

FACTORS AFFECTING DEPRESSION IN CANCER PATIENTS UNDERGOING CHEMOTHERAPY IN A TERTIARY CARE HOSPITAL: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Cancer is a life threatening and feared diagnosis and is the second leading cause of death globally. Depression is the most common psychological disorder in cancer patients and upto 1 in 4 people with cancer suffer from clinical depression. Besides genetic factors and family history, many demographic factors like age, gender, marital status, socio-economic status, etc are responsible for manifestation of depression in cancer patients.

Methods: Present cross-sectional study was conducted amongst cancer patients undergoing chemotherapy at Day Care Centre, Department of Radiation Therapy and Oncology, Government Medical College and Hospital, Nagpur. 95 participants were interviewed using predesigned and pretested questionnaire based on the Beck's Depression Inventory.

Results: Depression was found to be present in 70 (73.69%) study subjects. Socio-economic status and type of treatment were found to be significantly related with depression.

Conclusion: The proportion of depression in cancer patients receiving chemotherapy is quite high. Factors like SES and type of treatment play an important role in contributing to depressive symptoms.

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INTRODUCTION

Cancer is a life threatening and feared diagnosis, characterised by uncontrolled growth and spread of abnormal cells.^[1] It is the second leading cause of death globally, and was responsible for an estimated 9.6 million deaths worldwide in 2018. About 1 in 6 deaths worldwide is due to one or the other type of cancer. Approximately 70% of deaths from cancer occur in low and middle income countries.^[2] The total number of new cancer cases in India is expected to reach nearly 17.3 lakhs by 2020.^[3]

A cancer diagnosis can have a huge impact on most patients, families, and caregivers. Feelings of depression, anxiety, and fear are very common and are normal responses to this life-changing experience. Depression is the most common psychological disorder in cancer patients and upto 1 in 4 people with cancer suffer from clinical depression.^[4] The rate of depression in cancer patients is thought to be upto three times higher than in the general population.^[5]

Depression often goes undiagnosed and untreated among cancer patients which may have a deleterious effect on not only the quality of life but also affects the course of disease and compliance.^[6] Moreover, patients with cancer and comorbid depression have worse anxiety, pain, fatigue, functioning and more likely to have suicidal thoughts.^[7] A meta-analysis revealed that minor and major depression increases mortality rates by upto 39%, and that patients

displaying even few depressive symptoms may be at a 25% increased risk of mortality.^[8]

The responsible risk factors for the manifestation of depression are many, such as age, gender, marital status, duration of treatment, previous history of depression, type of cancer and social isolation, etc. Moreover, the financial difficulties arising from the disease, consist an additional source of depression, mainly when the patient is the one who maintains family.^[9,10,11,12] Apart from demographic factors, genetic factors and family history, also contribute to depressive symptoms in cancer patients who undergo chemotherapy. Although there have been remarkable progressions in biomedical care for cancer it has not been complemented by progressions in providing good quality care for psychological effects of cancer.^[13] Recognition of depression and determining the appropriate level of intervention, ranging from brief counselling and support groups to medication and psychotherapy is an important aspect of cancer care, which is unfortunately missing in most palliative care settings.^[14]

There is very little literature available on this oft neglected topic, more so in patients from Central India, hence, this study was carried out with the objective of determining the factors affecting depression in cancer patients undergoing chemotherapy.

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MATERIALS AND METHODS

Study type and Setting: A descriptive cross-sectional study was conducted in Day Care Centre, Department of Radiation Therapy and Oncology, Government Medical College and Hospital, Nagpur. The duration of the study was two months, from 1st May 2018 to 30th June 2018.

Study Population: Patients undergoing chemotherapy at the time of study constituted the study population.

Inclusion Criteria

Age 18 years and above.

Exclusion criteria

Patients who were very sick.

Patients who refused to give consent.

Sampling: Considering the prevalence of depression in patients undergoing chemotherapy to be 55.7% (95% confidence interval and 10% absolute precision), the estimated sample size came out to be 95.^[15] After record analysis of previous one-year data of patients' visit to Day Care Centre, it was seen that there were approximately 330 patients undergoing chemotherapy every month. So, the study subjects were selected by systematic random sampling and every 7th patient was selected.

Data Collection tools and Techniques: Data was collected using predesigned and pretested questionnaire by interview technique in local language. General information, socio-demographic data such as gender, age, marital status, occupation, level of education was noted. Socio-economic status was assessed using Modified Kuppaswamy classification and BG Prasad classification (corrected as per current CPI) for patients residing in urban and rural areas respectively. The levels of depression were determined by Beck's Depression Inventory (BDI).

