



## Pre-Treatment Knowledge and Side-Effects Experienced during Chemotherapy for Breast Cancer in a Nigerian Tertiary Hospital

**<sup>1</sup>Abbas Abdus-Salam, <sup>1</sup>Atara Ntekim, \*<sup>2</sup>Sharif Folorunso, <sup>1</sup>Ayorinde Folasire, <sup>1</sup>Mutiu Jimoh, <sup>1</sup>Adeniyi Adenipekun**

<sup>1</sup>Department of Radiation Oncology, University of Ibadan/University College Hospital Ibadan, Nigeria.

<sup>2</sup>Radiotherapy and Oncology Unit, Department of Radiology, Obafemi Awolowo University Teaching Hospitals Complex Ile Ife.

### Abstract

**Background:** Chemotherapy is an important component of treatment for breast cancer as it improves tumour control, overall survival or disease-free survival but is associated with side effects that could affect patients' quality of life. Patients' understanding and expectation of these side effects can improve their coping abilities. Exploring these understanding and expectations before chemotherapy can reduce the burden of chemotherapy side effects and improve compliance to treatment by increasing their physical and psychological preparedness. The study aimed to assess how the knowledge of expected side effects of chemotherapy affected the level of coping with the side effects of chemotherapy

**Methodology:** This study was carried out at the Radiation Oncology and the Surgical Oncology clinics of the University College hospital Ibadan Nigeria. Patients with breast cancer were randomly selected to participate in the study. Before commencement of 1st-course chemotherapy data on sociodemographic variables, clinical characteristics and patients' knowledge about chemotherapy side effects was collected using a set of questionnaires. While presenting for the second course, patients were asked if they encountered side effects and how long it took them to recover from the side effects. The data collected was analysed using the Statistical Package for the Social Sciences (SPSS) software version 21.

**Result:** A total of 110 women participated in the study. Most of the patients (85%) knew chemotherapy side effects (SE). Most of the respondents, (73.5%), received their information on the side effects of chemotherapy from doctors, followed by nurses (40.9%), internet (32.7%), peers (32.7%) and family members (12.7%). Currently employed and younger patients tended to have more knowledge concerning chemotherapy SE ( $p = 0.018$ ). Patients who knew SE before treatment recovered faster than those who did not ( $p=0.01$ ).

**Conclusion:** Majority of the patients were aware of the side effects of chemotherapy. Having knowledge about side effects was associated with faster recovery. Pre-Chemotherapy counselling should be done routinely for patients starting on chemotherapy.

**Keywords:** Pre-treatment Knowledge; Side-effects; Chemotherapy; Breast Cancer.

**Correspondence:** Sharif Folorunso, Radiotherapy and Oncology Unit, Department of Radiology, Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife.

**Email:** thenoble20@yahoo.com

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## Introduction

Chemotherapy is the use of cytotoxic drugs to control tumour growth. It is used in oncology to eradicate disease, prevent a recurrence, to achieve palliation in advanced disease and tumour debulking to downstage advanced diseases. More than one agent is generally recommended for a higher response rate and to allow spreading toxicity over multiple organ systems. Cytotoxic agents affect all rapidly dividing cells and do not discriminate sufficiently between normal rapidly dividing tissues and tumour cells. This, therefore, leads to side effects in the patients. Side effect is undesirable (harmful or beneficial) but often unavoidable effects of drugs when given at therapeutic doses as opposed to toxic effects which are harmful and not common at therapeutic doses. A unique characteristic that distinguishes cancer chemotherapeutics from many drugs is the frequency and severity of the side effects even at therapeutic doses. Cancer chemotherapy is feared by healthcare providers, patients and their families mainly due to the associated side effects. Many cancer survivors described chemotherapy as the most unpleasant of all cancer treatments they received.

Ideally, before the commencement of chemotherapy, patients are properly prepared with appropriate investigations, hydration and counselling. Pre and post-treatment medications like anti-emetics and steroids are given to prevent or reduce the severity of the side effects. American Society of Clinical Oncology, recommended that each patient receiving chemotherapy should be given adequate information regarding their diagnosis, the goals of therapy, planned duration of chemotherapy, information on all side effects, drug-specific effects, and plans for monitoring and follow-up. Giving such information reduces anxiety, promote self-care, improve compliance and coping, decrease unwanted hospitalization and phone calls. Since most patients received chemotherapy on an outpatient basis, they are likely to encounter problems outside the hospital where there is limited opportunity for discussion with their caregivers. Therefore, it is very important to equip them with adequate knowledge before a chemotherapy session.

