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Research Article

Prevalence and correlates of anxiety and depression among cancer patients in the University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia

Abstract

Background: Depression and anxiety are two of the most commonly experienced psychological disorders of cancer patients. They are associated with unique psychophysiological side effects that importantly encompass poorer treatment outcomes, increased periods of hospitalization and higher mortality rates. This problem was not well studied in Ethiopia. Therefore, the aim of this study was to assess the prevalence of anxiety, depression and associated factors among cancer patients in Gondar University Hospital.

Methods: A cross-sectional study was conducted among cancer patients in Gondar University Hospital from January to June 2016. In this study, all cancer patients who were admitted to the hospital were taken. An interviewer-administered questionnaire containing socio-demographic and clinical variables, and Hospital Anxiety and depression scale and General Health Questionnaire were employed. Data were analyzed using SPSS version 20. Association of variables with anxiety and depression was reported with chi-square and p-value.

Results: A total of 77 cancer patients were included in this study. The prevalence of anxiety and depression were 51.00% and 58.44%, respectively. Sex, educational level, residence, and monthly income had a significant association with anxiety and depression among cancer patients.

Conclusions: Anxiety and depression were prevalent among cancer patients. Sex, educational status of the patients, residence, and monthly income were found to be associated with anxiety and depression. Psychological interventions targeting females, less educated patients, rural residents, and patients with lower level of monthly income may lessen their anxiety and depression burdens, in turn, to improve their survival apart from their somatic illness.

Background

Cancer is a serious and potentially life-threatening illness which has an effect on physical and emotional wellbeing of patients and their families [1]. A great amount of cancer patients suffer from social, emotional, and psychological distress due to the diagnosis and treatment of cancer [2-4]. The diagnosis and treatment of cancer is a stressful event causing significant psychological distress [5]. Upon diagnosis of cancer on a patient, the news can break the heart before proper preparation is made. Patients may have fear of death, disruption of life plans, changes in body image and self-esteem, changes in social role, change in lifestyle, financial concerns and they experience varying levels of stress [6]. Cancer diagnosis and treatment brings changes in patients' personal paths of life, in their daily activities, work, relationships, and family roles, and it is associated with a high level of patient psychological stress. This stress shows up as anxiety and/or depression [7].

Cancer has become a commonly diagnosed chronic disease that influences many aspects of an individual's life. It is a disease that affects the patient's life globally; generally seen as a disease whose synonym is suffering and death [6]. In the biological sphere, the patient faces debilitating symptoms and an invasive and prolonged treatment with unpleasant side effects. In relation to the psychosocial context, the patient could face difficulties in the change of the daily routine, dependence

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on other persons, change of habits, isolation, among others, rarely triggering psychological suffering [1]. Cancer does not only affect the patient, but also close family and friends in different aspects. The social difficulties experienced are present at all stages of the disease [8] and every stage has its own difficulties to overcome.

Adjustment in their daily life cancer patients can be traumatic. Aspects within the daily life that were seen as hassles before are now given different meanings. Patients experience changes in their relationships with others, in their interpretation of situations, in their physical abilities, and many more [9]. Statistics by the World Health Organization (WHO) indicate that cancer is the second leading cause of death worldwide from non- communicable diseases [10]. Approximately 8.4 million patients have died from cancer and its complications by 2012 [11].

Research has well documented that cancer patients face many difficulties starting from the onset of the disease. Cancer is a risk factor for developing emotional disturbance, especially depression and anxiety [12]. In fact, the most commonly psychological conditions experienced by patients with cancer are reactive anxiety and depression [13]. Patients have common fears, which have been called six Ds: death, dependency on family, spouse and physician; disfigurement and change in early appearance and self-image, sometimes resulting in loss or changes in sexual functioning; disability interfering with achievement of age appropriate tasks in work, school or leisure roles; disruption of interpersonal relationships; and finally, discomfort or pain in later stages of illness [14].

