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Chemotherapy for breast cancer: Opinions of patients and relatives at the Rivers State University Teaching Hospital

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Abstract

Background: Breast cancer is the most commonly diagnosed cancer among females globally, and chemotherapy play useful role. This study evaluated the awareness, attitude and challenges associated with the use of chemotherapy for breast cancer patients at the surgical out-patient clinics.

Materials and Methods: A cross-sectional descriptive study was carried out among patients at surgical outpatient clinics using a questionnaire and the results were analysed using SPSS version 20.

Results: A total of 445 respondents were recruited, out of which 81 (18.2%) were males and 364 (81.8%) females. The mean age was 39.36 ± 8.96 years. Three hundred and fifty (78.7%) respondents had heard about chemotherapy, and only 243 (54.6%) would allow their relatives to take chemotherapy. Two hundred and seventeen (48.8%) respondents affirmed that there were challenges with chemotherapy, and the most disturbing challenges were side effects (n = 217, 48.8%) and finance/cost (n = 17, 3.8%), while 211 (47.4%) did not respond. The advice for the government were the need to "make cancer treatment free" (n = 208, 46.7%), improve awareness about cancer for early detection (n = 136, 30.6%), among others. There was statistically significant relationship between awareness of breast cancer and age (X2=16.179, p=0.013), and the level of education (X2=71.365, p=0.000) of the respondents.

Conclusion: Awareness on chemotherapy for breast cancer among respondents was above average. However, only about half of the respondents would consent for chemotherapy due to side effects and high cost. The assistance of government is needed to reduce burden of cost and improve awareness.

Keywords: Breast Cancer; Chemotherapy; Opinions of Patients; Port Harcourt; Nigeria

1. Introduction

Although many theories have been proposed to explain the occurrence of cancer: humoral, lymph, blastema, chronic irritation, viral oncogenesis, chemical carcinogenesis, mutation, tissue organization field (TOF-Theory), and cancer stem cell;[1] genetic alteration of a single cell which ultimately undergo proliferates, expansion and loss of normal program of cell death, are known to result in cancer.[2, 3] Cancer has a long history traced back to the era of dinosaurs, however in humans, cancer description dates back to "Edwin Smith" and "George Ebers" papyri written between around 3000 to

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1600 BC.[1] The battle for the control of cancer has since been raging on many fronts till date, with the description of many cancers and various methods for its treatment. One of such methods is the use of chemical agents – chemotherapy - with the potential of killing rapidly dividing (and some slow-growing) cells. Breast cancer is the most commonly diagnosed cancer among the female population globally,[4-8] and use of chemotherapeutic agents is one of the pivotal modes of control of this disease among women. These drugs, as diverse as their mechanisms of action, so do their side effects vary with the potential of affecting compliance.

There are different ways of classifying drugs used for breast cancer chemotherapy, one of which is based on their mode of action. Hence there are antimetabolites, immunologic, endocrine, DNA alkylating agents, metal ions and antimitotic agents.[3] These drugs target certain control points in the cell cycle, thereby interfering with further proliferation.[9-11] The antimetabolites (e.g., methotrexate, fluorouracil, capecitabine) share similarity with cellular purines and pyrimidines and hence are targeted against enzymes necessary for synthesis of deoxyribonucleic acid (DNA) - dihydrofolate reductase and thymidylate synthase,[12, 13] thereby preventing tumor growth. The alkylating agents on the other hand act on all cell cycle (non-specific) crosslinking the N-7-guanine residues leading to DNA strand breakage and cell death,[14] and there are six different groups of these drugs (alkylating agents) - alkyl sulfonates (e.g., busulfan), thyleneimines and methylmelamines (e.g., hexamethylmelamine or altretamine), nitrogen mustards (e.g., cyclophosphamide, ifosfamide), triazenes (e.g., dacarbazine, temozolomide), piperazines; and nitrosoureas (carmustine, streptozocin).[14] There are yet tumor antibiotics (e.g., anthracyclines – epirubicin, doxorubicin),[15] and mitotic spindle inhibitors – prevent entry, abnormal entry or fixation in mitosis and cell death (e.g., the taxanes – paclitaxel, docetaxel).[16] Immunotherapeutic agents (e.g., active agents: tumor associated antigens – examples being vaccination techniques, use of oncolytic viruses, and use of immune checkpoint inhibitors; passive agents: monoclonal antibodies like trastuzumab, cetuximab, and cytokines - IL-2, and IL-12. IL-2) fight against cancer cells by using the body's own defense systems.[17-19]

