

Psychological Effects of Chemotherapy Experienced by Patients Diagnosed With Breast and Cervical Cancer Attending Kenyatta National Hospital Cancer Treatment Centre

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ABSTRACT

Background: Breast and cervical cancers cause the highest cancer related morbidity and mortality among women globally. Chemotherapy is associated with psychological effects which affect patients' adherence to treatment. In Kenya no study concentrated specifically on the psychological effects of chemotherapy on patients diagnosed with breast and cervical cancer.

Objective: To determine the psychological effects of chemotherapy among patients diagnosed with breast or cervical cancer.

Methodology: This was a cross-sectional study which involved both quantitative and qualitative data collection methods to explore on the psychological effects of chemotherapy. Quantitative data was collected from 157 systematically sampled participants. In addition two focus group discussions were held by purposively selected participants. Quantitative data was analyzed using SPSS version 23.0 while related narrative information from the focus group discussion was clustered together and then analyzed using content analysis. Permission to conduct the research was obtained from Kenyatta National Hospital/University of Nairobi Ethics and Research Committee (KNH/UON ERC).

Results: The highest percentages (31.2%) of participants were aged between 41-50 years. Most (66.9%) were married and depended on their husbands (45.9%) for social support. Only (22.9%) were in formal employment and majority (73.2%) earned below 20000kshs per month. Psychological effects experienced by the participants included; body image changes (65.6%), anxiety (79%), low self-esteem (63.1%), loneliness (55.4%) and sadness (51.6%). Further analysis showed that age, economic status and previous chemotherapy sessions had significant relationships with psychological effects.

Conclusion: cancer chemotherapy is associated with many psychological effects which are aggravated by increased chemotherapy sessions and low monthly income.

Key words: Chemotherapy, breast and cervical cancer, psychological effects.

INTRODUCTION

Among all cancers in sub-Saharan Africa reproductive cancers have the highest morbidity and mortality and breast cancer tops the list among women while prostate cancer has the highest rate in men. ^[1] In Kenya, data from the Nairobi registry indicates that among women, breast cancer is the commonest accounting for 23% of all

cancers while cancer of the cervix is second with 21.1% of cancers. ^[2] Chemotherapy has remained one of the major treatment modalities for breast and cervical cancer all over the world and is associated with better outcomes in the developed countries but the same cannot be said for the developing countries mainly due treatment adherence issues attributed to many factors including

psychological effects of chemotherapy [3,4] Chemotherapy like all other drugs have side effects and its use increases the chance of developing psychological and social disorders which have been associated with suboptimal treatment adherence and poor health outcomes [5]

Studies have shown that Chemotherapy is associated with altered many psychological effects. In a Taiwan study [6] among patients with cancers of the breast and cervix found that the psychological effects of chemotherapy were similar among the patients with the two cancers and they included decreased self-esteem, self-projection in life, impaired cognitive function, anxiety and depression. Similarly from a study in Turkey, [7] psychological strains during chemotherapy in patients with breast cancer included uncertainty, body image changes, loneliness and disturbed emotional state, fear of cancer recurrence, anger and sadness.

While studies on psychological effects associated with chemotherapy are documented elsewhere in the world, this information is scanty in Kenya due to challenges of cancer registry.

The purpose of this study was to determine the psychological effects of chemotherapy experienced by patients diagnosed with breast and cervical cancer in a Kenyan hospital.

Materials and methods

Setting: This is a descriptive cross sectional study which used mixed methods of data collection including quantitative and qualitative data. The study was conducted at Kenyatta National Hospital which is Kenya's largest referral hospital which provides comprehensive cancer care.

Sample: Adult patients diagnosed with breast or cervical cancer who were receiving chemotherapy as outpatients at the cancer treatment center, who had received at least one chemotherapy session who gave consent and were not too sick were requested to participate.

During the study period 157 participants who were selected through systematic

sampling answered the questionnaire and 10 participants who were purposively selected by the nurse in-charge of the treatment center took part in the focus group discussion.

