

peer reviewed ORIGINAL ARTICLE

# Fatigue among breast cancer patients receiving radiotherapy at an oncology centre in Ghana

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## Abstract

**Background** Breast cancers are caused by an overgrowth of the cells lining the breast ducts. Fatigue is one of the symptoms most frequently reported by patients with breast cancer during and after radiation treatment which impacts upon their quality of life. This symptom is caused by the cancer and related treatment, and it often interferes with daily activities.

**Aim** The aim of the study was to assess fatigue among patients undergoing radiotherapy in Ghana.

**Method** A quantitative survey was carried out at an oncology centre in Ghana. Convenience sampling was used with a sample of 120 participants. Data were collected using a structured questionnaire in the form of a modified fatigue symptom inventory scale. Data collected were analysed using SPSS version 20. Frequency tables and pie charts were used to present information obtained from the analysis.

**Results** The response rate was 100% (n=120). Fifty-one (42.5%) respondents experienced average fatigue after receiving two weeks of radiotherapy, 45 (37.5%) experienced extreme fatigue, 22.5% experienced mild fatigue, and 10% had no fatigue. Fifteen (12.5%) experienced mild fatigue within two weeks of treatment. The majority (45%) claimed they did nothing about the fatigue they experience during treatment; 32.5% indicated that they took a nap (sleep) anytime, they experience fatigue; 15% claimed they saw (reported to) their doctors when they experienced fatigue; and a few (7.5%) claimed they used medication when they experienced fatigue.

**Conclusion** Patients who received radiotherapy at an oncology centre in Ghana experienced different levels of fatigue during their treatment trajectory. As a result of this, their ability to concentrate, as well as to undertake normal daily activities, was affected.

**Keywords** Assessment; fatigue inventory scale; frequency; severity

## INTRODUCTION

Breast cancers are usually caused by an overgrowth of the cells lining the breast ducts.<sup>[1]</sup> Other causes of breast cancer include a personal history of breast cancer conditions, a family history of breast cancer, inherited genes that increase cancer risk, radiation exposure, obesity, beginning menstruation at a young age, beginning menopause at an older age, never been pregnant, and postmenopausal hormone therapy, among others.<sup>[2]</sup> According to the American Cancer Society,<sup>[2]</sup> the major forms of therapies used for curative and palliative care include surgery, radiotherapy, and systemic therapy. Fatigue is one of the most frequently symptoms, reported by breast cancer patients with, that impacts upon their quality of life.<sup>[3]</sup> It is usually characterised by an overall lack of energy, cognitive impairment, somnolence, mood disturbance, or muscle weakness.<sup>[4]</sup> These symptoms are caused by the cancer and its therapy and are typically not relieved by rest or additional sleep and often interfere with daily activities.<sup>[5]</sup>

Assessment of breast cancer fatigue is most often done with different scales. Multi-dimensional fatigue scales measure the severity of the fatigue, with time, as well as monitor interference of daily life activities of an individual by the perceived fatigue. They assess created fatigue interference of the psychological and emotional aspect of an individual. The fatigue symptom inventory (FSI) is an example of a multi-dimensional fatigue scale.<sup>[6]</sup> It is a 14-item self-report measure designed to assess severity, frequency, and daily pattern of fatigue, as well as its perceived interference with quality of life. The latter measurement provides qualitative information about possible diurnal variation in the daily experience of fatigue.<sup>[6]</sup> Fatigue experienced by breast cancer patients is often overlooked and under-acknowledged by health professionals. Health professionals thus need to be aware of the variety of strategies that can be used to facilitate patients in overcoming, or managing cancer-related fatigue.<sup>[7]</sup>

A number of approaches have been highlighted which may be used by health

professionals.<sup>[7]</sup> These include a patient's ability to know about basic remedies for early experienced fatigue, pharmacological and nutritional interventions by a physician and or a dietician, and graded exercise or activity planned by a physiotherapist to manage the fatigue. Another approach is that patients must heed the advice of a radiotherapist on sleep hygiene and relaxation. The final part is restorative activities and cognitive rehabilitation as these are key to a patient's recovery.

