Severity of Anxiety Among Cervical Cancer Patients in Referral Hospitals in Western Kenya

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Abstract: Cervical cancer diagnosis may cause patients to experience anxiety since it is a life threatening illness. The treatment of cervical cancer has side effects and complications that may worsen the anxiety experience at different levels. This study sought to determine the severity of anxiety among cervical cancer patients attending referral hospitals in Western Kenya. Data on severity of anxiety was obtained using Becks Anxiety Inventory (BAI), from 218 cervical cancer patients. Data was entered into SPSS version 23 and univariate and bivariate analysis were done. The study found that the participant with moderate symptoms of anxiety were the most at 34.4% as opposed to mild (26.6%) and severe anxiety (19.3%). Participants aged 40-49 years had higher symptoms of moderate anxiety (12.4%), mild anxiety (9.2%) and severe anxiety (8.3%) compared to other age groups. Those who responded to having primary level of education had a higher level of moderate anxiety (19.7%), mild anxiety (13.8%) and severe anxiety (13.3%) compared to participants with other levels of education. Married participants had the highest number of moderate anxiety (20.2%), mild anxiety (20.2%) and severe anxiety (13.8%) compared to participants of other marital status categories. Those who reported to have receive social support from family members had more symptoms of moderate anxiety (20.2%), mild anxiety (14.2%) and severe anxiety (10.1%) as compared to those who responded to not having received any social support and other social support categories. Anxiety was found to be more severe among participants who had a combination treatment of chemotherapy and radiotherapy with moderate anxiety at 16.1%, mild anxiety at 15.1%, and severe anxiety at 11.5% compared to those who had other forms of single treatments. This study concludes that levels of anxiety vary among cervical cancer patients hence the need for routine assessment during care and rehabilitation.

Keywords: Anxiety, Severity, Cervical Cancer Patients, Hospital, Kenya

1. Introduction

The diagnosis and treatment of cervical cancer is established to development of psychological problems [1]. Researchers have reported that anxiety is common at diagnosis of cancer, when it recurs, during prolonged treatment due to the side effects and complications and at progression to advanced or terminal stage [2]. Anxiety can become more severe when patients are told that the cancer has spread or it has recurred due to the uncertainty and existential threat that impact on adherence to treatment and affect the quality of life of the patients [3].

The fear of cancer recurrence is predominant despite high cure rate and survival after treatment of cancer [4, 5]. A systemic search on seventeen articles reported that fear of cancer recurrence is experienced by most long term cancer survivors [6]. This fear among cancer patients may trigger the physiological changes that contribute to the symptoms of anxiety. Cognitive distortions come from processing information in ways that results in errors in thinking that

leads to formation of a negative cognitive triad [7]. Cognitive distortions like over-generalization, magnification and minimization, emotional reasoning among others have been identified to have impact on the cancer disease which may lead to severe anxiety symptoms [8].

A study in the UK assessed anxiety among 57 patients who were undergoing treatment for cancer and reported that 30% and 11% of the patients had mild and moderate anxiety respectively [9]. In Australia a study was done among gynecological cancer patients at the Royal Adelaide Hospital Cancer Centre to assess their psychological distress [10]. Out of 45 participants, 28.9% had mild-to-severe anxiety. A number of studies have been done on severity of anxiety symptoms among cervical cancer patients in developed countries [11]. There is limited data on severity of anxiety among cervical cancer patients locally. This study therefore sought to determine the severity of anxiety among cervical cancer patients in referral hospitals in Western Kenya.

2. Methods

2.1. Sample

A cross sectional research design was used to determine the severity of anxiety among cervical cancer patient at referral hospitals in Western Kenya. There were a total of 218 participants who were screened for anxiety symptoms (n = 147) at MTRH and (n = 71) at JOOTRH. The two hospitals were purposively chosen based on availability of the target population that would aid the researcher to attain the appropriate sample size. Purposive sampling, was used by selecting study participants who were diagnosed with cervical cancer and those who had anxiety symptoms. Inclusion into the study requisites were having been diagnosed of cervical cancer, above 18 years, signed informed consent, and agreeing to participate in the study.