Procedure and data collection

Questionnaire

A questionnaire, developed by the researcher from a modified memorial symptom assessment scale which did not require permission before use. The questionnaire was discussed by a team of oncology experts before use and was used to collect data on side effects experienced by the patients. The questionnaire consisted of sociodemographic and clinical data of the participants as well as questions on the common psychological effects of chemotherapy obtained from literature review. The questionnaires were self-administered and for the participants who could not read either Kiswahili or English the questionnaires were administered by two nurses who were trained as research assistants. Pretesting of the study questionnaire was done in an outpatient clinic among 16 patients who had similar characteristics as the study population.

Focus group discussion

In addition to inclusion criteria presented above the focus group participants were selected by a nurse who was working in the cancer treatment centre. The potential participants were approached and requested to participate in the focused group discussion. Focus group discussions are useful when collecting data from unexplored areas. The potential participants were asked about consent. 20 participants were willing to participate but only 10 turned up on the day of the discussion. The participants discussed their experiences of the psychological effects of chemotherapy. The discussion was guided by the author using a guide prepared by the author and discussed by the team of oncology experts. Pre-test of the tool was done in a focus group discussion with 3 patients with breast cancer and 3 patients with cervical cancer from a cancer ward. Two research assistants

conversant with qualitative data collection assisted during the focus group discussion. One of the assistants took notes during the discussion while the other assisted with recording of the discussion. The recorded discussions were transcribed verbatim and translated into English by the author.

Data analysis

Analysis of data from the questionnaires was done for the whole sample and depending on the sections of the questionnaire. Overall frequency of psychological effects was calculated as frequencies and proportions of the participants who stated they experienced them. Pearson's correlation test was used to determine any relationship between the psychological effects and sociodemographic factors of the participants. Descriptive statistics are presented in narrative text and in the form of tables.

The data from the focus group discussion were analyzed by content analysis by the author and the two assistants in the following steps: 1)The transcripts were read and sentences relevant to the study questions were identified.2) Similar sentences were then grouped into categories. 3) Central characteristics of each category were developed. During the analysis the author and assistants each analyzed the transcripts independently and then they discussed the findings together in a meeting and came to a consensus on the findings.

Ethical considerations

Potential participants were informed verbally and through writing for those who could read. The participants were informed about the aim of the study and that participation was voluntary, confidentiality would be guaranteed and they could withdraw from the study at any time without any consequences, and that neither participation nor non-participation would affect their treatment and care. Thereafter informed consent was sought from them. Ethical approval was received from Kenyatta Hospital/ University of Nairobi Ethics and Research Committee. Permission

to carry out the research was obtained from Kenyatta National Hospital management.

RESULTS

Socio Demographic characteristics of participants

Table 1: Participants' socio demographic and cancer related characteristics.

Characteristics	Frequency	%
Age in years		
<20	1	0.6
21-30	13	8.3
31-40	46	29.3
41-50	49	31.2
51-60	30	19.1
>60	18	11.5
Marital status		
Single	19	12.1
Married	105	66.9
Divorced	16	10.2
Widowed	17	10.8
Religion		
Protestant	80	51.0
Catholic	55	35.0
Muslim	19	12.1
Others	3	1.9
Working status		
Yes	58	36.1
No	99	63.9
Income status (kshs per month)		
<20000	115	73.2
20000-40000	32	20.4
40000-60000	7	4.5
>60000	3	1.9
Social support		
Husband	72	45.9
Children	52	33.1
Family members	27	17.2
Community	6	3.8
Health insurance availability		
Yes	138	87.9
No	19	12.1
Stage of disease		
One	2	1.3
Two	43	27.4
Three	78	49.7
Four	34	21.7
Previous Chemotherapy sessions		
One	38	24.2
Two	51	32.5
Three	30	19.1
>Three	38	24.2

Table 1 above shows the description of the sociodemographic characteristics of the participants. Many (31.2%) of the participants were aged between 41-50 years, majority (51.0%) of them were of the protestant faith, and most (66.9%) of them were married. Very few (22.9%) of the participants were in formal employment and the majority (73.2%) had a monthly income of below 20000kshs but majority (63.9) had

stopped working. Many (35.8%) participants had 2-5 children and they got their social support mainly from their husbands (45.9%), with a small percentage supported by other family members (17.2%), community (1.9%) and the church supports 1.9%. Most (87.9%) of the participants had enrolled into the National Hospital Insurance Fund which pays part of their treatment expenses. More than half of the participants presented late for treatment

in stage three (49.7%) and stage four (21.7%). Majority (75.8%) of the participants had attended at least two previous chemotherapy sessions.

