

Level of Adherence to Cytotoxic Drugs by Breast Cancer Patients' in Lagos State University Teaching Hospital

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Abstract

Background: Breast cancer is one of the most common malignant diseases in women and adjuvant combination chemotherapy has been shown to reduce mortality from this disease. Adherence to medical treatment is a multifaceted issue that can substantially alter the outcomes of therapy. Patient non-adherence to chemotherapy is the ultimate barrier to the treatment effectiveness. **Objective:** This study was carried out to determine the relationship between cancer chemotherapy adherence and breast cancer staging, patient's perception of cancer care and patient's socio-demographic characteristics. **Material and method:** This was a cross sectional study selection of respondents and was based on simple random sampling technique, 184 patients were interviewed and data was collected using a semi-structured questionnaire to obtain socio-demographic data, adherence data, and facility-related information. **Results:** There was a significant association between marital status and non-adherence ($P = 0.013$). Both separated and single subjects had higher proportion of non-adherence compared with married subjects. Analysis of perception of chemotherapy care revealed a significant association between the satisfaction score and non-adherence, with non-adherent patients showing higher scores or being less satisfied. The quality of service ($P = 0.0052$); rating of needs been met ($P = 0.0079$); rating on whether the services helped the subject ($P = 0.0405$); rating on the general satisfaction of the services provided ($P = 0.0115$); and rating on whether subject would seek help again ($P = 0.0320$) all had a significant association with non-adherence. **Conclusion:** The awareness of oncologist and patient of the problem of non-adherence and communication regarding the importance of adherence to therapy may improve health outcomes.

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Keywords

Chemotherapy, Adherence, Breast Cancer

1. Introduction

Breast cancer is one of the most common malignant diseases in women. There are greater than 1,000,000 new cases diagnosed annually worldwide. A marked increase in incidence occurs annually and especially among women of young age, which poses a serious threat to women's physical and mental health [1]. Studies from Nigeria indicate that the breast cancer is the most common female malignancy [2].

Surgery followed by adjuvant treatment has been the gold standard for breast cancer treatment for a long time. More recently, neoadjuvant treatment has been recognized as an important strategy in biomarker and target evaluation. It is clinically indicated for patients with large tumor size, high nodal involvement and an inflammatory component, or for those wish to preserve remnant breast tissue [3].

Adjuvant combination chemotherapy has been used since the 1970s for subgroups of women with early stages of breast cancer and has been shown to reduce mortality from this disease [4].

Adherence to medical treatment is a complex and multifaceted issue that can substantially alter the outcomes of therapy. Non-adherence can contribute greatly to the variability observed in a drug's therapeutic effect, with the potential for a clinician to attribute the patient's worsening condition to an absence of drug activity [5]. Patient non-adherence to chemotherapy is the ultimate barrier to the treatment effectiveness [6]. Adherence is the extent to which a patient's behavior coincides with medical advice [7]. Because barriers to medication adherence are complex and varied, solutions to improve adherence must be multifactorial [8] [9]. There is paucity of information on adherence to cancer chemotherapy among the Nigerian population unlike disease conditions like HIV/AIDS and tuberculosis where some published works exist. Anyanwu *et al.* had reported poor compliance and adherence to treatment modalities offered breast cancer patients over a five year period in Eastern Nigerian. This report, however, did not evaluate what factors were responsible for the poor adherence reported. This study is therefore intended to fill some of these knowledge gaps with the following objectives (Table 1 and Table 2):

- 1) To determine the relationship between cancer chemotherapy adherence and breast cancer staging.
- 2) To determine the relationship between cancer chemotherapy adherence and patient's perception of cancer care.
- 3) To determine the relationship between cancer chemotherapy adherence and patient's socio-demographic characteristics.

1.1. Methodology

This is a cross sectional study that was carried out amongst female breast cancer patients attending the oncology clinic of Lagos State University Teaching Hospital. Selection of respondents was based on simple random sampling technique.

A total number of 184 patients were interviewed.

Inclusion criteria:

- 1) Adults: 18 years old and above.
- 2) Histological diagnosis of breast cancer.

Table 1. Chemotherapy adherence.

Level of adherence	Frequency	Percentage (%)	Cumulative (%)
Adherent	116	71.17	71.17
Missed 1 dose	36	22.09	93.25
Missed 2 or more doses	5	3.07	96.32
Missed whole cycle	4	2.45	98.77
Dose at irregular interval	2	1.23	100.00

Table 2. Factors associated with adherence.