As useful as chemotherapy is in the treatment of breast cancer, it is associated with some side effects arising from collateral damage to body's own fast diving cells, as it targets cancer cells in its destructive path. It is a common finding in our society that patients with breast cancer present at late stages of the disease in Port Harcourt,[20-22] in regions of Nigeria,[23-25] and Africa.[26, 27] The fear for mastectomy has mostly been describe as being part of the reasons,[28-30] necessitating their avoiding formal hospital treatment. There are few studies in our environment of practice detailing patients' views on chemotherapy. This study therefore evaluated the awareness, attitude and challenges associated with the use of chemotherapy for breast cancer patients at the surgical out-patient clinics of the Rivers State University Teaching Hospital.

2. Materials and Methods

2.1. Research Design

A cross-sectional analytical study was carried out.

2.2. Study Area

The study was done in Port Harcourt, the metropolitan capital city of Rivers State in Nigeria.

2.3. Study Setting

The setting was the surgical outpatient clinics of the Rivers State University Teaching Hospital – RSUTH.

2.4. Study Population

The patients (and their relatives) who attended the surgical outpatient clinics in the last quarter of year 2024 were the study population.

2.5. Sample Size Determination

All consenting consecutive patients were included until a minimum of four hundred was achieved. The formula for descriptive studies (medical studies) was used to obtain the minimum number of enrollees:[31] $n = \frac{Z^2P(1-P)}{d^2}$ Where n is the sample size, Z is the statistic corresponding to level of confidence, P is expected prevalence (that can be obtained from same studies or a pilot study conducted by the researchers), and d is precision (corresponding to effect size).

2.6. Sampling Method

Total population of consenting patients was used.

2.7. Study Instrument

A semi-structured questionnaire was used.

2.8. Ethical Considerations

The approval of the Research Ethics Committee of Rivers State University Teaching Hospital (RSUTH) was obtained. Personal details the respondents were excluded.

2.9. Data Analysis

The obtained data was entered into spreadsheet, transported to SPSS version 20, and presented in tables as means, percentages, etc.

2.10. Validity/Reliability of Instrument

The study instrument was reviewed by the authors, pretested, and the Cronbach Alpha test was carried out for reliability and the result was 0.823.

3. Results

There was a total of 445 respondents recruited in the study.

Table 1 Socio-demographic characteristics of respondents (n = 445)

Variables	Number	Percentage (%)
Sex		
Male	81	18.2
Female	364	81.8
Age (mean=39.36±8.96 years, min= 21 years, max=61 years)		
20 - 30	94	21.1
31 - 40	143	32.1
41 - 50	180	40.4
Greater than 50	28	6.3
Marital Status		
Single	104	23.4
Married	329	73.9
Widow/Widower	12	2.7
Educational Qualification		
Primary school completed	22	4.9
Secondary completed	155	34.8
University completed	240	53.9
Post graduate completed	28	6.3
Religion		
Christianity	413	92.8

Islam	32	7.2
Category of Respondents		
Patient	163	36.6
Patient's Relative	282	63.4

Table 1 shows the demographic characteristics of the respondents. There were 81 (18.2%) of the respondents were male and female respondents were 364 (81.8%). The mean age of respondents was 39.36 ± 8.96 years, the youngest was 21 years, and oldest was 61 years. Three hundred and twenty-nine (73.9%) were married and 104 (23.4%) were single. Four hundred and thirteen (92.8%) were Christians. Two hundred and eighty-two (63.4%) were patients' relative, . More than half (53.9%), while 163 (36.6%) were patients. Two hundred and forty 240 (53.9%) had university education, while 28 (6.3%) had postgraduate qualifications. One hundred and fifty-five (34.8%) had completed secondary education and 22 (4.9%) had primary school education.

