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Health related quality of life and its determinants in Nigerian breast cancer patients

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Summary

Breast cancer, the commonest malignancy in women, is now the most common cancer in Nigeria, but little is known about the quality of life (QOL) of Nigerian women breast cancer survivors and the predictive factors that may influence their QOL. Health-related QOL (HRQOL) was evaluated in 35 Nigerian women receiving radiotherapy for breast cancer at the University College Hospital, Ibadan by using the European Organization for Research and Treatment of Cancer (EORTC) quality of life questionnaire (QLQ - C30 version 3). Linear regression procedures were used to evaluate the association of HRQOL outcomes with medical and socio-demographic factors. Physical functioning (PF), Emotional functioning (EF) and Cognitive functioning (CF) scores were above average (76.9 ± 20.6 , 61.9 ± 30.3 and 60.0 ± 32.1 respectively) while Role functioning (RF) and Social functioning (SF) scores were below average (46.2 ± 36.6 and 40.9 ± 42.8 respectively). High symptom scale scores were recorded for fatigue, pain and financial difficulties (52.7 ± 32.8 , 59.1 ± 34.4 and 71.4 ± 38.8 respectively). Age had no significant influence on any of the functional and symptom scale scores as well as the overall QOL. The overall QOL was significantly related to PF, CF and SF. It was also significantly and inversely related to the scores of fatigue, nausea and vomiting, pain, insomnia and financial difficulty. The findings of this study provide important information on QOL and their correlates among Nigerian women undergoing radiotherapy for breast cancer and are helpful in developing treatment strategies accordingly.

Keywords: Cancer, breast cancer, quality of life, determinants of health, physiotherapy in oncology

Résumé

Le cancer des seins est plus communs chez les femmes au Nigeria, mais l'on a une faible connaissance sur la qualité de vie des femmes

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nigérianes atteints du cancer des seins et les facteurs de prédiction qui peuvent influencer la qualité de vie au centre universitaire hospitalier d'Ibadan en utilisant un questionnaire structuré C30 version 3 de l'organisation européenne de recherche et de traitement du cancer (OERTC). L'analyse de régression linéaire était utilisé pour évaluer la relation entre les facteurs socio-démographiques et la qualité de vie lié à la santé. Les résultats du fonctionnement physique et cognitive était au dessus de la normale ($76.9 + 20.6$, $61.9 + 30.3$, $60.0 + 32.1$ respectivement), alors que les résultats du rôle fonctionnelles social étaient en dessous de la moyenne ($46.2 + 36.6$, $40.9 + 32.8$ respectivement) les résultats des symptômes élevés étaient enregistrés pour la fatigue, la douleur et les difficultés financiers $52.7 + 32.8$, $59.1 + 34.4$, $71.4 + 38.8$ respectivement). L'âge n'avait aucune influence significative aussi bien sur ces résultats que sur leur qualité de vie. La qualité de la vie entière était significativement liée au résultat du fonctionnement physique, émotionnel et cognitive et inversement lié au résultat de la fatigue, nausée, vomissement, insomnie et les difficultés financière. Les résultats de cette étude apportent d'importantes informations sur la qualité de la vie et leur co-relation parmi les femmes nigérianes suivant une radio thérapie du cancer des seins et pourrait servir pour développer les stratégies de traitement

Introduction

Breast cancer is the leading female malignancy in the world and is now the most common cancer in Nigeria [1]. McPherson *et al* [2] reported that with one million new cases in the world each year, breast cancer is the commonest malignancy in women and comprises 18% of all female cancers. They also reported that in the United Kingdom, where the age-standardized incidence and mortality is the highest in the world, the incidence among women aged 50 years approaches to two per 1,000 women per year and the disease is the single commonest cause of deaths among women aged 40-50 accounting for about a fifth of all deaths in this group. Both men and women

can develop breast cancer, but it occurs very rarely among men [3]. The American Cancer Society [4] reported that survival statistics from this disease continues to improve overall. Five year survival has increased from 72% in the 1940s to 97% as at 1997. Unlike survival for other cancers which levels off after 5 years, 65% of women diagnosed with breast cancer survive 10 years and 56% survive 15years [4]. Thus, women with a history of this disease are living longer.

It has been reported that 20 to 25% of women with breast cancer experience long term psychological morbidity [5]. Breast cancer and its treatment can have negative mental and physical consequences. Emotional effects may include depression, anxiety, stress, poor body image, low self esteem, loneliness and loss of sense of control [6]. Physical and functional effects may include asthenia, ataxia, reduced cardiovascular function, muscle weakness and atrophy, difficulty in sleeping, fatigue, nausea, vomiting and pain. Although many of these side effects are common to other cancer patients, breast cancer survivor face additional unique challenges including limited arm range of motion, lymphoedema [7], and impaired cognitive function [8], weight gain [9] and osteoporosis [10]. Together, these comorbidities can impair a woman's quality of life.