In general, symptoms of anxiety and depression were shown to be associated with a worse course of disease, including reduced quality of life and increased symptoms burden, health care use, and even mortality. Psychological disorder namely depression and anxiety will bring both extra cost of medical burden and impact to the whole health care system. The increase of burden caused by non-communicable diseases, specifically cancer, in developing nations is a public health concern that has been neglected [15]. The upward trend in deaths resulting from cancer is a public health concern and a problem that needs to be addressed [16]. Given the seriousness of its impact, it is important to better understand and evaluate the overall impact of the disease and to identify what factors and how they influence patient's quality of life.

Several studies in general suggest that a substantial proportion of cancer patients suffer from psychological or psychiatric complications. However, no local research attempted to examine the possible risk factors associated with depression and anxiety among these particular groups of patients. Consequently, little information exists on the prevalence of depression and anxiety among cancer patients and possible risk factors associated with depression and anxiety. Therefore, the lack of data regarding cancer patients within the context of Ethiopian society may result in a significant gap in our understanding of this population. Indeed, without a more comprehensive understanding of the situation, health policy and resource allocation can be difficult, especially in Ethiopia where the resource allocation is limited.

Although the prevalence of depression and anxiety among cancer patients has been studied extensively with Western samples, the situation in Ethiopia is largely unclear and information is almost scant. In fact, to the knowledge of the present researcher, no previous research has explicitly examined the prevalence of depression and anxiety among cancer patients and the risk factors associated with depression and anxiety of these particular groups of patients in Ethiopia due to the fact that there is lack of proper documentation and registry [17]. WHO (2011) estimated the national prevalence of cancer in Ethiopia to be 4% but there is dearth of studies conducted on the prevalence of anxiety and depression among cancer patients.

Methods

Study design

A cross sectional study was conducted among cancer patients in Gondar University Hospital, from March 01 to 30, 2016. The aim of this research was to determine the prevalence of anxiety, depression and identify associated factors among cancer patients. In this study, anxiety and depression were the dependent variables and socio demographic characteristics such as age, sex, marital status, educational level, income level, residence and clinical variables like type of cancer, treatment type, stage of cancer, time of diagnosis were explanatory variables of the study.

Participants and sampling

In this research, all cancer patients who were under follow up in University of Gondar Hospital has been taken as source population and since cancer patients are small in number, those who were competent to give the necessary data during the data collection period are selected as a sample unit.

Data collection tools and procedures

Data was collected using pretested and structured interviewer administered questionnaire on age, gender, educational attainment, residence, marital status, and occupational status of the study participants. In addition, questions pertaining to clinical and medical history of a patient including stage of the disease, type of current treatment, time of diagnosis and type of cancer were asked from participants.

The third part of the structured interview contains different scales which measures levels of anxiety and depression of a patient. In this study the investigators used Hospital Anxiety and Depression Scale (HADS). The HADS is a self-report questionnaire developed to detect states of distress in patients. It contains two sub-scales: anxiety and depressive states, with seven items per subscale. The questions relating to anxiety are marked 'A' and to depression 'D'. Each question has a score from 0 to 3 and the total score of an individual patient for each of the subscale ranges from 0 to 21. According to Hospital Anxiety and Depression Scale, a score of 0 to 7, 8 to 10, 11 to 14 and 14 to 21 is considered as normal, mild, moderate and severe, respectively. Subjects were asked to choose one response from the four given optional answers. They should

give an immediate response and be discussed from thinking too long about their answers.

The Ethiopian version reliability and validity was done by Ayalu Aklilu (2010) from the Department of Public Health, College of Health Sciences. Since it was developed for use in non-psychiatric departments, it does not rely upon symptoms that may be present in people with physical illness alone, such as pain and weight loss. The HADS has been widely used for screening tool for psychiatric morbidity in general hospital patients; also its validity to screen medical outpatients has been confirmed. All questions were translated from English to Amharic by two independent translators following standard forward and backward translation procedure.