Table 2 Awareness of patients on chemotherapy for breast cancer (n = 445)

Variables	**Number**	**Percentage (%)**
Ever heard about chemotherapy especially for breast cancer		
Yes	350	78.7
No	23	5.2
Not sure	72	16.2
What does Chemotherapy mean?		
Treatment of breast cancer using drugs	71	19.0
Cancer treatment	126	33.8
Therapy to reduce cancer spread	151	40.5
No response	25	6.7
Known someone who has successfully taken chemotherapy drugs		
Yes	221	49.7
No	170	38.2
Not sure	54	12.1
What people say about chemotherapy for breast cancer		
Chemotherapy works if patient is given right treatment	74	16.6
Has a lot of side effects	108	24.3
Its effective if detected and taken earlier	91	20.4
Strong cancer treatment that weakens the body	75	16.9
No response	97	21.8

Table 2 shows the awareness of respondents on chemotherapy for breast cancer. Three hundred and fifty (78.7%) respondents had heard about chemotherapy especially for breast cancer, while 23 (5.2%) had not. One hundred and fifty-one (40.5%) respondents described chemotherapy as "therapy to reduce spread of cancer", while 126 (33.8%) described it as just "cancer treatment", and 71 19.0% described chemotherapy as "treatment of breast cancer using drugs". Two hundred and twenty-one (49.7%) respondents knew someone who had successfully taken chemotherapy drugs. One hundred and eight (24.3%) respondents emphasized that chemotherapy "has a lot of side effects", while some 20.4%, 16.6%, and 16.9% revealed that people say that chemotherapy "it's effective if detected and taken earlier", "works if patient is given right treatment", is a "strong cancer treatment that weakens the body", respectively.

Table 3 Attitude to chemotherapy for breast cancer (n = 445)

Variables	Number	Percentage (%)
Would allow someone known to take Chemotherapy (if doctor prescribe)		
Yes	243	54.6
No	9	2.0
Not sure	193	43.4
Why patient/relatives would not allow someone to take Chemotherapy		
Very draining	64	14.4
Painful	22	4.9
No response	74	16.6
Not applicable	285	64.0
Most Chemotherapy-induced side effects will disappear after the chemotherapy		
Strongly disagree	2	0.4
Disagree	107	24.0
Neutral	120	27.0
Agree	122	27.4
Strongly agree	13	2.9
No response	81	18.2
Not sure	193	43.4
Chemotherapy-induced nausea and vomiting could be prevented or reduced		
Disagree	105	23.6
Neutral	110	24.7
Agree	144	32.4
Strongly agree	5	1.1
No response	81	18.2
Chemotherapy-induced nausea adverse reactions could be reduced through self-care		
Strongly disagree	12	2.7
Disagree	73	16.4
Neutral	104	23.4
Agree	150	33.7
Strongly agree	25	5.6
No response	81	18.2
Taking analgesics for pain could reduce addiction		
Disagree	15	3.4
Neutral	95	21.3
Agree	178	40.0
Strongly agree	76	17.1

No response	81	18.2
There is need to receive health education on chemotherapy		
Disagree	6	1.3
Neutral	89	20.0
Agree	138	31.0
Strongly agree	131	29.4
No response	81	18.2

Table 3 shows the attitude to chemotherapy for breast cancer. Only 243 (54.6%) of the respondents would allow someone they know to take chemotherapy (if doctor prescribe), and 193 (43.4%) were not sure. Sixty-four (14.4%) respondents considered it very draining, and 22 (4.9%) considered chemotherapy as painful. Two hundred and twenty-nine (51.5%) disagreed that most chemotherapy-induced side effects will disappear after the chemotherapy. Similarly, 215 (48.3%) of respondents disagreed with the statement that chemotherapy-induced nausea and vomiting could be reduced with drugs. Two hundred and sixty-nine (60.4%) of respondents were of the opinion that "there is need to receive health education on chemotherapy".

Table 4 Challenges with chemotherapy for breast cancer (n = 445)

Variables	**Number**	**Percentage (%)**
Have any challenge with chemotherapy for breast cancer		
Yes	217	48.8
No	30	6.7
Not sure	182	40.9
No response	16	3.6
Type of challenge encountered with chemotherapy for breast cancer		
Had challenge with deciding to accept it	41	9.2
Not able to buy the drugs regularly due to lack of funds	12	2.7
The drugs is expensive	132	29.7
Challenges with the side effects	155	34.8
No response	105	23.6
Other challenge to be indicated		
Finance	43	9.7
Side effects	45	10.1
Falling of hairs	101	22.7
No response	256	57.5
The most disturbing challenge		
Financial challenge	17	3.8
Side effects	217	48.8
No response	211	47.4
Opinions on Chemotherapy drugs		
It is not helpful	15	3.4