Beck's Depression Inventory

Beck's Depression Inventory has 21 questions.^[16] The score for each of the 21 questions is added by counting the number to the left of each question marked. The highest possible total for the whole test is 63 (this means the score is 3 for all the 21 questions). Since, the lowest possible score for each question is 0, the lowest possible score for the test is 0 (this means the score is 0 for each question). The level of depression is evaluated according to table below:

Total Score Levels of Depression

1-10 _____ These ups and downs are considered normal
 11-16 _____ Mild mood disturbance
 17-20 _____ Borderline clinical depression
 21-30 _____ Moderate depression
 31-40 _____ Severe depression
 over 40 _____ Extreme depression

Ethical Considerations

Approval from the Institutional Ethics Committee was obtained. Permission was taken from Dean, Government Medical College and Hospital, Nagpur and the respective Heads of the Departments. Informed consent was taken from the study subjects after apprising them of the purpose of the study. They were reassured regarding strict confidentiality about the information provided by them.

Statistical Analysis

Data entry was done in Microsoft Excel version 2007 and analysis was done in Epi Info version 7.2. Descriptive statistics such as mean, standard deviation, range were used to summarise baseline characteristics of the study subjects. Association between two categorical variables was analysed using Chi square test. The p value <0.05 was considered as significant.

RESULTS

Total 95 patients undergoing chemotherapy were enrolled in the study. The age of study subjects varied between 25-80 years, the mean age being 49.35 ± 11.75 years. 77(81.05%) study subjects were females and 18(18.95%) were males. Majority of them 77(81.05%) were Hindu by religion, mostly from urban area 65(68.42%) and most of them 78(82.10%) were married. Most of the them were of low education levels, 25(26.13%) were illiterate. Majority of the study subjects 66(69.47%) belonged to lower socio-economic class. Most 76(80%) had no co-existing morbidity and a large number 55(57.89%) had support from their spouses.

Table 1 Distribution of study subjects by Levels of Depression

Levels of depression	Study subjects	
	Number	Percentage (%)
Normal	12	12.63
Mild mood disturbance	13	13.68
Borderline clinical depression	15	15.78
Moderate depression	44	46.31
Severe depression	11	11.57
Total	95	100

Table 1 shows the distribution of study subjects by levels of depression. Among the study subjects, 12 (12.63%) had no depression, 13 (13.68%) had mild mood disturbance and majority 70 (73.69%) suffered from some form of depression.

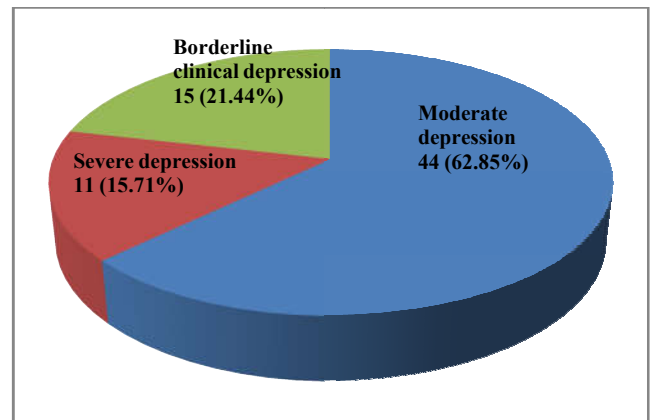


Figure 1 Depression in study subjects

Of the 70 (73.69%) study subjects who had depression, 44 (62.85%) had moderate depression and 11 (15.71%) had severe depression. None of the study subjects had extreme depression. (Figure 1)

Table 2 Relation of depression with various demographic variables

Demographic variables	Depression Present		Total		p value
	n	%	n	%	
Age in years					
<50	35	76.08	46	48.42	0.77
≥50	35	71.42	49	51.57	
Females	55	71.42	77	81.05	0.38

Males	15	83.33	18	18.95	
Marital status					
Married	55	70.15	78	82.11	0.22
Others	15	88.23	17	17.89	
Educational status					
Illiterate	18	72.00	25	26.32	0.79
Literate	52	74.28	70	73.68	
Socio-economic status					
Class I, II, III	17	58.62	29	30.53	0.04
Class IV, V	53	80.30	66	69.47	
Stage of malignancy					
Stage I, II	25	71.42	35	36.84	0.69
Stage III, IV	35	77.77	45	63.16	
Treatment taken					
Radiotherapy not taken	46	67.64	68	71.58	0.03
Radiotherapy taken	24	88.88	27	28.42	
No. of cycles of chemotherapy					
≤3 cycles	31	79.48	39	41.05	0.34
>3 cycles	39	69.64	56	58.95	
Co-existing morbidity					
Present	12	70.58	19	20.00	0.25
Absent	58	76.31	76	80.00	

Table 2 shows relation of depression with various demographic variables of study subjects. Among the study subjects, 75% in the age group 30-49 years and 71.42% in the age group ≥50 years were depressed. However, this difference was not found to be statistically significant ($p=0.77$).