Data quality control mechanisms

In order to assure the quality of data, the questionnaire was pre-tested on 20 patients with chronic illnesses one week before the actual period of data collection. Training was given to data collectors and supervisors. The collected data was reviewed and checked for completeness after each day of data collection, and the necessary correction was made. Data were checked and cleaned before data entry and incomplete data were discarded.

Data analysis

The data were analyzed using statistical software called SPSS version 20 after thorough data checked, cleaned and coded. Descriptive statistics such mean and standard deviation and analytical statistics chi-square were used. The descriptive section includes mean and standard deviation used to show the prevalence of anxiety and depression on cancer patients; whereas, the analytic one used chi-square test to determine the association of various demographic, clinical and behavioral factors with the presence of depression and anxiety symptoms on cancer patients. A p-value of ≤ 0.05 considered statistically significant.

Results

The total sample size for this research was 77 participants. As shown in table 1, of the 77 participants, 34 (44%) cases were males (44%) and 43 cases females (55.8%). Thirty nine (50.6%) were from the rural area and the rest 38(49.4%) were from the urban area. Regarding marital status, the majority of the participants (68.8%) were married, while eighteen (23.4%) cases were single and the rest six (7.8%) were divorced/widowed. By their educational level, 24(42.9%), were unable to read and write, 5(6.5%) completed primary education, 6(7.8%) reached secondary education, 6 (7.8%) have diploma and TEVT and the rest 3.9% have attended university education. The mean age of the patients was 43.45 (ranging from 22 - 88) years.

Prevalence of anxiety and depression among cancer patients

The first research question focuses on assessing the prevalence of anxiety and depression among cancer patients.

Table 1: Demographic profile of cancer patients, University of Gondar Referral Hospital, 2016.

Characteristics		Frequency	Percentage
Sex	Male	34	44.2
	Female	43	55.8
Marital status			
	Single	18	23.4
	Married	53	68.8
	Divorced/Widowed/Separated	6	7.8
Educational level			
	No formal education	57	74.0
	Primary education (G1-8)	5	6.5
	Secondary education& above(G>=9)	15	19.5
Residence			
	Rural	39	50.6
	Urban	38	49.4
Occupational status			
	Farmer	26	33.8
	Merchant	10	13.0
	Gov't employee	11	14.3
	House wife	11	14.3
	Students	19	24.7
Monthly income			
	<=500	90	45.0
	501-1000	45	22.5
	>=1001	65	32.5

Both anxiety and depression were measured using Hospital Anxiety and Depression Scale (HADS).

Anxiety

In this study, the frequency analysis revealed that among the total 77 cancer patients, 39 of them had anxiety giving a prevalence of 51%. Among those patients having anxiety, 25, 10 and 4 of them had mild, moderate, and sever anxiety, respectively.

Depression

In this study from the total 77 cancer patients, 45 of them had depression with a prevalence of 58.44%. Among the total patients, 22, 20, and 3 had mild, moderate, and severe levels of depression, respectively.

Type of cancer

In this study, seventy seven cases of cancer with diagnosis of different types such as lung, breast, blood, intestinal, colorectal types have been included. In this study, blood cancer patients had higher frequency and lung cancer patients had lower frequency from the total cancer patients.

Type of treatment

Nearly fifty percent, 37 (48.05%) of the patients were under treatment with chemo-therapy, 24(31.16%) cases were taking both chemo-therapy and surgery, 6(7.79%) were treated with

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surgery and the rest 10 patients did not start their treatment during the study (Tables 2,3).

Clinical characteristics of cancer patients

In terms of disease stage, the higher frequency was observed in stage III and II (51.9% and 24.7%) respectively. Stage I and stage IV had lower frequency. The main reason may be cancer patients may not come during early (stage I) whereas stage IV patients were near to death and need to stay at their home.