It is helpful	169	38.0
It is very helpful	44	9.9
No response	217	48.8
Know someone with breast cancer who did not take the chemotherapy because of the challenges		
Yes	35	7.9
No	99	22.2
Not sure	311	69.9
Advice for those afraid to take chemotherapy		
The drug is good but violent	92	20.7
They should give it a trial	80	18.0
Take it, it's helpful	10	2.2
Should get health education on Chemotherapy	95	21.3
Follow doctor's advice	156	35.1
No response	12	2.7
Advice for the government		
Should provide support	21	4.7
Provide subsidies for chemotherapy treatment	68	15.3
Make cancer treatment free	208	46.7
Awareness about cancer for early detection	136	30.6
No response	12	2.7

The opinion of respondents on the challenges of chemotherapy for breast cancer is shown in Table 4. Two hundred and seventeen (48.8%) respondents affirmed that there are challenges with chemotherapy for breast cancer. These challenges include: side effects (n = 155, 34.8%), expensive drugs (n = 132, 29.7%), decision to even accept or not (n = 41, 9.2%). However, 105 (23.6%) respondents did not respond. The most disturbing challenge was highlighted as side effects (n = 217, 48.8%), finance (n = 17, 3.8%), and 211 (47.4%) did not respond. Thirty-five (7.9%) respondents knew someone who did not take chemotherapy for breast cancer due to side effects. Two hundred and thirteen (47.9%) respondents considered chemotherapy as "helpful", while 15 (3.4%) affirmed that is not useful. The respondents' advice for those afraid to take chemotherapy included: follow doctors' (n = 156, 35.1%), they should give it a trial (n = 80, 18%), should get health education on chemotherapy (n = 95, 21.3%). The advice for the government were: "make cancer treatment free" (n = 208, 46.7%), improve awareness about cancer for early detection (n = 136, 30.6%), "provide subsidies for chemotherapy treatment" (n = 68, 15.3%), provide support (n = 21, 4.7%).

Table 5 Relationship between selected demographics and ever heard of breast cancer

		Ever heard of breast cancer				
Age (years)	Yes	No	Not sure	Total	(X^2)	P-Value
20 - 30	67 (71.3%)	6 (6.4%)	21 (22.3%)	94		
31 - 40	118(82.5%)	3 (2.1%)	22(15.4%)	143	16.179	0.013
41 - 50	137(76.1%)	14 (7.8%)	29 (16.1%)	180		
Greater than 50	28 (100.0%)	0 (0.0%)	0 (0.0%)	28		
Educational Qualification						

Primary school completed	8 (36.4%)	0 (0.0%)	14 (63.6%)	22		
Secondary completed	114(73.5%)	20 (12.9%)	21 (13.5%)	155	71.365	0.000
University completed	200(83.3%)	3 (1.2%)	37 (15.4%)	240		
Post graduate completed	28 (100.0%)	0 (0.0%)	0 (0.0%)	28		
Total	350	23	72	445		

Table 5 shows the relationship between selected demographics (age and educational qualification) and ever heard of breast cancer. There was a statistically significant (X2=16.179, p=0.013) relationship between ever heard of breast cancer and age of respondents. The awareness of breast cancer also increases as the age of the respondents increased. The awareness of breast cancer also increases with the level of education among the respondents, and the relationship was statistically significant (X2=71.365, p=0.000).

4. Discussion

The United Nations Agenda 2030, a world document on Sustainable Development Goals (SDGs) having 17 SDGs and 169 targets, which was adopted by Member States, highlighted in its "Goal 3" the need to "ensure healthy lives and promote well-being for all at all ages".[32, 33] "Target 3.4" of this document specifically emphasized the "reduction by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and wellbeing"; and "Target 3.9c" stipulated "substantial increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States". Breast cancer ranks highest among all cancers,[34-36] and chemotherapy is a veritable modality of treatment. Awareness, attitude and challenges associated with chemotherapy for breast cancer are likely to affect the achievement of these goals, and they constitute the focus of this study. In this study, females dominated the demographics of the respondents with a ratio of 4.5:1, and the mean age of respondents was 39.36 ± 8.96 years. This observation could be explained by the traditional role of women in African society – care-giving,[37, 38] although advocacy for change is gradually gaining prominence in modern society.[39, 40] Additionally, majority were observed to be Christians and the married, and had university education. These findings also align with previous studies where level of education was noted to be relatively higher among the Christian-dominated Southern Nigeria,[41-43] where this study was conducted.