Quality of life (QOL) is defined as a multidimensional construct covering all aspects of life. It is a person's sense of well being that stems from satisfaction or dissatisfaction with the areas of life that are important to him/her. QOL is comprised of four underlying domains: Health/functioning domain, Socio-economic domain, Psychological/spiritual domain and Family domain [11]. QOL had also been said to refer to a person's subjective well-being and life and to include mental and physical health, material well-being, inter-personal relationship within and outside the family, work and other activities in the community, personal development and fulfillment and active recreation [12]. Medical interest in quality of life (QOL) has been stimulated by success in prolonging life and the realization that patients want to live, not merely survive [13]. Moving beyond the notion of "mere survival" after successful treatment, women are searching for ways to improve their quality of life and successfully integrate the experience of breast cancer into their lives [3].

Cancer is a source of psychological and physical stress to all patients, but some tolerate the disease better than others [14]. QOL has gained an

important place in the management of cancer in industrialized nations, with the increase in survival. However, in developing countries, not much attention has been paid to this issue [15]. This is particularly true of Nigeria hence this study which was carried out to assess the QOL of Nigerian breast cancer patients and to investigate factors that influence/determine their QOL.

Materials and methods

Participants

Thirty five post-surgical breast cancer patients receiving treatment at the University College Hospital, Ibadan participated in this study. They were the patients who could speak, understand and read English language as the term of use of the instrument included the instruction that it must not be translated into any other language.

The participants recruited over six months period freely consented to be part of the study after the study had been well explained to them and assured of anonymity and confidentiality.

Research instrument

The European Organization for Research and Treatment of Cancer quality of life questionnaire (EORTC QLQ - C30 version 3) was obtained from and used for this study following the written permission of the EORTC quality of life group. The EORTC QLQ-C30 (version 3) is a quality of life questionnaire assessing the health related QOL of cancer patients designed by the European Organization for Research and Treatment of Cancer developed in 1993. Its validity was evaluated with 305 patients in 13 countries. An average of 11 minutes was needed to complete the questionnaire. Significant differences over time is detectable with this instrument and the reliability estimates for the subscales ($\alpha = 0.52 - 0.89$) were similar across cultural subgroups [16].

It consists of 3 domains:

Domain A – Consists of 15 questions aimed at assessing functioning scales as at time of assessment.

Domain B – Consists of 13 questions aimed at assessing symptoms scales one week prior to time of assessment.

Domain C – Consists of 2 questions aimed at assessing patient's perception of her global health status. In addition to these, there are 3 questions requesting the patient's initials, age and if patient is

on radiotherapy or chemotherapy. All of the scales and single item measures were scored from 0-100.

Procedure

Ethical approval for the study was sought and obtained from UI/UCH Institutional Review Board before the commencement of the study. The permission of the Heads of Surgery and Radiotherapy departments were also obtained before the commencement of data collection. The nature and purpose of the research was explained to the participants. They were assured of anonymity and confidentiality and their informed consent was obtained before interviewing them.

Data analysis

Descriptive statistics of mean and standard deviation were computed for the scores on the global health status, functional scales and symptom scales. The relationships between the following were studied using the linear regression method:

- i. Age and functional scores of respondents.
 - ii. Age and symptom scores of respondents
 - iii. Age and QOL scores
 - iv. QOL scores and functional scores
 - v. QOL scores and symptom scores
- Significance level was set at 0.05 alpha.

Results

A total of thirty five (35) breast cancer patients aged between 28 and 75 years (Mean = 44.3 ± 11.9 yrs) participated in the study. The scores on the functional scales and the overall quality of life score are recorded in table 1. The highest functional score was recorded on the physical functioning (PF) scale (76.9 ± 20.6) while the lowest score was recorded on the social functioning (SF) scale (40.9 ± 42.8). The overall QOL score was above average (58.1 ± 30.7).

Table 2 summarizes the scores on the symptom scales. Financial difficulty was the greatest concern of the patients (71.4 ± 38.8) while pain (59.1 ± 34.4) and fatigue (52.7 ± 32.8) were the most troublesome symptoms. Age was not significantly related to any of the functional and symptom scales scores as well as the overall QOL (Tables 3 and 4). Inverse relationship was observed between age and each of the PF, RF & SF scales (Table 3) and the entire symptom scales except fatigue and dyspnoea (Table 4).