In Nigeria, relatively few studies have been carried out on chemotherapy side effects in breast cancer patients despite documented high rates of intentional non-adherence to chemotherapy. A study highlighted a group of women on chemotherapy for breast cancer who defaulted treatment because they were improving, this may occur when the benefits of treatment and the need to stay the course are not obvious to the patients. This further stresses the importance of exploring patients' pre-treatment knowledge about chemotherapy to develop measures to mitigate against side effects of the treatment. This study aimed to assess how the knowledge about chemotherapy side-effects (SE) affected the level of coping with side effects of chemotherapy in breast cancer patients.

## Materials and Method

This was a prospective study carried out at the Radiation and Surgical outpatient clinics of the University College Hospital, Ibadan (UCH) South-West Nigeria. The study population included patients who were 18 years and above with histologically confirmed breast cancer scheduled to receive chemotherapy who eventually had at least one course. Patients who had started chemotherapy before the onset of the study as well as patients receiving concurrent radiotherapy were excluded from the study. Ethical approval was obtained from the joint Institutional Review Board of the Teaching Hospital and the College of Medicine, University of Ibadan. Data were collected using an interviewer-administered questionnaire. The questionnaire was developed from reviewing relevant literature and discussion with experts experienced in the treatment of cancer patients with chemotherapy. The questionnaire addressed patients' sociodemographic variables which included age, marital status, level of education and employment status. Knowledge was assessed by asking how much information patients received on the possible side effects of chemotherapy and their satisfaction with the knowledge. These were scored on a four-point Likert-type categorical scale as follows 'not at all (1), a little' (2), 'quite a bit (3), 'very much (4). Patients were asked to state where they got this information, whether from doctors, nurses, clinical psychologists, the internet and others.

Before administration of chemotherapy, all patients were given pre and post-chemotherapy medication to limit the side effects. While presenting for the second course of chemotherapy patients were asked if they encountered side effects from the first course, the list of the side effects and the length of time it took them to recover from the side effects.

## Data Management and Analysis

Collected data were analysed using the Statistical Package for Social Sciences (SPSS) version 21 and presented in frequency distribution tables and cross-tabulations. The student t-test was used to compare mean scores for values that were normally distributed. Mann-Whitney was used for values that were not normally distributed. The Chi-square test was used for the comparison of proportion.

## Results

A total of one hundred and ten patients with breast cancer who met the inclusion criteria were studied. The age range of patients seen was between 22 and 78 years with a mean age of  $50.45 \pm 11.1$  years. More than half 65 (59.1%) of the patients were in the 40-59 age category while 21 (19.1%) were younger and 24 (21.8%) were older. (Figure 1) All the 110 patients who met the inclusion criteria were women.

Four patients (3.6%) were single, 93 (84.5%) were married and 13 (11.8%) were divorced.

As regards the educational status, 53 (48.2%) had tertiary education, 39 (35.5%) had secondary education, 10 (9.1%) had primary education and 8 (7.3%) had no formal education. Seventy-nine patients (76.8%) were employed while 31 (28.2%) were unemployed. (table 1)

To assess patients' knowledge, they were asked how much information they had received about the side effects of chemotherapy before receiving the first course. (see table 2) Out of the 110 patients, 16 (14.5%) said they did not know the possible side effects of chemotherapy (see table 1). The majority of the patients were satisfied with the information received though 20(18.2%) said they were not satisfied (see Table 2). Most of the respondents, 81 (73.5%), received their information on the side effects of chemotherapy from doctors followed by nurses 45(40.9%), internet 36 (32.7%), peers 36 (32.7%) and family members 14 (12.7%) (see table 2).

All the patients experienced one or more side effects from the first course of chemotherapy. The side effects reported were fatigue 105(95.5%), nausea 88 (80%), loss of appetite 76 (69.1%), alopecia 68 (61.8%), vomiting 46 (41.8%), numbness 26(23.6%),diarrhea 25 (22.7%) and constipation 2 (1.8%). Sixty-six (60%) were able to recover from the SE within the first 7 days, 41 (37.3%) recovered in 8-14 days while 3 (2.7%) recovered afterwards. (see table 2). Most of the patients, 80(72.7%) recovered on their own without seeking any help. For those who did not recover on their own, 9(8.2%) were admitted, 12(10.9%) had a blood transfusion, 6(5.5%) presented to the clinic while 3(2.7%) called their doctors on phone.