Factors	Adherent	Miss \geq 1 dose	P-value	
Marital status	Married	87 (76.99%)	26 (23.01%)	<i>P</i> = 0.013
	Separated	3 (42.86%)	4 (57.14%)	
	Single	11 (47.83%)	12 (52.17%)	
	Widowed	15 (75.00%)	5 (25.00%)	
Income	>N10,000	20 (71.43%)	8 (28.57%)	<i>P</i> = 0.851
	N10-25,000	30 (73.17%)	11 (26.83%)	
	N26-50,000	13 (61.90%)	8 (38.10%)	
	N51-100,000	8 (66.67%)	4 (33.33%)	
	>N100,000	6 (85.71%)	1 (14.29%)	
Education	None	14 (70.00%)	6 (30.00%)	<i>P</i> = 0.602
	Primary	20 (66.67%)	6 (33.33%)	
	Secondary	45 (78.95%)	12 (21.05%)	
	Graduate	26 (60.47%)	17 (39.53%)	
	Post-graduate	6 (75.00%)	2 (25.00%)	
Employment status	Self-employed	59 (71.08%)	24 (28.92%)	<i>P</i> = 0.694
	Unemployed	21 (63.64%)	12 (36.36%)	
	Worker	28 (71.79%)	11 (28.21%)	
Stage	Stage I	10 (76.92%)	3 (28.08%)	<i>P</i> = 0.318
	Stage II	20 (71.43%)	8 (28.57%)	
	Stage III	9 (75.00%)	3 (25.00%)	
	Stage IV	3 (37.50%)	5 (62.50%)	
Did you receive good quality service?	Yes, definitely	31 (88.57%)	4 (11.43%)	<i>P</i> = 0.0052
	Yes, generally	65 (69.89%)	28 (30.11%)	
	No, not really	15 (62.50%)	9 (37.50%)	
	No, definitely not	0 (0.00%)	2 (100.00%)	
Have the service provided helped you?	Yes, definitely	80 (76.19%)	25 (23.81%)	<i>P</i> = 0.0405
	Yes, generally	26 (61.90%)	16 (38.10%)	
	No, not really	2 (50.00%)	2 (50.00%)	
	No, definitely not	1 (50.00%)	1 (50.00%)	
Are you satisfied with the care received?	Yes, definitely	60 (78.95%)	16 (21.05%)	<i>P</i> = 0.0115
	Yes, generally	41 (68.33%)	19 (31.67%)	
	No, not really	5 (50.00%)	5 (50.00%)	
	No, definitely not	1 (25.00%)	3 (75.00%)	
Would you seek help again?	Yes, definitely	66 (77.65%)	19 (22.35%)	<i>P</i> = 0.0320
	Yes, generally	30 (54.55%)	25 (45.45%)	
	No, not really	3 (100.00%)	0 (0.00%)	
	No, definitely not	2 (100.00%)	0 (0.00%)	

Continued

Did you get the service you wanted?	Yes, definitely	40 (81.63%)	9 (18.37%)	<i>P</i> = 0.630
	Yes, generally	63 (68.48%)	29 (31.52%)	
	No, not really	6 (60.00%)	4 (40.00%)	
	No, definitely not	2 (66.67%)	1 (33.33%)	
Do you think your needs have been met?	Yes, definitely	41 (86.67%)	8 (16.33%)	<i>P</i> = 0.0079
	Yes, generally	48 (65.75%)	25 (34.25%)	
	No, not really	12 (54.55%)	10 (45.45%)	
	No, definitely not	2 (66.67%)	1 (33.33%)	

3) At least 3 months history of breast cancer management at oncology clinic, LASUTH.

Exclusion criteria:

1) Patients with depression, cognitive impairment or psychiatric disorder.

Independent variables:

1) Staging of breast cancer.

2) Patient's perception of cancer care at LASUTH.

3) Socio-demographic characteristics of study subjects.

Dependent variable: Level of adherence to cancer chemotherapy.

Data was collected by a trained interviewer who administered a semi-structured questionnaire to obtain socio-demographic data, adherence data, and facility-related information. Adherence data collection was based on the definition by the International Society for Pharmacoeconomics and Outcome Research stating that adherence referred to the degree or extent of conformity to the recommendations about day-to-day treatment by the provider with respect to the timing, dosage, and frequency; and the duration of time from initiation of the medication to the discontinuation of therapy [9].