Table 1: Mean functional scales scores and quality of life of respondents.

	Score	
	Mean	S.D.
Functional Scales:		
Physical Functioning (PF)	76.86	20.59
Role Functioning (RF)	46.19	36.62
Emotional Functioning (EF)	61.90	30.34
Cognitive Functioning (CF)	60.00	32.13
Social Functioning (SF)	40.95	42.84
Overall Health:		
Quality of Life (QOL)	58.10	30.68

Table 2: Mean symptom scales scores of respondents

Symptom Scales and Items:	Score	
	Mean	S.D.
Fatigue	52.70	32.82
Nausea /Vomiting	14.76	20.52
Pain	59.05	34.38
Dyspnoea	23.81	37.55
Insomnia	35.24	32.28
Loss of Appetite	35.24	39.56
Constipation	19.61	31.91
Diarrhea	5.88	20.87
Financial Difficulties	71.43	38.83

Table 3: Relationship between age and functional scales scores and quality of life of respondents

	Correlation Coefficient (r)	P-value
Functional Scales:		
Physical Functioning (PF)	-0.110	0.535
Role Functioning (RF)	-0.075	0.673
Emotional Functioning (EF)	0.042	0.812
Cognitive Functioning (CF)	0.045	0.802
Social Functioning (SF)	-0.056	0.753
Overall Health:		
Quality of Life (QOL)	0.084	0.636

Physical functioning, cognitive functioning and social functioning were significantly related to overall QOL (P< 0.05) with the strength of the relationship following the order SF > PF > CF (Table 5). The relationship between the overall QOL and each of the symptom scale scores are recorded in table 6.

Table 4: Relationship between age and symptom scores of respondents

	Correlation Coefficient (r)	P-value
Fatigue	0.033	0.854
Nausea / Vomiting	-0.076	0.668
Pain	-0.272	0.406
Dyspnoea	0.020	0.258
Insomnia	-0.147	0.406
Loss of Appetite	-0.061	0.733
Constipation	-0.020	0.990
Diarrhea	-0.151	0.401
Financial Difficulties	-0.236	0.179

Table 5: Relationship between Quality of Life (QOL) and functional scales scores of respondents

	Correlation Coefficient (r)	P-value
Physical Functioning (PF)	0.418*	0.013
Role Functioning (RF)	0.294	0.087
Emotional Functioning (EF)	0.256	0.133
Cognitive Functioning (CF)	0.355*	0.037
Social Functioning (SF)	0.586*	0.000

* Indicates significant correlation (relationship) $P < 0.05$

Table 6: Relationship between Quality of Life (QOL) and symptom scores of respondents

	Correlation Coefficient (r)	P-value
Fatigue	-0.398*	0.018
Nausea / Vomiting	-0.398*	0.018
Pain	-0.586*	0.000
Dyspnoea	-0.144	0.410
Insomnia	-0.478*	0.004
Loss of Appetite	-0.447	0.733
Constipation	-0.279	0.110
Diarrhea	-0.213	0.266
Financial Difficulties	-0.398*	0.018

* Indicates significant correlation (relationship) $P < 0.05$

QOL was inversely related to all the symptoms scales, the symptom scales that were significantly associated with poorer overall QOL include fatigue, nausea and

vomiting, pain, insomnia, and financial difficulty ($P < 0.05$). The strength of these inverse relationships is in the order: pains > insomnia > fatigue / nausea and vomiting > financial difficulty.

Discussion

On the average, the patients in this study were in their fifth decade of life (mean age = 44.3+11.9 yrs). Age has been reported to be the single best predictor of the risk of developing cancer. Risks for the development of cancer begin to increase at 40 years of age and then increase rapidly at 50 years of age [17]. The subjects in this study fall within this range of ages at risk. It had been reported that breast cancer rarely develops before the age of 25yrs, with a peak incidence during the peri-menopausal years [18]. McPherson *et al* [2] reported that in the UK, breast cancer is the single commonest cause of deaths among women aged 40-50 yrs.

