more depressed, which can be explained by their worry of not being able to reach the radiation treatment facility and the need to have a companion every time they go for treatment. The elderly also fears of death from cancer, since many people connect them together. Also, it was shown that cancer patients are more anxious and depressed during the first treatment period, since patients are new to radiation therapy and fear of being irradiated and therapy consequences. These findings agree with a study which described the effect of age on depression and anxiety [15], which suggests that, at the start of adjuvant radiotherapy, emotional distress is characterized by anxiety rather than depression especially for women in their fifties. A Norwegian study identified higher anxiety levels among mid-age cancer patients and lower levels of anxiety in patients under 30 and over 70 years old [16]. Patient age at the time of treatment had a significant influence on psychological distress for cancer patients undergoing radiotherapy as demonstrated as in similar studies [17–20].

There was a significant difference in the level of anxiety with the duration of treatment, especially for treatments over 3 months as reported in a similar study [21], which showed a higher level of anxiety compared with depression for older patients receiving radiotherapy for longer periods.

Conclusions

Palestinian cancer patients undergoing radiotherapy demonstrated substantial levels of emotional depression and anxiety. Even though the sample size in the current study is small, the initial results indicate the presence of psychological distress among cancer patients undergoing radiotherapy in Palestine. Therefore, addressing these issues improves the quality of life and gives better adherence to cancer treatment. Results show that the highest percentage of breast cancer patients treated with radiation therapy are those having more than 3 children. Also, the highest anxiety mean was found for those highly educated (more than BA), whereas the highest depression mean was found for those who received less than secondary education. The study also revealed that the lowest anxiety mean was for those having two children, while the lowest depression mean was for those having only one child. In order to help mitigate psychosocial issues, routine screening and psychosocial support services should be provided for breast cancer patients. A further step for the current research is to

carry out an investigation regarding the efficacy of available psychosocial support services on patients' quality of life and to improve methods used in reducing psychological distress for breast cancer patients undergoing radiotherapy.

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Author Contributions Both authors participated in the interpretation of study results and in the drafting, critical revision, and approval of the final version of the manuscript. HA and OR were involved in the study design/concept, data collection, analysis, interpretation, acquisition of data, and statistical analysis.

Data Availability Not applicable.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflicts of interest.

Ethics Approval This study was approved by the ethics committee of the Augusta Victoria Hospital in Jerusalem, Palestine.

Informed Consent Written informed consent was obtained from each participant.

Consent to Participate Not applicable.

Consent for Publication Not applicable.

Code Availability Not applicable.

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