Among cancer patients who take treatment, the higher prevalence of anxiety and depression were observed on patients who took chemotherapy as a single treatment. The main reason may be toxicity and side-effect of drugs used for the treatment of cancer (Table 4).

Factors associated with anxiety and depression

One of the objectives of the present study was to identify factors influencing anxiety and depression among cancer

Table 2: Clinical characteristics of cancer patients University of Gondar Hospital, Ethiopia, 2016.

Variables	Frequency	Percentage
Type of cancer		
Lung	1	1.3
Breast	11	14.3
Cervical	8	10.4
Blood	24	31.2
Intestinal	13	16.9
Colorectal	20	25.9
Type of treatment		
Chemo therapy	37	48
Surgery	6	7.8
Both	24	31.2
Not yet started	10	13.0
Stage of cancer		
Stage I	2	2.6
Stage II	19	24.7
Stage III	40	51.9
Stage IV	16	20.8

Table 3: Distribution of Anxiety and Depression across types of cancer diagnosis, University of Gondar Referral Hospital, 2016.

Type of cancer	Anxiety				Depression			
	No anxiety	Mild (8-10)	Moderate (11-14)	Sever (14-21)	No Depression	Mild	Moderate	Severe
Lung	0	0	1	0	0	1	0	0
Breast	5	3	4	2	4	3	3	1
Cervical	3	3	2	0	0	5	3	0
Blood	9	10	2	0	12	5	6	1
Intestinal	9	3	0	1	8	2	2	1
Colorectal	12	7	0	1	8	6	6	0
Total	38	26	9	4	32	22	20	3

Table 4: Distribution of anxiety and depression with different treatment type, University of Gondar Referral Hospital, 2016.

Type of cancer treatment	Anxiety		Depression	
	No	Yes	No	Yes
	N (%)	N (%)	N (%)	N (%)
Chemotherapy	15(19.48)	22	13(16.9)	24(31.1)
Surgery	4(5.19)	2	4(5.2)	2(2.6)
Both (chemo & surgery)	15(19.48)	9	11(14.3)	13(16.9)
Not started	4(5.19)	6	4(5.2)	6(7.8)
Total	38	39	32	45

patients. Table 5 describes the factors influencing anxiety and depression.

As shown in table 5, educational status of cancer patients was associated with anxiety with a chi square and $p-value$ of 7.11 and 0.029. Monthly income of patients was marginally associated with anxiety with a chi square and $p-value$ of 4.88 and 0.087.

The study shows that gender, monthly income, educational status and residence of the patients' were significantly associated with depression. Sex has also showed significant association with depression with a chi square of 17.06 = <0.001. Similarly, monthly income in Birr and patient's residence have revealed a significant association with depression with a chi square and $p-value$ of (6.65, 0.036) and (3.79, 0.052), respectively. There were no significant relationships between anxiety and depression with marital status, age, type of cancer they had and type of treatment they took, smoking status and physical activity of the patient having a p-value > 0.05 (Table 5).

Discussion

Prevalence of anxiety and depression among cancer patients

The present study shows that among the total 77 cancer patients who were under follow up at the University Of Gondar Hospital, the overall prevalence of anxiety was found to be 51%. Similarly, the prevalence of depression was significantly higher among cancer patients which were found to be 58.44%. As the study indicated, both anxiety and depression had affected higher number of cancer patients. These findings are similar to results from other studies on patients with cancer [18]. The results presented in this study confirm that cancer patients suffer from psychological or psychiatric complications.

According to hospital anxiety and depression scale, 25, 10 and 4 of cancer patients had mild, moderate, and sever anxiety, respectively. Similarly, among the total cancer patients found to have depression, about 22, 20 and 3 participants had mild, moderate and severe depression, respectively. Anxiety was significantly associated with educational status of cancer patients with a chi square and $p-value$ of 7.11 and 0.029, while monthly income of patients was marginally significant with anxiety with a chi square and $p-value$ of 4.88 and 0.087. Variables; such as gender of the patients, monthly income, educational status and residence of the patient were

Table 5: Association of factors with Anxiety and Depression, University of Gondar Hospital, 2016.