Socio demographic characteristics of focus group discussion participants

A total of 10 participants took part in the focus group discussion (FGD). Those participants were assigned identity numbers and their details are shown in **table 2** below

Table 2: Sociodemographic characteristics of FGD participants.

Participant	Age in years	Gender	Marital status	Occupation	Type of cancer	Previous chemo session
P001	41	Female	Married	Business	Breast	2
P002	70	Female	Widow	Farmer	Breast	5
P003	60	Female	Married	Retired teacher	Breast	3
P004	54	Female	Married	Clerk	Cervical	3
P005	45	Female	Married	Business	Breast	4
P006	29	Female	Single	Receptionist	Breast	6
P007	39	Female	Married	Business	Cervical	2
P008	35	Female	Married	Farmer	Breast	3
P009	27	Female	Separated	Hairdresser	Cervical	4
P010	54	Female	Married	Farmer	Breast	2

Sources of information on diagnosis, treatment benefits and side effects

Participants received information about their cancer diagnosis in the last 1-6 months (46.5%), 6-12 months (24%) and only 3.8% had received the information in the last one month. The majority (45.9%) of the participants received information on their treatment and side effects from the doctor and those who received information from the nurse were 35.7%. Information on treatment included benefits of chemotherapy where slightly more than half (52.2%) of the participants said they had received this information. Regarding information on the side effects of chemotherapy 59.9% said they were given this information. These results are shown in **table 3** below

Table 3: Source of information on diagnosis, treatment and side effects

Variable	Category(months)	Frequency (n)	Percentage (%)
Time since diagnosis of cancer	<1	6	3.8
	1-6	73	46.5
	6-12	38	24.2
	>12	40	25.5
Information on benefits of chemotherapy	Yes	75	47.8
	No	82	52.2
Information on side effects of chemotherapy	Yes	94	59.9
	No	63	40.1
Informant	Nurse	56	35.7
	Doctor	72	45.9
	Trained counsellor	18	11.5
	Relative	7	4.5
	Others	4	2.5

Psychological effects of chemotherapy experienced by the participants

The most common psychological effect experienced by the participants was anxiety (79%) followed by dissatisfaction with body image (65.6%) and low self-esteem (63.1%). Loss of hope was the least

experienced psychological symptom. These findings are shown in **table 4** below

Further analysis with Pearson's correlation test showed that married women were likely to suffer fewer psychological effects($r = -0.389$). The same test also showed that as the patients advanced into

the treatment trajectory they were more likely to experience psychological effects($r=0.51$). Additionally aged patients were less likely to suffer psychological effects($r= -0.300$)

Table 4: Psychological effects experienced by patients receiving chemotherapy

Symptom	Experienced (n)%	Not experienced (n) %
Loneliness	(87)55.4	(70)44.6
Low self esteem	(99)63.1	(58)36.9
Sadness	(81)51.6	(76) 48.4
Lack of concentration	(66)42	(91) 58
Amnesia	(72)45.9	(85) 54.1
Self-projection	(77)49	(80) 51
Depression	(49)31.2	(108) 68.8
Anxiety	(124)79	(33) 21
Negative body image	(103)65.6	(54) 34.4
Loss of hope	(34)21.7	(123)78.3

The above results were supported by findings from the FGD. The results from the focus group discussion on were categorized into two key themes and eight subthemes.

Key Themes

Psychological stress: five subthemes were identified under this theme which included negative body image, loneliness, changes in emotional status, cognitive effects and perception of immense suffering.

Coping strategies: three sub themes were identified which included prayers, finding a reason to live, and self-projection.