Breast cancer patients who had radiation treatment at oncology centres in Ghana frequently complained of fatigue even before receiving treatment as well as during treatment. This study was conducted to assess fatigue of breast cancer patients receiving radiotherapy.

## METHODOLOGY

A survey was conducted to ascertain an observational symptom of fatigue, and to determine the adequacy of the status by comparing it with established standards.<sup>[8]</sup> The study was carried out at an oncol-

ogy centre in Ghana. The study population included all breast cancer patients receiving treatment from April to June 2017. Convenient sampling was used. The inclusion criteria were all patients who were undergoing radiotherapy treatment, and those with at least two weeks in their treatment regime. Patients with any emergency condition were excluded. Although this method is non-probabilistic suggesting less representative data and even possible bias, it was the most feasible and practical due to time constraints. The sample size was all patients in the study population (n=120).

A questionnaire that included a modified fatigue symptom inventory (FSI) scale was used to assess each patient's severity, frequency, daily pattern of fatigue, as well as perceived interference with quality of life, and the remedy for the fatigue experienced. The FSI was modified to suit the local patient setting. For example, a question on the pattern of fatigue with perceived interference was about a patient's ability to bath and dress during the day. The original quantitative scale (0 to 10) was adjusted to assess: *no fatigue*, *mild fatigue*, *average fatigue*, *extreme fatigue/no interference*, *mild interference*, *average interference* and *extreme interference* for easy comprehension the respondents. Definition of no fatigue implies no discomfort in any area of their life. Mild fatigue refers to slight discomfort, weariness or tiredness. Average fatigue refers morning stiffness for a few hours, discomfort, and evidence of tiredness. Extreme fatigue refers complete morning stiffness, profound tiredness and weariness, and difficulty getting out of bed in the morning.

After consenting to participate in the study, the breast cancer patients who had received treatment for not less than two weeks were asked to complete the modified FSI questionnaire. Those who presented for review just after receiving treatment at the centre were also asked to complete the questionnaire. The purpose of the study was explained to all the patients. Those who experienced difficulty understanding the questionnaire were assisted by being verbally informed of the wording of the questions.

The data were entered into a database and analysed statistically with Statistics Package for Social Sciences (SPSS) version

20. Bar charts and pie charts were used to present the analysed data: severity of fatigue; perceived interference; pattern of fatigue experienced; and the how the respondents' dealt with the fatigue they experienced. The study did not involve any experiment and threats to internal validity. It was, however, possible that threats to statistical conclusion validity could take place when insufficient inferences and generalising of the results to the whole population are made.

Approval was obtained from the Ethical Review and Protocol Committee (SAHSET/10341320/AA/8A/2017) of a higher institution. Written permission was obtained to conduct the study at the selected site. Ethics principles of confidentiality and privacy were upheld. Informed consent was obtained from all the respondents prior to commencing the study and each data collection activity.

**RESULTS**

All 120 respondents completed the questionnaire giving a 100% response. In terms of experiencing fatigue 42.5% did not experience fatigue before receiving the first fraction of radiation dose; 35% experienced mild fatigue; and 22.5% experienced average fatigue (Figure 1). The majority (35%) experienced average fatigue on weekends during their radiation treatment period; 32.5% experienced extreme fatigue; and 22.5% experienced mild fatigue (Figure 2). In all, 42.5% experienced average fatigue after receiving two weeks of radiotherapy; 37.5% experienced extreme fatigue; and 12.5% experienced mild fatigue (Figure 3). Finally, 45% claimed they did nothing about the fatigue they experienced; 32.5% claimed they took nap (sleep) whenever they experienced fatigue (Figure 4). Only 15% claimed they saw (reported to) their doc-