Awareness of chemotherapy used for breast cancer was observed among two third of the respondents, and two-fifth described it as "therapy to reduce spread of cancer"; a third described it as "cancer treatment"; and about a fifth described chemotherapy as "treatment of breast cancer using drugs". Similar relatively increased awareness was reported in a Nigerian study.[44] The respondents in our study were also aware of the side effects of chemotherapy, and almost half of the respondents knew someone who had successfully taken chemotherapy for breast cancer. Community-based organizations have been reported to be playing some role in improving cancer literacy.[45] One would expect that the above average awareness shown in our study would translate to improved attitude to breast cancer chemotherapy. It is worrisome that only about half of the respondents would allow someone they know to take chemotherapy as prescribed by the doctor. This attitude is a setback against current effort at mitigating breast cancer in our environment. Their opinion was partly based on assertions as chemotherapy "is painful", "very draining", and the chemotherapy-induced side effects "will disappear after the chemotherapy". Our finding differs from the observations in another study carried out in Mwanza in Northern Tanzania, where there was 92.1% positive attitude towards the side effects of chemotherapy.[46] Variation in culture and health system factors may be responsible for this difference.

The relationship between awareness of breast cancer and some demographic variables of age and educational qualification were statistically significant as it was observed that awareness increases as the age and educational status increased. These findings share similarity with a Northern Iranian study where low breast cancer awareness was observed among women with low level of education.[47] It is also similar to another study among Saudi women where awareness of breast cancer was found to be related to age and educational status.[48] The observations in some Nigerian studies are found to also share some similarities with our study.[49, 50] However, a Nigerian study reported that the level of breast cancer awareness may not necessarily correlate with knowledge, and practice of breast cancer preventive measures.[51] This implies that other challenges exist outside awareness and improved knowledge of breast cancer.

Challenges associated with chemotherapy for breast cancer were affirmed by almost half of the respondents, and the significant challenges included but not limited to side effects and the expensive nature of the drugs. Similar challenges

and others were also reported in a Nigeria study as reasons for non-compliance with chemotherapy.[52] Challenges with breast cancer treatment, especially chemotherapy-based has been reported in another study with advocacy for individualize treatments after consideration of comorbidities and patients' preferences especially in the elderly.[53-55] In our study, the impact of these challenges was significant enough to deter patients from accepting the prescribed drugs, while less than half of the respondents considered chemotherapy as "helpful". A few respondents even knew someone who did not take chemotherapy for breast cancer due to side effects. Some Nigerian studies had similarly chronicled the side effects associated with chemotherapy for cancer,[56] and breast cancer chemotherapy,[57-59] some of which were opined by the respondents in this study. The respondents in our study advised those/patients who are afraid to take chemotherapy to "follow doctors' advice", "give it a trial", "get health education on chemotherapy", and appealed to government "provide subsidies for chemotherapy treatment" to "make cancer treatment free"; and improve awareness about cancer for early detection. Improved patient counselling for improved awareness was advocated in a Nigeria study due to known challenges of chemotherapy for breast cancer.[44]

- *Study Limitations:* This was carried out in hospital setting, and hence affected by the limitations of typical hospital-based studies. Additionally, the study was executed within relatively short period (three months).
- *Future Research:* This study has provided an insight into the challenges associated with chemotherapy for breast cancer. Community-based research would provide more information on a wider variety of the population.

5. Conclusion

Although there was above average awareness on chemotherapy for breast cancer among respondents, with some describing it as "therapy to reduce spread of cancer"; "cancer treatment", and "treatment of breast cancer using drugs". The awareness of breast cancer chemotherapy increases as the age and level of education increased. However, only about half of the respondents would consent for chemotherapy. This attitude was related to the challenges associated with its use, including side effects, expensive drugs, which affected patients' decision to even accept or not. This was such that less than half of the respondents opined that chemotherapy was helpful.

Recommendations: Majority of patients and their relatives who accessed care were educated and hence could read and write. There is therefore need for hospitals who treat breast cancer to evolve policies on chemotherapy, including adequate counselling and provision patients' education leaflets. The assistance of government is needed to reduce burden of cost of care and improve awareness. The government has National Cancer Access Partnership (NCAP), a program of the federal ministry of health which aims at improving access and subsidize cost of care for cancer patients.[60] This program is not available in all the States of the Federation. There is a need to scale up so that more patients can access their services. The awareness could be improved by budgetary allocation to agencies of government for audiovisual and print media public education. State legislations for mandatory involvement of multinational companies in sponsorship of public enlightenment campaigns and support for breast cancer patients, as part of their corporate social responsibility, could be a veritable way out.

Compliance with ethical standards

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Disclosure of conflict of interest

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Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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