A high score for a functional scale represents a high or healthy quality of functioning. The patients in this study had high scores of physical, emotional and cognitive functioning. This is in agreement with the findings of Ganz *et al* [19] in their study of over 800 stage I and stage II breast cancer patients to determine whether chemotherapy affects a breast cancer patient's quality of life after treatment. They found out that the women were in excellent physical and emotional condition after treatment. It has also been reported that women with breast cancer have less depression, anxiety and hostility, less dramatization and less psychological distress compared with women with other cancer types [20]. The score of 60.0 ± 32.1 for the cognitive functioning parameter in this group of patients is comparable to the findings of Tada *et al* [16] who reported a mean score 60.4 ± 37.4 for the same parameter. They also reported that role functioning parameter had the lowest mean score of 38.2 ± 36.9 . The role functioning score of the subjects in this study (46.2 ± 36.6) also appears low compared to other scores but is not the lowest parameter being higher than the score of 40.8 ± 38.6 for social functioning. The very low social functioning score in the present study could also be dependent on the low role functioning score because a patient that scores low in the role functioning will tend to shy away from social functioning or activities due to her limitation in fulfilling or playing her role. In our environment where artificial breasts and breast

reconstruction surgery are not common, the low score in the social functioning parameter could also be due to the tendency to stay away from public glare.

A high score for a symptom scales or item represents a high level of symptomatology or problem. Financial difficulty was the greatest concern of the patients in this study, far above the problems of pain and fatigue. A previous study had also reported that the cancer patient's condition altered her role within the family unit, as well as her role as a provider and consequently affecting the financial status of her family [21]. That financial difficulties ranked highest in the present study may be related with the economic situation in this country. In most of the developed nations of the world, there exists one form of support system or the other but such is not available in Nigeria. This therefore heightens the financial difficulty beyond what is obtained in most developed countries. In the study of Tada *et al* [16], fatigue showed the highest score of 53.7 ± 33.4 in the symptoms scale. The results of this study reveals a similar trend in the fatigue score (52.7 ± 32.8) but ranked third highest coming after financial difficulties and pain. The lesser impact of fatigue in these patients might have contributed to the higher physical functioning and QOL since it has been reported that fatigue is associated with poorer physical functioning and HRQOL [22]. Insomnia and loss of appetite ranked next among the symptom scores. Sleep disturbance is known to be a common side effect of the cancer experience. It is considered to be a part of normal psychosocial adjustment to a diagnosis of cancer and may not emerge until after treatment has been initiated [23]. The score for dyspnoea recorded in this study is comparable with what had been reported in literature [16]. According to Wadle [24], the incidence of diarrhoea in the cancer setting is less than that of constipation being a more troublesome symptom than diarrhoea. This trend was also observed in the present study.

A high score for the overall health or quality of life represents a high quality of life. The overall quality of life obtained in this study is above average (58.1 ± 30.7). Ganz *et al* [18] had reported that long-term, disease-free survivors of breast cancer report high levels of QOL. The present study however showed a higher QOL than that reported by Tada *et al* [16]. This may be as a result of racial differences as Meeske *et al* [22] had stressed the need for future studies to clarify relationships between ethnicity and

HRQOL in cancer survivors. The relationships between age and each of the functional scale scores and the overall QOL were very weak implying that age was not a strong predictor/determinant of functioning and quality of life. Lu *et al* [25] had also reported that age had minimal influence on overall QOL. Weak, insufficient but inverse association was found between age and all the symptom scale scores except fatigue and dyspnoea. This is in line with the findings of McMillan [26] who reported a low to moderately negative relationships between age and symptom intensity. These results support the commonly held belief that elderly people report a low intensity of some physical symptoms than do younger individuals but that the relationship between age and symptom intensities are weak.

QOL was significantly related to physical functioning (PF), cognitive functioning (CF), role functioning (RF) and social functioning (SF) but the strength of the associations are not very strong. This agrees with the report of Frank-Stromberg [27] that while quality of life and functional status are related, more is involved in the perception of quality of life than functional abilities.

QOL was moderately and significantly related to pain and insomnia in the order of strength of the association and poorly but significantly related to fatigue, financial difficulty and nausea and vomiting with equal strength. Pain being the most important symptom relevant to QOL in these patients is in line with literature. It has been well reported to be a major problem experienced by cancer patients generally [28,29]. Fatigue has been well reported to have significant impact on patients' QOL [30-32] even among paediatric cancer patients [22]. It has been said that many patients regard the treatment of fatigue as more important than the treatment of pain in contrast to the opinion of many physicians [33]. Even though financial difficulty as a symptom or problem gave the patients more concern than pain and insomnia, it was not as strong a determinant of the overall QOL as either of them.

Conclusion

This study has shown that the overall QOL of post-surgical breast cancer survivors undergoing adjuvant therapy is above average. The determining factors for the overall QOL of this group of patients have been highlighted. Since these women would desire ways to improve their QOL, there is the need for

health care providers to address the factors highlighted by this study. Four of the predictive factors (physical functioning, fatigue, pain and insomnia) are issues that fall within the corridor of physiotherapy. Physiotherapists should arise to address these important aspects of the management of this group of patients.

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