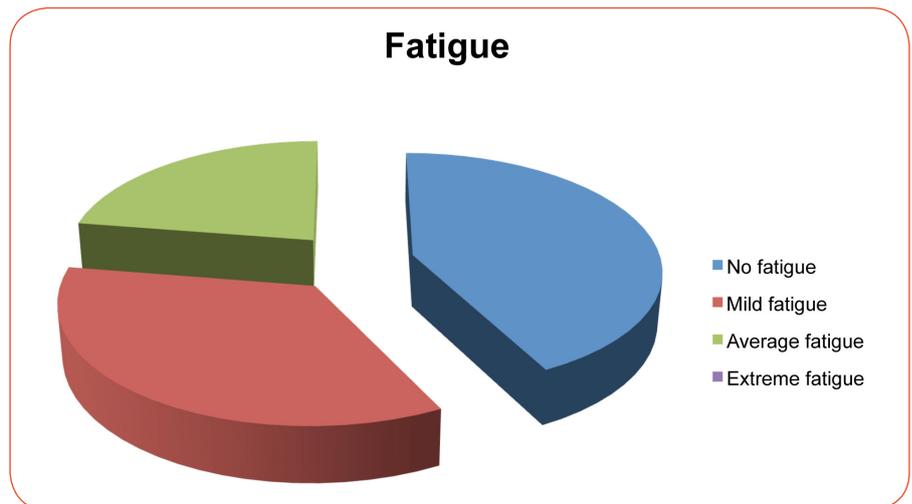


Figure 1. The level of fatigue of patients before receiving the first radiation dose.

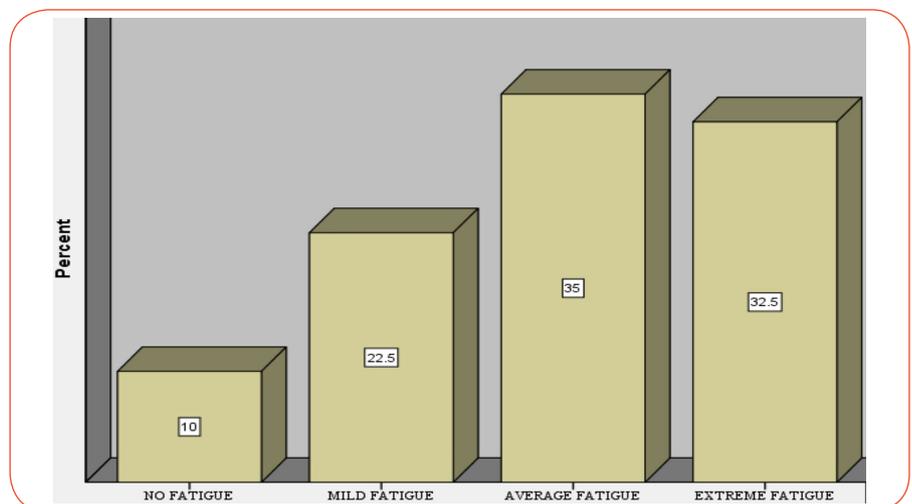


Figure 2. The level of fatigue of patients during weekends.

tors when they experienced fatigue; and 7.5% claimed they used medication when they experienced fatigue.

## DISCUSSION

This study investigated the severity of fatigue and its perceived interference in the activities of breast cancer patients before and during radiotherapy at an oncology department of Ghana. Two separate studies of fatigue experienced among African women assessed the severity of fatigue, levels of fatigue during and after treatment, as well as remedies for fatigue.<sup>[9,10]</sup> The questions in this study were based on these two studies.

### • Assessing severity variables

In this study, 42.5% of the respondents did not experience any fatigue; 35% and 22.5% experienced mild and average fatigue respectively before the start

of radiotherapy. We need to bear in mind that they had to recall the levels of fatigue when they completed the questionnaire. A study by Ancoli et al<sup>[11]</sup> found that women with breast cancer complained of fatigue even before the start of their radiation treatment. They had increased fatigue, disturbed sleep and increased daily dysfunction before the start of radiation treatment. This suggests that fatigue is not solely a result of radiation treatment, but rather it is multifactorial. It was therefore expected that some of the respondents in this study would have experienced some level of fatigue as a result of the cancer itself before commencement of their treatment.