The association between level of knowledge about chemotherapy side effects was tested with age, level of education, employment status and duration of recovery from side effects. (see table 3) To achieve this, the level of knowledge was dichotomized into "No Knowledge" and "Some Knowledge". There was a statistically significant relationship between the level of knowledge and age (p = 0.018). Patients with no knowledge about chemotherapy side effects were older than patients with some knowledge. Patients' knowledge was not related to the level of education (p=0.186) but significantly related to the employment status (p=0.04). It was observed that employed patients had more knowledge than unemployed patients. Patients who were aware of the SEs before treatment were found to recover faster(p=0.01)(Table 3).

The relationship between the source of information and the level of satisfaction with the information received was tested. To do this, the level of satisfaction was dichotomized into "yes" or "no". The source of information was positively related to satisfaction in patients who received the information from doctors (p=0.005) and nurses (p=0.015) whereas it was not with others (see table 4).

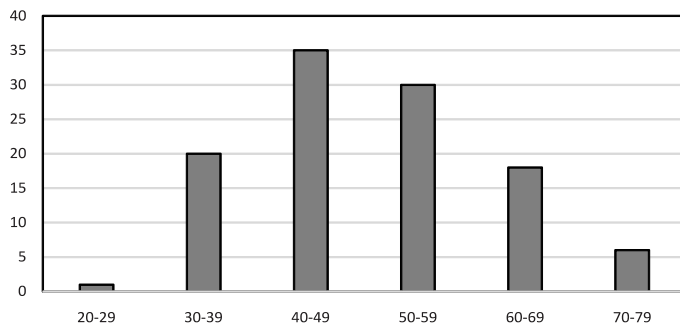


Figure 1: Age category of patients receiving chemotherapy for breast cancer

Variable	Categories	Frequency	(%)
Marital Status	Single	4	3.6
	Married	93	84.5
	Divorced	13	11.8
Level of Education	Primary	10	9.1
	Secondary	39	35.5
	Tertiary	53	48.2
	No formal Education	8	7.3
	Others	3	2.7
Current Employment status	Working	79	71.8
	Not working	31	28.2
What was done to make you recover from the side effects?	No intervention	80	72.7
	Blood transfusion	12	10.9
	Hospital admission	9	8.2
	Clinic visit	6	5.5
	Call a doctor	3	2.7

Table 1: Shows sociodemographic characteristics of the patients

Variable	Categories	Frequenc y	(%)
<b>How much information have you received on possible side effects?</b>	Not at all	16	14.5
	A little	48	43.6
	Quite a bit	39	35.5
	Very much	8	7.3
<b>From whom was the information received?</b>	Doctors	81	73.6
	Nurses	45	40.9
	Psyco- oncologist/counselor	26	23.6
	Internet	36	32.7
	Family	36	32.7
	Peers	14	12.7
	Others	5	4.5
<b>Are you satisfied with the amount of information received?</b>	Yes	20	18.2
	No	90	81.8
<b>Did you encounter any side effects?</b>	Yes	110	100
	No	0	0
<b>What were the side effects encountered?</b>	Fatigue	105	95.5
	Nausea	88	80.1
	loss of appetite	76	69.1
	alopecia	68	61.8
	vomiting	46	41.8
	numbness	26	23.6
	diarrhoea	25	22.7
constipation	2	1.8	
<b>How long did it take you to recover from the symptoms?</b>	1-7days	66	60.0
	8-14 days	41	37.3
	>14 days	3	2.7
<b>What was done to make you cope with the side effects?</b>	No intervention	80	72.7
	Blood transfusion	12	10.9
	Hospital admission	9	8.2
	Clinic visit	6	5.5
	Call a doctor	3	2.7

*coped with the SEs*

Table 2: Assessing patients' knowledge about the expected SEs, experienced SEs and how they coped with the SEs

Variables	Knowledge about SE		P-value
	None	Some	
<b>Age(years)</b>			0.018*
Mean ± SD	56.50 ±13.44	49.41± 10.39	
<b>Level of Education</b>			0.186
None and primary	3(30%)	7(70%)	
Secondary and Tertiary	13(13%)	87(87%)	
<b>Employment Status</b>			0.04*
Employed	8(10.1%)	71 (89.9%)	
Unemployed	8(25.8%)	21 (74.2%)	
<b>Duration of recovery (days)</b>			0.01**^
Median (IQR)	10 (7,14)	7 (5,8)	

\*Significant ^Mann Whitney test used

Table 3: Comparing patients' knowledge about side effects of chemotherapy with the level of education and employment status