Theme 1: Psychological stress

Negative body image

Many (6) of the participants reported that they did not like the way they looked. Their bodies had changed since they started receiving chemotherapy. They felt they were no longer beautiful and this affected their self-esteem as shown by examples below:

“See how thin I am I cannot even go to church to worship because my weight is all gone. Look at my skin it has turned black and hard. I had soft skin and I was chocolate in color now am ugly...I cannot stand before people even my family to tell them anything.” P008

“..My skin color has changed it is now very black and my once beautiful nails have a funny color ah! P010.

“I have lost a lot of weight and I do not like the way I look at all...P007

Perception of deep suffering

All the participants expressed a sense of deep suffering with the treatment. One participant (P004) said the suffering was so much she would not wish even her worst enemy to have such an experience. Other participants stated:

“Sometimes when I need to take medications and I remember the side effects I get so stressed and wonder what wrong I did in this world to deserve this suffering”P008

“Treatment for this illness is very bad I will not wish for anybody to get this disease it really disturbs people very much psychologically”.P007

“...I really suffer a lot. When you think of taking the medication and know that you will experience vomiting and nausea for almost a week you get very depressed. You will not be able to eat and you get even thinner and uglier.”P009

Loneliness

Most of the participants stated that they were left by friends and relatives and this made them feel lonely. This was associated with how they looked due the medicines they were taking, the financial needs to meet the treatment expenses and some of the people feared that they would be infected with the disease.

Some of the statements include

“For me I lost my friends....Up to now I do not have friends. My friends are my children and those who help me are my siblings and my husband. Even no neighbor who would come to check on me even when they have not seen me out for a week to find out how I am doing there is nothing like that. Only when they see me outside is when they greet me and finish like that...”P003

“... Friends run away one by one, that is why some of us do not tell people that we are sick... others run away while others discuss in low tones...”P002

“...In the family you are isolated because everyone sees that you are spending so much. You will see the husband start pulling

away and the rest feel that you are tiring them.....and neighbors do not want you to come to their house because they see if you go to their house you will bother them” P005

“I have had problems here and there for example having friends most of them have left me. ...Even my brothers and sisters have abandoned me... No friend is providing any support. Who will associate with you with this illness and treatment? People fear you look like an animal” P007

Changes in emotional status

Participants expressed changes in emotional status which include feelings of sadness, anxiety, fear, anger and depression. Some of the expressions are quoted below

“...My feelings are for my children. I fear if I die now what will happen to my children. These drugs are making me weaker and weaker. I do not know what will happen to me. I am wondering will I really get back to work and provide for my children or am I going to die?” P010

“Let me say that due to this treatment one usually has a lot of thoughts and sadness because sometimes you see like God was unfair to you...”P001

“Many times you feel like you have stress. You do not want to talk a lot with people you feel like talking to people makes the disease worse...” P005

“You know when you have been left alone you start feeling you have stigma because you have been abandoned. I usually feel

very sad and I sometimes try to go to church to talk to people just to reduce stress.”P007

Cognitive effects of chemotherapy

Participants stated some cognitive effects which they experienced since they started taking the chemotherapy. These included amnesia which was described as being too forgetful.

The differences I have noticed are many for example you could have planned on something with somebody but when that time reaches you find that you forgot you cannot remember and you can even put money somewhere you look for it until you get tired..... so that problem of forgetting I have it a lot and due to being forgetful even when cooking you forget and start asking yourself what is it that I have not put in the food.....P003

“I really have a problem remembering things and I do not know whether it is because of the medicine or my age..... I really forget things. Even when I organize to do something I find myself forgetting and the day passes without me doing what I had planned to do” P008

Another cognitive effects experienced by the participants was reduced concentration expressed as not being able to perform an activity up to the end without being distracted

The number of participants who expressed a certain sub theme were counted and the results tabulated as shown in **table 5** below

Table 5: The number of participants who expressed a given subtheme

Theme	Subtheme	Number of participants (n=10)	Percentage (%)
Psychological stress	Stress from side effects	9	90
	Negative body image	6	60
	Emotional stress	6	60
	Cognitive effects	5	50
	Loneliness	4	40
Coping strategies	Prayers	7	70
	Finding a reason to live	4	40
	Self-projection	3	30

DISCUSSION

Introduction

Chemotherapy as one of the major treatment modalities for cancer is associated with many side effects which affect the patients psychologically

Socio-demographic factors

Majority (31-2%) of the participants recruited for this study were middle aged with the highest percentage ranging between 41-50 years. This age distribution is attributed to the fact that the two cancers are

commonest in the reproductive age group when the female hormones are most active. This finding is similar to a study in India where the highest incidence of the two cancers was found to be among middle aged patients. [8] Similar findings were also observed by Huang *et al.*, [6] who found that the average age at diagnosis for breast cancer was 48.89+/- 8.53 while that of cervical cancer was 49.0+/-10.30 years.