2.2. Anxiety

Anxiety symptoms were assessed using Beck's Anxiety Inventory (BAI) which consists of a 21- point scale that quantify the severity of anxiety on a 4- point scale stretching from 0 (Not at all) to 3 (Severely) in adult [12]. The severity of anxiety symptoms is classified as mild, moderate, or severe. The study considered participants who scored between 0 – 9 as normal or no anxiety, mild anxiety total score range was 10 - 18, moderate anxiety score range was 19 – 29 and severe anxiety total score range was between 30 – 63 [13].

Beck's Anxiety Inventory has been validated compared to the Diagnostic and Statistical Manual for Mental Disorders (DSM-5) and other diagnostic measures. According to Beck, A. T. et al. [13], BAI has an internal consistency of Cronbach's alpha = 0.92 with one-week test retest reliability of 0.75. The validity studies display good association of the BAI with tools like the Hamilton Anxiety Rating Scale (HARS) (r = 0.51), the State Anxiety Scale (r = 0.47–0.58) and the Symptom Checklist-90 anxiety scale (r = 0.81).

2.3. Data Analysis

The Statistical Package for Social Sciences program (SPSS version 23) was used to analyze all data. Descriptive statistics of frequencies, percentages and Chi-Square tests were used to compare severity scores for the sociodemographic variable including age, education level, marital status, occupation and social support. This was calculated to determine how many cervical cancer patients experience any severity level of anxiety symptoms by computing the frequency of mild, moderate and sever anxiety and the number of cervical cancer patient who had normal anxiety levels. The difference regarding the sociodemographic variables and anxiety score were tested with Chi-squared test.

3. Results

Table 1. Severity of Anxiety of the Study Participants (N=218).

Anxiety Severity Status	No. of respondents N (%)
Normal anxiety level (0-9)	43 (19.7)
Mild anxiety (10-18)	58 (26.6)
Moderate Anxiety (19-29)	75 (34.4)
Severe Anxiety (30-63)	42 (19.3)

Table 1, presents results in percentage on the level of severity of anxiety among the study participants. The participants with moderate symptoms of anxiety were the most at 34.4% as opposed to mild (26.6%) and severe anxiety (19.3%). This implies that more participants presented with moderate anxiety.

Table 2. Socio-Demographic Characteristics and Severity of Anxiety.

Variables		Severity of Anxiety, frequency (%)				Chi-Square
		Normal	Mild	Moderate	Severe	
Age	18-29	1 (0.5)	1 (0.5)	1 (0.5)	0 (0.0)	
	30-39	6 (2.8)	12 (5.5)	14 (6.4)	8 (3.7)	$X^2 = 6.648$
	40-49	16 (7.3)	20 (9.2)	27 (12.4)	18 (8.3)	df= 4
	50-59	10 (4.6)	19 (8.7)	19 (8.7)	8 (3.7)	Sig.=.880
	60 +	10 (4.6)	6 (2.8)	14 (6.4)	8 (3.7)	
Education	No education	3 (1.4)	2 (0.9)	5 (2.3)	2 (0.9)	
	Primary	27 (12.4)	30 (13.8)	4 (19.7)	29 (13.3)	$X^2= 10.51$
	Secondary	8 (3.7)	17 (7.8)	21 (9.6)	8 (3.7)	df= 4
	College	3 (1.4)	6 (2.8)	6 (2.8)	3 (1.4)	Sig. =.571
	University	2 (0.9)	3 (1.4)	0 (0.0)	0 (0.0)	