	Satisfaction with information received?		P-value
	Yes	No	
<b>From whom did you get the information?</b>			
<b>Doctors?</b>			0.005*
Yes	70	11	
No	18	11	
<b>Nurses?</b>			0.015*
Yes	41	4	
No	47	18	
<b>Psychologist/Counsellors?</b>			0.272
Yes	23	3	
No	65	19	
<b>Family?</b>			0.226
Yes	11	3	
No	77	19	
<b>Peer?</b>			0.887
Yes	32	5	
No	56	17	

\*Significant

Table 4: shows the relationship between the source of patient's knowledge and satisfaction

## Discussion

The mean age of the study population was 50.45 years with a peak age group of 40–59 years, accounting for the majority (59.1%) of the entire study population. The study shows that breast cancer occurs predominantly in young and middle age groups in this environment and is in keeping with similar studies in Nigeria which demonstrated that breast cancer presents at a younger age when compared with Caucasians.–

The majority of the patients (85 %) had some knowledge about the side effects of chemotherapy before the commencement of treatment. This is in keeping with findings of a previous study by Adenipekun and colleagues (2012) in Ibadan. However, Clegg-Lamptey et.al. (2009) reported that 30.3% of breast cancer patients receiving chemotherapy in Ghana had no information about chemotherapy side effects before treatment. The higher knowledge about chemotherapy Ses reported in Ibadan was linked to the influence of weekly psycho-oncology counselling clinics where patients have information about their treatments. American Society of Clinical Oncology recommended that each patient receiving chemotherapy should be given adequate information regarding side effects, drug-specific effects, and plans for monitoring and follow-up. This study noted that patients with no knowledge about chemotherapy side effects were older than patients with some knowledge ( $p = 0.018$ ). The younger age group tend to be more exposed to sources of information such as the internet. In addition, elderly patients are believed to be less sensitive to identifying stimuli on both a neurologic receptor level and a level of cognitive recognition. This implies that younger patients tend to understand the information given better than the elderly suggesting the need to pay more attention to the elderly when giving information about side effects of chemotherapy.

It was also found that patients that were working had more knowledge than the unemployed ( $P=0.04$ ). An employed person would likely get some social support from colleagues which could improve his or her knowledge. They are also likely younger with the strength to work and more financially capable to assess information materials. The level of knowledge about chemotherapy side effects was however not related to educational status. This is in contrast to the finding of a previous study that linked knowledge to educational status. The relatively high level of knowledge by both educated and non-educated patients may not be unconnected to the influence of the weekly counselling clinics as well as monthly breast cancer support group meetings held in our clinics. These are avenues where most of their questions are answered using both English and local languages.

This study found that patients who knew chemotherapy recovered faster than those without knowledge ( $p=0.01$ ). This did not come as a surprise as such patients are likely more prepared to face the side effects, leading to their faster recovery. This further stresses the importance of equipping patients with adequate information before the commencement of chemotherapy.

Most of our patients received their information from doctors (73.5%) and nurses (40.9%). A similar pattern has been reported in previous studies in the United States and Saudi Arabia. Patients who received their information from doctors and nurses were more satisfied than others. This maybe because doctors and nurses are directly involved in patient care in clinics and wards. Apart from this, doctors and nurses as well as psychologists are involved in running weekly psycho-oncology clinics where information about treatment is given and serve as an avenue where most of their questions are answered.

Findings from this study showed that apart from health professionals, many cancer patients depend on the internet (32.7%), peers (32.7%) and family members (12.7%) for information about their treatment. This might be because most patients received chemotherapy on an outpatient basis and they are likely to encounter problems outside the hospital where there is limited opportunity for discussion with their caregivers. It was suggested that an education plan should involve family, caregivers, or others based on the patient's ability to assume responsibility for managing therapy. Internet can be explored to create information material in form of videos, audio and mobile app which the patients can easily lay their hands upon. Since cancer patients tend to trust their peers and family members for information, such individuals can be incorporated into breast cancer support groups which will also have health professionals as members.

## Conclusion

The majority of the patients knew the side effects of chemotherapy which was related to their age and employment status but not to their educational status. Most of them got their information from health professionals while a sizeable got theirs from the internet, peers and family. Those who got their information from doctors and nurses were more satisfied. Patients with knowledge about chemotherapy side effects recovered faster.

This study recommends that more attention should be given to the elderly during counselling. Better satisfaction observed by patients who received their information from doctors and nurses shows that patients counselling should not be left in the hand of psychologists/counsellors only. Due to the tight schedule of doctors and nurses, we could explore the use of audiovisuals in counselling patients for chemotherapy. We should also carry patients' relatives along when counselling on the side effects of chemotherapy since most of the side effects occurs at home.

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