Married patients derive their social support from their spouses (45.9%) as shown in the study findings and this reduces the likely hood of them experiencing psychological symptoms during treatment with chemotherapy. Social support assists the patient chooses positive coping mechanisms and reduces the likely hood of experiencing emotional stress. This findings are similar to those of Kim *et al.* [9] who found that the more and better social support one has, the higher the chance the patient has for improving her psychological well-being by having a higher likelihood of selecting active coping strategies, having more confidence, and more control over her situation.

Majority (98%) of the participants subscribed to a religion and expressed that they believed in God and had faith and hope that they would get better and this could also be seen from the low percentage of responses about loss of hope. A Latin American study by Mesquita *et al.*, [10] on religious and spiritual coping among patients receiving chemotherapy who found that religion/spirituality was an important way of coping with cancer and its treatment. This believes they hold on a Supreme Being makes them to continue taking the treatment despite the many side effects and other chemotherapy associated challenges.

Information on diagnosis and treatment

Doctors and nurses play a major role in passing information to the patents as indicated in the results of this study. The doctors and nurses will be the best channel of giving education to the patients on the effects of chemotherapy before and during the treatment process.

Psychological effects of cancer chemotherapy

The findings of this study showed that chemotherapy side effects can lead to psychological problems which affect the patient's activities of daily living. Loss of hair together with skin color changes and loss of weight experienced by participants led to a disturbed body image and low self-esteem especially among the younger participants as described in the FGD. This is because the younger participants were more concerned with body image and a sense of femininity which was reduced by alopecia and loss of weight. Participants in the focus group discussion also stated that they had experienced anxiety and fear of dying from the cancer or from the treatment. Several other studies [11,12] also noted that the biological effects experienced by cancer patients during chemotherapy were associated with psychological effects to include; fear of chemotherapy, grief related to loss of self-identity, depression, low self-esteem and fear of dying from the disease or its treatment.

In this study, self-projection was expressed by participants in the FGD where they said they did not tell people about their disease because they thought it was a "devil" in their life while others thought God had purposed for them to suffer like that. Self-projection is a negative way of coping with stress which will require for the nurses and other health care staffs to be aware and develop ways of helping the patients cope with stress positively. These findings concur with the findings of a study in Turkey among breast cancer patients had evised ways of coping some of them being negative like isolating themselves so that nobody gets hurt by them or wanting to bear the "punishment alone", which is an unhealthy way of dealing with emotion. [7] Similarly a study in South Africa reported that other patients just go through the side effects quietly without communicating to anyone because they thought it was their destiny and feared asking for help from their relatives. [13]

Loss of concentration (42%) and loss of memory (45.9%) were cognitive side effects associated with chemotherapy for breast cancer and cervical cancer observed in this study. These side effects were reported during the FGD by participants who had received more than three chemotherapy sessions implying that these effects could be as a result of a cumulative effect of the cytotoxic drugs over time. Other studies [14-16] confirmed that many patients who were receiving chemotherapy complained of cognitive impairment approximately three months into their treatment and after treatment.

CONCLUSION

Patients diagnosed with breast and cervical cancer who receive chemotherapy at KNH experience psychological effects some of which are as a result of the side effects of the treatment. Some of the psychological effects include anxiety, low self-esteem, amnesia and dissatisfaction with body image.

Findings from this study have identified areas where the patients need to be educated on before and during chemotherapy. The study has also identified areas of assessment by the nurses during chemotherapy to identify if the patients are suffering any psychological effects of chemotherapy and plan to provide care.

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