1.2. Statistical Analysis

Each variable was analyzed in relation to adherence first, using Chi-Square analysis test. If significant, variables were then further analyzed in relation to non-adherence using the Two-sample Wilcoxon rank-sum (Mann Whitney).

2. Results

Socio-demographic characteristics of study subjects, staging of breast cancer at diagnosis and patient's perception of cancer care at LASUTH were analyzed in relation to the levels of adherence to chemotherapy.

- The analysis between socio-demographic characteristics of subjects here studied and their level of adherence to chemotherapy care revealed a significant association between marital status and non-adherence ($P = 0.013$) (Figure 1 and Figure 2). Both separated and single subjects had higher proportion of non-adherence compared to married subjects. The remaining socio-demographic factors including education, income, and employment status had no significant association with non-adherence to chemotherapy treatment (Figure 3).
- Stage of the breast cancer at diagnosis also revealed no significant association with non-adherence to chemotherapy, although it should be noted that stage at diagnosis was not available for approximately 67% (122) of subjects.
- Analysis of perception of chemotherapy care revealed a significant association between the satisfaction score and non-adherence with non-adherent patients showing higher scores or being less satisfied. The quality of service ($P = 0.0052$); rating of needs been met ($P = 0.0079$); rating on whether the services helped the subject ($P = 0.0405$); rating on the general satisfaction of the services provided ($P = 0.0115$); and rating on whether subject would seek help again ($P = 0.0320$) all had a significant association with non-adherence.

3. Discussion

Breast cancer outcomes to improve with 5 years survival rate having increased from 50% in the 1970s to nearly

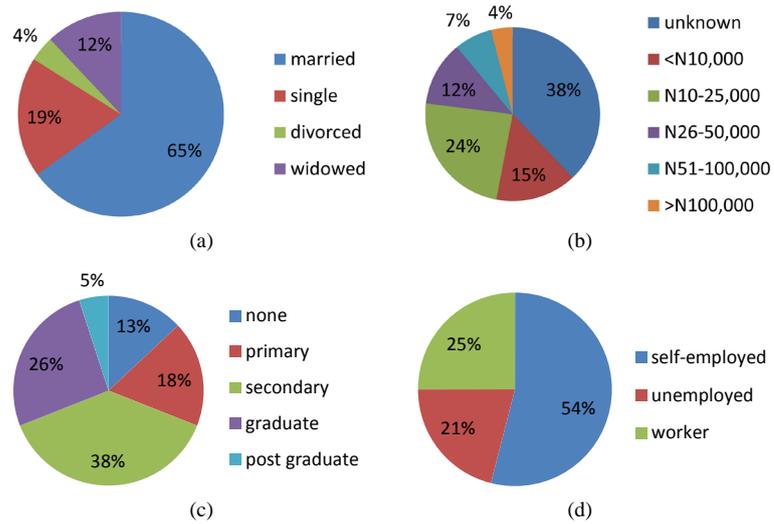


Figure 1. Illustration of social-demographic features of breast cancer patients including: (a) marital status; (b) income; (c) education level; and (d) employment status.

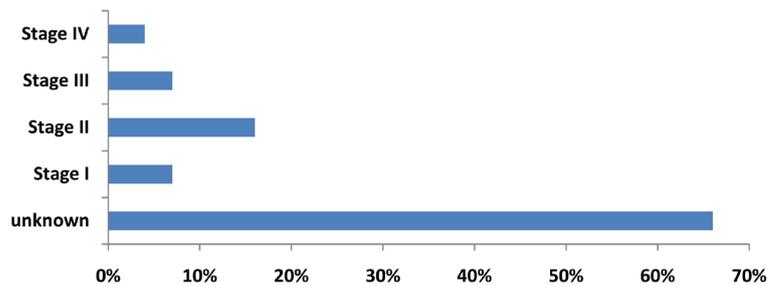


Figure 2. Illustration of tumour characters: stage of breast cancer at diagnosis.