Variables		Severity of Anxiety, frequency (%)				Chi-Square
		Normal	Mild	Moderate	Severe	
Marital status	Single	3 (1.4)	3 (1.4)	4 (1.8)	3 (1.4)	
	Married	23 (10.6)	44 (20.2)	44 (20.2)	30 (13.8)	X^2 = 11.014
	Separated	2 (0.9)	2 (0.9)	7 (3.2)	2 (0.9)	df= 4
	Divorced	1 (0.5)	1 (0.5)	1 (0.5)	1 (0.5)	Sig. =.528
	Widow	14 (6.4)	8 (3.7)	19 (8.7)	6 (2.8)	
Occupation	Self-employed	29 (13.3)	34 (15.6)	42 (19.3)	28 (12.8)	X^2 = 6.783
	Unemployed	9 (4.1)	15 (6.9)	28 (12.8)	10 (4.6)	df= 2
	Formal	5 (2.3)	9 (4.1)	5 (2.3)	4 (1.8)	Sig..341
Social support source	None	13 (6.0)	15 (6.9)	23 (10.6)	13 (6.0)	X^2 = 6.243
	Family	25 (11.5)	31 (14.2)	44 (20.2)	22 (10.1)	df= 3
	Friends	1 (0.5)	7 (3.2)	6 (2.8)	4 (1.8)	Sig. =.715
	Community	4 (1.8)	5 (2.3)	2 (0.9)	3 (1.4)	

Table 2 presents the severity of anxiety in relation to the distribution of socio-demographic characteristics among the 218 participants. The participants aged 40-49 years had higher frequency of moderate anxiety (12.4%), mild anxiety (9.2%) and severe anxiety (8.3%) compared to other age groups. The results showed that participants with primary level of education had a higher level of moderate anxiety (19.7%), mild anxiety (13.8%) and severe anxiety (13.3%) compared to participants with other levels of education. The married participants had the highest number of participants with moderate anxiety (20.2%), mild anxiety (20.2%) and severe anxiety (13.8%) compared to participants of other marital status categories. This finding showed that cervical cancer patients who were married had higher scores of various anxiety levels.

In terms of employment status, more participants who were self-employed had a higher frequency of moderate, mild and, severe anxiety levels at 19.3%, 15.6% and 12.8%, respectively, compared to unemployed participants and those who had formal employment. Those who reported to receive social support from family members had more symptoms of moderate anxiety (20.2%), mild anxiety (14.2%) and severe anxiety (10.1%) as compared to those who responded to not having received any social support and other social support categories. Overall, Chi-square test showed that there was no statistically significant difference in the distribution of participants' anxiety levels and all the socio-demographic characteristics (Ps > 0.05). In particular age (p=0.880), education level (p = 0.571), marital status (p =0.528), occupation (p = 0.341) and social support (p = 0.715). These results indicate that the severity levels of anxiety were equally distributed across the various sociodemographic characteristics.

Table 3. Participant Clinical Characteristics and Severity of Anxiety.

	Variables	Severity of Anxiety, frequency (%)				Chi Square Test
		Normal	Mild	Moderate	Severe	
Stage of Cervical cancer	IA	4 (1.8)	4 (1.8)	3 (1.4)	2 (0.9)	
	IB	2 (1.8)	9 (4.1)	14 (6.5)	5 (2.3)	
	IIA	2 (0.9)	5 (2.3)	10 (4.6)	2 (0.9)	X^2 = 25.34
	IIB	10 (4.6)	7 (3.2)	13 (6.0)	9 (4.1)	df = 9
	IIIA	3 (1.4)	7 (3.2)	9 (4.1)	1 (0.5)	Sig. = .555
	IIIB	9 (4.1)	7 (3.2)	7 (3.2)	12 (5.5)	
	Above IIIB	11 (5.0)	19 (8.7)	19 (8.7)	11 (5.0)	
Treatment options	Chemotherapy	2 (0.9)	6 (2.8)	20 (9.2)	5 (2.3)	
	Combination	26 (11.9)	33 (15.1)	35 (16.1)	25 (11.5)	X^2 = 28.39
	Palliative	5 (2.3)	7 (3.2)	9 (4.1)	3 (1.4)	df = 5
	Radiotherapy	2 (0.9)	2 (0.9)	0 (0.0)	4 (1.8)	Sig.=.019*
	Surgery	8 (3.7)	10 (4.6	11 (5.0)	5 (2.3)	