Variables		Anxiety				Depression			
		Number	%	X²	P-value	N	%	X²	P-value
Gender	Male	14	18.2	2.18	0.212	11	14.3	17.06	<0.001
	Female	25	32.5			34	44.1		
Age	15-24	7	9.1	.882	.83	9	11.7	.45	.93
	25-44	11	14.3			12	15.6		
	45-64	17	22.1			18	23.4		
	>=65	4	5.2			6	7.8		
Education status	No formal edu	34	44.1	7.11	0.029	38	49.3	7.348	0.025
	Grade 1-8	2	2.59			4	5.19		
	Above grade -9	3	3.89			3	3.89		
Monthly income in birr	<=500	14	18.2	4.9	0.087	23	29.9	6.65	0.036
	501-1000	12	15.6			11	14.3		
	>=1001	13	16.9			11	14.3		
Residence	Rural	23	29.9	2.20	0.13	27	35.1	3.79	0.052
	Urban	16	20.8			18	23.4		
Occupation	Farmer	15	19.5	8.98	0.062	15	19.5	13.19	0.01
	Merchant	3	3.9			5	6.5		
	Govt. employee	3	3.9			2	2.6		
	House	9	11.7			10	12.9		
	Student	9	11.7			13	16.9		
Disease stage	Stage I	2	2.6	3.88	0.326	2	2.59	9.38	0.095
	Stage II	8	10.4			9	11.7		
	Stage III	21	27.3			25	32.5		
	Stage IV	8	10.4			9	11.7		
Smoking status	Non-smoker	38	49.3	0.0003	0.747	45	58.4	2.88	0.17
	Smoker	1	1.3						
Physical activity	Active	36	46.7	1.22	0.31	39	51	0.28	0.59
	Inactive	3	3.9			6	7.8		
Type of treatment	Chemo therapy	22	28.5	3.87	0.275	24	31.2	2.37	0.49
	Surgery	2	2.6			2	2.6		
	Both	9	11.7			13	16.9		
	Not-started	6	7.8			6	7.8		
Length of diagnosis	<1month	5	6.5	2.69	0.44	6	7.8	1.927	0.588
	1-6 month	19	24.7			22	28.5		
	6-12month	11	14.3			14	18.2		
	>12month	4	5.2			3	3.9		

significantly associated with depression with p-value of <0.001, 0.036, 0.025 and 0.052 respectively.

The prevalence of anxiety in this study was found to be higher compared to a study done in Nepal that showed a prevalence of anxiety to be 40.0% as identified by HADS [19]. The reason for this discrepancy might be cancer patients in Nepal might have better health service that may include psychological counseling related to patients with chronic illness.

Depression in this study was found to be by far higher (58.44%) compared to the study done by the World Mental Health Survey in 17 countries which was found to be on average that about 5% people reported as having an episode of depression in the previous year [20]. The possible explanation for the higher prevalence of depression in this study could be due to the fact that the present research used smaller sample size. However,

the study done by World Mental Health Survey was among the general population but not among cancer patients. Depression in this study was also higher (58.44%) compared to a study done in Ethiopia using a nationally representative sample with a prevalence of 9.1% [21]. This might be due to the fact that the national study done in Ethiopia was based on nationally representative sample consisting of the general population; however, this particular study was carried out among cancer patients. This could make prevalence of depression to be higher in the current study.

Association of anxiety and depression to demographic variable of cancer patients

Regarding factors associated with anxiety and depression, in this study sex was found to be associated with depression with X² and p-value of 17.06 and <0.001. It indicated that

females were more affected by depression. This finding was similar with a study done in China in which females were more depressed (p = 0.008). However, there was no association between sex and anxiety in the current study which was in contrast to the Chinese study where females were less anxious than males (P=0.020) [18].