### • Level of fatigue during weekends

As shown in Figure 2 more than 50% of the respondents had mild to extreme fatigue during weekends. According to them in a follow up question, they had been inactive throughout the whole week-

end. The incidence of fatigue in these women is in keeping with a study by the American Cancer Society<sup>[12]</sup> that reported that exercising can be an effective intervention to help in the fight against fatigue. Schneider<sup>[12]</sup> observed that individualised, prescribed physical activity of moderate intensity resulted in significant reductions in cancer-related fatigue during treatment.

### • Level of fatigue two weeks after radiotherapy started

A study by the American Cancer Society<sup>[12]</sup> indicates that receiving radiotherapy could lead to an increase in fatigue. Similar studies indicate that the longer the duration of radiotherapy (number of days receiving radiotherapy), the higher the fatigue experienced.<sup>[12]</sup> According to these studies, about 80% of patients experienced levels of fatigue during treatment. The findings of this study are in keeping with the literature. Díaz et al<sup>[13]</sup> make the same assertion that the intensity of fatigue increases with an increase in the amount of radiation dose received by patients. It was thus expected that most of the respondents in this study would experience average and extreme fatigue after receiving two weeks of radiation dose. See Figure 3.

### • Remedy for fatigue

The respondents' knowledge on how to deal with fatigue was not adequate as shown in Figure 4. This was because most of them thought that the fatigue they were experiencing was mere tiredness and as such it would be curbed on its own. A few did indicate they took a nap anytime they experienced fatigue; others chose to self-medicate. We therefore deduced that their knowledge on the remedies of fatigue and even the realisation of the condition (state) of fatigue was minimal. In view of their knowledge gap, it was evident that education and awareness seminars had to be organised for patients who are receiving radiation treatment to help reduce the intensity of the fatigue during the course of their treatment.

There were three limitations in this study.

- Difficulty in translating the questionnaire into other local languages for those respondents who did not understand the English language.
- The study was limited to one oncology centre.
- The respondents were expected to accurately recall their level of fatigue before commencing their treatment.

## Level of Fatigue after 2 Weeks of RT

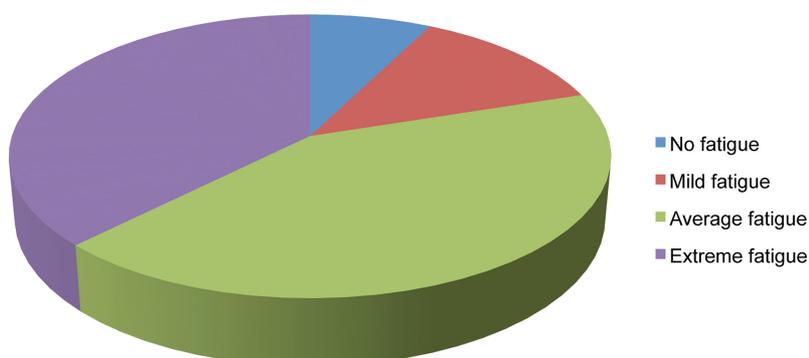


Figure 3. Level of fatigue after receiving two weeks of radiotherapy.

## How patients deal with their fatigue

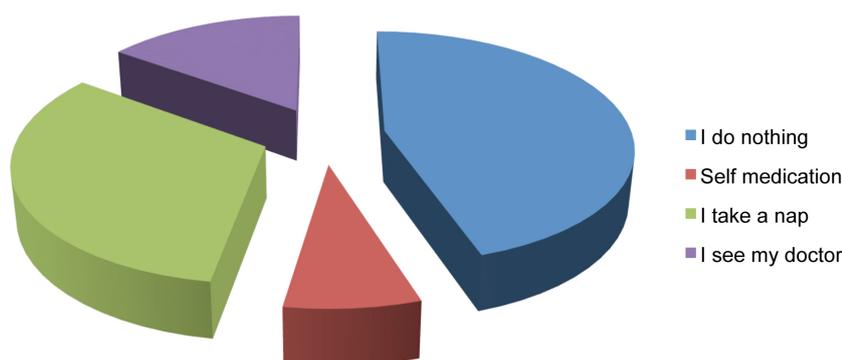


Figure 4. How patients deal with the fatigue they have been experiencing.