Table 3 presents the distribution of participant's clinical characteristics and severity of anxiety symptoms. Regarding the participant's stage of cervical cancer, participants with above IIIB stage of cancer had a higher score of mild and moderate anxiety (8.7%) each. Those participants with stage IIIB had the higher score of severe anxiety levels (5.5%) although the difference in the distribution of anxiety levels among participants with different stages of cervical cancer was not statistically significant (p=0.555).

Moreover, concerning participant's treatment options in relation to severity of anxiety, the study showed that more participants who had a combination treatment of chemotherapy and radiotherapy had moderate anxiety at 16.1%, mild anxiety at 15.1%, and severe anxiety at 11.5% compared to those who had other forms of single treatments. The difference in the levels of severity of anxiety among participants on different types of treatment was statistically significant (p=0.019). This implies that levels of anxiety vary among participants on different types of treatment for cancer.

4. Discussion

This study investigated the severity of anxiety among the study participants. Findings indicate that participants with moderate anxiety were the highest (34.4%) compared to mild anxiety (26.6%) and severe anxiety (19.3%). The finding

from this current study appears to be high compared to the existing data on severity of anxiety. For example, a study among 31 cervical cancer patients in Morocco, found that moderate anxiety was high at 25.8% while severe anxiety was 22.6% [14]. A literature search involving 39 studies in Italy found that moderate levels of anxiety improved decision-making, while low and high levels of anxiety had no effect on decision making [15]. In addition, a survey of 600 cancers patients and 200 control in five hospitals of Nepal found, cervical cancer patients suffered from a greater intensity of anxiety and lack of functional wellbeing compared to those with other types of cancers and control who experience significantly lower intensity of anxiety [16].

Participants with primary level of education also had a higher level of moderate anxiety (19.7%), mild anxiety (13.8%) and severe anxiety (13.3%) compared to participants with other levels of education. This agrees with a study cervical cancer patients in Morocco, that found illiterate participants were the most at 64.5% [14]. The study also reported that the level of education had a significant correlation with anxiety scores (p = 0.027). These study results are similar to a study that was done in India among 159 cervical cancer patients that found most of the participants were illiterate (44%) with 19.5% having primary education and only 6.9% had graduate education [17]. A systematic search conducted on 25 studies in Ethiopia found that educational status was significantly associated with late-stage presentation among cervical cancer patients (p = 0.031) [18].

In addition, participants who were self-employed had a higher score of moderate, mild and, severe anxiety levels at 19.3%, 15.6% and 12.8%, respectively, compared to unemployed participants and those who had formal employment. This is in line with a cross sectional study of 100 participants diagnosed with cervical cancer in Indonesia that found work status was significantly related to anxiety level among participants. The study also reported that those who worked at home as housewives had higher anxiety level than those worked at the institutions or industry [19]. A cross sectional study among 55 cervical cancer patients in Iran to found that 89.1% had delayed diagnosis and this was significantly higher among participants with lower education level and lower socio economic status [20].

Participants who had stage IIIB and above had a higher frequency of mild (8.7%), moderate (8.7%) and severe anxiety (5.0%) compared to other stages of cervical cancer. In the USA, a study was done among 204 cervical cancer patients with locally advanced cancer and found that 45% and 47% of patients scored in the moderate to severe scores for anxiety and depression, respectively [21]. This study found more severe levels of anxiety than the current study because the participants had advanced disease suggesting more emotional trauma due to complication of treatment. In Norway, a study among 91 survivors of locally advanced cervical cancer after radiotherapy treatment found higher anxiety symptoms among those with chronic pain compared to those without [22]. The results showed that 14.6% had anxiety symptoms and pointed at chronic pain in the lower

back and hips among cervical cancer patients with locally advanced illness [22]. It was important to note that those with chronic pain, after cancer treatment, could have increased anxiety levels.