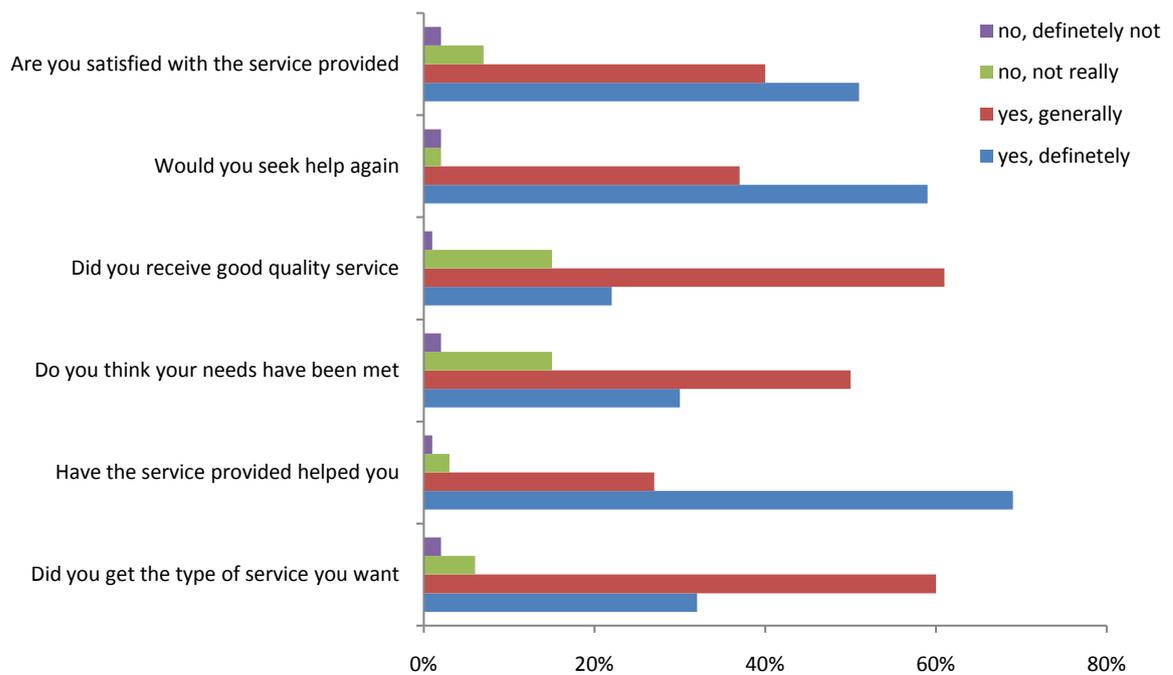


Figure 3. Illustration of perception of chemotherapy care.

80% today with major contributions made by the advent of screening and improved systemic therapy such as the use of anti-oestrogen, chemotherapy and trastuzumab [10]. In the absence of good adherence, therapeutic goals cannot be achieved resulting in poorer outcomes as adherence has been cited as the single most important modification factor that compromises treatment outcome across disease [11].

The marital status in socio-demographic characteristic of the study subject has been found to influence the pattern of adherence to chemotherapy ($P = 0.013$). Both separated and single patients had higher proportion of non-adherence compared to married patients.

It has been revealed that emotional support influences the decision women make to adhere to treatment. Emotional support is the most beneficial in the adjustment of women with breast cancer, generating opportunities for them to express feelings and favouring treatment adherence. Spouse has been found out the most important emotional support and the main source of instrumental support [12].

This corroborate study by Arora *et al.* reported that emotional support could influence and/or facilitate decisions concerning treatment adherence and post treatment care contributing to health promotion [13].

The remaining socio-demographic factors such as education, income and employment status had no association with non-adherence to chemotherapy treatment in this study.

In a study on African-American women, Sheppard *et al.* [14] noted that barriers to treatment could include not only limited knowledge of cancer and its causes, but also lack of health insurance, influence of spiritual beliefs and need for secrecy and complementary and alternative treatment. So level of education may not actually influence level of adherence in Nigeria [15].

In most studies, the financial status of the patients have been associated with level of adherence to chemotherapy with low income associated with non adherence, as stated by Arowolo *et al.* in his study where 45% of patients who gave reasons for non adherence to chemotherapy cited financial constrain as the problem, while overuse was found in patients with high income [16].

In our study, level of income does not have significant associations with non adherence probably because of the financial support programme of Lagos State Ministry of Health where indigent patient are supported with funds to purchase their chemotherapy, supportive therapy and pre-chemotherapy investigations. This programme also includes free consultations for cancer patient. Interactions with medical care system which includes relationship with providers, satisfaction with care and convenience of clinics has been found to influence adherence significantly in this study.

Reeler *et al.* noted that there was an improvement in treatment of breast cancer in developing countries (Ethiopia) when a programme was developed to support infrastructure for the management of breast cancer that our studies contributed to this finding [17].

4. Conclusion

Patients who are non-adherent to adjuvant chemotherapy may be compromising their care. The awareness of oncologist and patient of the problem of non-adherence and communication regarding the importance of adherence to therapy may improve health outcomes.

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