Based on the findings in this study the following recommendations are made to help manage patients' fatigue effectively.

- Caregivers should be ready to listen to patients' complaints and grievances since that can help improve their quality of life.
- Proper education should be given to breast cancer patients before, during and after receiving radiation treatment on how to manage fatigue effectively.
- Radiographers should ensure that proper treatment techniques are used to reduce the intensity of fatigue experienced by patients.

## REFERENCES

1. Abeloff M, Wolff A. Cancer of the breast. *Journal of Clinical Oncology*, 2008; 1875-1943.
2. American Cancer Society (ACS). Breast cancer facts and figures. Atlanta: Oxford Press, 2011.
3. National Comprehensive Cancer Network (NCCN) (2013). Practice guidelines in oncology. Breast Cancer. [Cited 2018 April 10]. Available from: [www.nccn.org](http://www.nccn.org)
4. Rao A, Cohen H. Fatigue in older cancer patients; etiology, assessment, and treatment. *Seminars in Oncology*, 2008; 35: 633-642.
5. Hofman M. Cancer patients' expectations of experiencing treatment-related side effects. A University of Rochester Cancer centre- community clinical oncology program study of 938 patients from community practices, 2007; 101: 851-857.
6. Stein K D, Jacobsen P B, Blanchard C M. Further validation of the multidimensional fatigue symptom inventory-short form (MFSI-SF). *Journal of Pain and Symptom Management*, 2004; 27: 14-23.
7. Minton O, Richardson A, Sharpe M. Drug therapy for the management of cancer-related fatigue. *Cochrane Database System Review*, 2010; 7: CD006704
8. Marczyk G, DeMatteo D, Festinger D. Essentials of research design and methodology. Hoboken, NJ: John Wiley & Sons, 2005.
9. Dash C, Randolph-Jackson P D, Isaacs C, Mills M, Makambi K, Watkins V V, Adams-Campbell L, 2016. An exercise trial to reduce cancer related fatigue in African American breast cancer patients undergoing radiation therapy: design, rationale, and methods. *Contemporary Clinical Trials*, 2016; 47: 153-157.
10. de M Alcântara-Silva T R, Freitas-Junior R, Freitas N M, Machado G D. Fatigue related to radiotherapy for breast and/or gynaecological cancer: a systematic review. *Journal of Clinical Nursing*, 2013; 22(19-20), 2679-2686.
11. Ancoli-Israel S, Liu L, Marler R. Fatigue, sleep and circadian rhythms prior to chemotherapy for breast cancer. *Support Care Cancer*, 2006; 14: 201-209.
12. Schneider C. Effects of supervised exercise training on cardiopulmonary function and fatigue in breast cancer survivors during and after treatment. *Cancer Journal*, 2007; 110: 918-925.
13. Díaz N, Menjón S, Rolfó C et al. Patients' perception of cancer-related fatigue. *Clinical Oncology*, 2008; 10 (11):753-757.

## CONCLUSION

Literature shows that the amount of radiation dose received by patients had a direct influence on the fatigue they experienced.<sup>[13]</sup> Similar results were obtained in this study. Moreover, the respondents' ability to concentrate, as well as to undertake normal daily activities, was affected as a result of the fatigue they experienced. Early detection of fatigue using applicable scales enables better management of patients' fatigue levels and better clinical adherence of radiotherapy treatment.

## CONFLICT OF INTEREST

No conflicts of interest.

## CONTRIBUTIONS OF EACH AUTHOR

KAK (University of Ghana) and NEO (Korle-Bu Teaching Hospital) were the main researchers. NEO was responsible for data collection; VV (Korle-Bu Teaching Hospital) and SYO (University of Ghana) captured and presented the results. KAK and SYO assisted with interpretation of the results. NEO and KAK drafted the manuscript. VV, KAK and SYO provided critical comments and recommendations regarding literature review.