A multi-center, cross-sectional study was conducted at the Liaoning Cancer Hospital & Institute and the Shengjing Hospital in China included a total of 224 cervical cancer patients. The study found that anxiety score was significantly higher at cancer stage II after diagnosis between 4-6 months [23]. A study among 59 cervical cancer patients in Serbia reported increased anxiety levels in all participants with a significant correlation between stage of cancer and the scores of anxiety (*p* = 0.016) which added a significant burden on the cancer illness [24]. This study also found a statistically significant difference in the levels of severity of anxiety among participants on different types of medical treatment (p=0.019).

This study found that more participants who had a combination treatment of chemotherapy and radiation had higher scores on moderate anxiety at 16.1%, mild anxiety at 15.1%, and severe anxiety at 11.5% compared to those who had other forms of single treatments. This finding are lower than data from a study conducted in the USA done among 1,326 cancer patients receiving chemotherapy that found 47.7% had low anxiety, 28.3% had moderate anxiety, 19.5% had high anxiety while 4.5% presented with very high anxiety level [25]. Participants in the moderate, high, and very high anxiety levels were associated with a younger age, female gender, lower performance status, more co-occurring symptoms compared to those with low levels. Patients with higher levels of anxiety reported higher levels of stress, lower levels of resilience, and increased severity of comorbidities.

A study among 41 cervical cancer patients in Indonesia found a significant effect of palliative care treatment toward the level of anxiety (p=0.000) [26]. In China, a study included 158 cervical cancer patients who underwent surgery and another 150 healthy controls found that the severity of anxiety were greatly increased in cervical cancer patients compared with controls [11].

The results agree with the findings in this current study that showed participants aged 40-49 years had higher frequency of moderate anxiety (12.4%), mild anxiety (9.2%) and severe anxiety (8.3%) compared to other age groups. This is confirmed by data from Eldoret Cancer Registry in Kenya that reported that cervical cancer mostly affected those in age group was 30-54 years [27].

This study found that those who received social support from family had a higher frequency of moderate anxiety at 20.2%, mild anxiety at 14.2%, and severe anxiety at 10.1% as compared to other forms of social support though the difference was not statistically significant (p = 0.715). A similar study analyzed the relationship of family support with the anxiety level among 34 cervical cancer patients in Indonesia and found a significant relationship existed between family support with the anxiety level of patients of cervical cancer (p = 0.000) [28].

5. Conclusion

Moderate anxiety was the highest at 34.4% then mild anxiety at 26.6% and severe anxiety at 19.3%. There was no significant difference between sociodemographic characterestics studied (age, level of education, marital status, occupation and social support) and severity of anxiety among the cancer patients. Participants who were on combination of medical treatment (Chemotherapy and radiotherapy) had higher presentation in moderate anxiety at 16.1%, mild anxiety at 15.1% and severe anxiety at 11.5%. This finding agreed with other studies that indicated participants with locally advancing illness who received a combination of treatment presented with higher levels of anxiety.

Ethics

Ethical clearance was sought from Daystar University Department of Human and Applied Sciences, Moi University/Moi Teaching and Referral Hospital Institutional Research and Ethics Committee (MTRH/IREC), the National Commission for Science Technology and Innovation (NACOSTI) and management of MTRH and JOOTRH. Cervical cancer patients aged 18 years and above gave consent to participate in the study.

Limitations

The study was done during COVID-19 pandemic and there was social distancing, and restriction of movement of patients due to curfew. Mitigation factors put in place to combat COVID-19 included lessening of in-person contact, by adherence to the physical distancing protocols.

Conflict of Interest

The authors state they have no conflict of interest.

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