In the present study, patients' educational status was found to be associated with both anxiety and depression showing a p-value of 0.029 and 0.025, respectively. Patients with lower educational status were more affected by anxiety and depression than patients having higher level of education. This finding was also similar with the Chinese study in which patients with low level of education had a higher prevalence of depression than patients with above 6 years of education (P <0.001) [18]. This study was also similar with a study done in Nebersica in 2006 showing that prevalence of current depression was significantly higher among respondents, who had less education than those who have a college degree [22].

In the present study, depression was significantly associated with monthly income with a p-value of 0.036; however, anxiety was found to be marginally significant with a p-value of 0.087. This finding was consistent with other study done in Nebersica in 2006 where patients with low level of income had higher prevalence of depression [22]. The findings showed that among different demographic variables, there were no significant differences among anxiety, depression and patients' age, marital status, stage of cancer, type of cancer, treatment type, smoking status, and length of diagnosis.

Association of anxiety and depression to clinical factors of cancer patients

In the finding of the present study, type of cancer did not have association with anxiety and depression. This was in contrast to a study done in china that showed patients with lung, esophagus, and cervix cancers were the high-risk groups for depression [22]. In a similar manner, stage of cancer does not show a significant association with neither anxiety nor depression. This finding was similar with a study done in China that indicated disease stage influenced neither anxiety (P=0.258) nor depression (P=0.197 [22].

Type of treatment was not also associated with anxiety and depression which was in contrast to a study done in Balon, Iran, where anxiety and depression had significant associations with the type of treatment.

Conclusion

Based on the results of this study the following conclusions can be drawn

Depression and anxiety are prevalent among the cancer patients as to the present study. The prevalence of anxiety and depression was found to be higher compared to studies conducted in other countries.

The finding of the present study revealed that a significant portion of the sample of cancer patients had mild, moderate, and sever anxiety, and severe depression.

Among cancer patients who take treatment, the higher prevalence of anxiety and depression was observed on patients who took chemotherapy as a single treatment.

While educational status and monthly income of cancer patients were associated with anxiety, gender, monthly income, educational status and residence of the patients' were significantly associated with depression.

The findings of the present study hold implications that are relevant to several stakeholders, such as health care providers, cancer survivors, and clinicians providing supportive services to cancer survivors, the general public, policy makers and future researchers who wish to improve the provision of mental health support for cancer survivors. Based on the results of this field of study, the present research makes recommendations to the various parties involved. Patients counseling and support unit should be in place and functional to help cancer patients in reducing anxiety and depression. It is recommended that interventions should target females, less educated patients, those who are from rural areas, and patients with lower level of monthly income so as to improve the survival of patients having cancer. Since cancer causes chronic and frustrating disease condition, policies and programs regarding to psychological burden should be considered to reduce the related psychosocial difficulties associated with the illness. In addition, further study is recommended with more samples, considering other strong study designs supplemented with qualitative methods to estimate the magnitude of anxiety and depression symptoms and factors contributing to these psychosocial problems. The findings of the present study are limited in employing small sample size which may affect the association of explanatory variables with anxiety and depression. The small sample size is a reflection of the population as the study was conducted at a regional centre. The cross-sectional design of the present study does not allow for causal inferences. It could have been better if supplemented with qualitative data.

Declaration

Ethical approval and consent to participate

Ethical clearance and permission to conduct the research was obtained from IRB of University of Gondar. Oral consent was obtained from each patient after explaining the purpose of the study. Participants were informed that the information obtained was purely anonymous and for research purposes. In order to ensure confidentiality, their names and other personal identifiers were not registered in the questionnaires. It was explained to the participant that selection of the study was not random and that they have the right to not respond for questions that were not comfortable for them and they can withdraw from the study. Finally, the questionnaire was kept locked after data entry.

Consent to publish

Consent to publish is secured from study participants

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