The relation between gender and depression was also not found to be statistically significant ($p=0.38$). Similarly, marital status ($p=0.22$), educational status ($p=0.79$) and stage of malignancy (0.69) were not found to be significantly related to depression.

In the upper and middle class 58.62% were depressed whereas in the lower class 80.30% were depressed. This difference was found to be statistically significant ($p=0.04$). Also there was a significant difference in the levels of depression between those who had undergone radiotherapy and others ($p=0.03$).

However, no significant relation was observed with cycles of chemotherapy ($p=0.34$) and co-existing morbidities ($p=0.25$).

DISCUSSION

Worldwide, the incidence of cancer is increasing rapidly and nowadays it is coming across as a major cause of morbidity and mortality. Cancer diagnosis generates a higher sense of distress than non-neoplastic diseases with poorer prognosis.^[17] High levels of mental distress for sustained periods of time leads to anxiety and depression.^[15] This is compounded by the negative effects that a cancer diagnosis and treatment has on patient's job, family, physical appearance, abilities, independence and finances.^[18]

Depression is the most frequent cancer related symptom which is a psychological disorder of great importance. It worsens during chemotherapy, persists for long time after end of chemotherapy, and is also manifested in the recurrence of the disease and finally is an independent prognostic factor for mortality.^[19] This cancer related depression is affected by many demographic factors like age, gender, marital status, education, SES, etc; apart from genetic factors.

In the present study, the proportion of depression was found to be quite high (73.69%) as compared to most of the other studies conducted by Bhattacharyya S, *et al* (55.7%)^[15]; Mansoor S, *et al* (26.8%)^[40]; Nakaguchi T, *et al* (8-9%)^[41]; Pandey M, *et al* (16.23%)^[28]. However, similar findings were reported by Jadoon NA, *et al* who found the prevalence of

depression to be 66%.^[32] Significantly higher proportion of depression in the present study can be attributed to greater number of female study subjects who are usually willing to express depression and tend to apply various emotional approach coping skills.^[15]

There was no statistically significant relation between age and depression in this study. These results were in consonance with the findings of Yus of S, *et al*;^[20] de Souza BF, *et al*;^[21] and Shayan Z, *et al*.^[22] However, the studies of Bhattacharyya S, *et al*^[15] and Polikandrioti M, *et al*^[23] revealed that elderly patients were more likely to suffer from depression. Beyer K (2009)^[24] and Fann JR, *et al*^[25] observed that younger patients had the higher risk of depression especially in the first year after diagnosis of breast cancer.

In the present study, there was no statistically significant relation between gender and depression. Similar results were obtained by Polikandrioti M, *et al*^[23] and Lavdaniti M, *et al*.^[26] But in the study of Bhattacharyya S, *et al* males were found to be more depressed than their female counterparts.^[15] The overall prevalence of depression was higher in males in the present study but the number of male study subjects was very less, so the difference was not significant. However, the results of Keller and Henrich^[27] and Linden W, *et al*^[15] showed that female cancer patients were more depressed than the males. Inconsistent gender difference may be due to different cultural settings.

The prevalence of depression is generally more in divorced and separated patients which could be due to lack of support from family members.^[20,26] However, there was no statistically significant relation between marital status and prevalence of depression in this study. This can be due to large number of married study subjects in the present study and those who were single had support from other relatives and friends. These results were similar to the findings of de Souza BF, *et al*;^[21] Pandey M, *et al*^[28] and Polikandrioti M, *et al*.^[23] However, Yusof S, *et al*^[20] and Lavdaniti M, *et al*^[26] noted that divorced patients were more depressed than married.

There was no significant relation between level of education and depression in this study. These results were in concordance with the results of de Souza BF, *et al*.^[21] Whereas, in the study of Polikandrioti M, *et al*, higher level of depression was found among patients educated upto primary level as compared to those of secondary and higher/university education.^[23] Shayan Z, *et al* in their study observed that there was a significant association between depression and higher levels of education.^[22]

Socio-economic status of cancer patients has frequently been a predictor of depression. In this study also it was found to have a statistically significant relation depression with prevalence of depression being more in those belonging to lower socio-economic classes. Heilman MV, *et al* also found a relation between financial stress and depressive symptoms in patients with cancer.^[29] However, in the study of Bhattacharyya S, *et al* higher socioeconomic status was found to be a predictor of depression.^[15]

There was no significant relation between stage of malignancy and depression in the present study. This was comparable to the findings of Pandey M, *et al*.^[28]

In the present study, statistically significant relation was found between depression and type of treatment taken, with

depression being more in those who had undergone radiotherapy. However, Matsushita T, *et al* in their study found that the prevalence of depression was more in those who had undergone surgery.^[30] Nikbakhsh N, *et al* in their study noted that depression was more in those who had taken chemotherapy as a single treatment modality.^[31] But, Jadoon NA, *et al*^[32] and Shayan Z, *et al*^[22] observed that there was no relation between type of treatment and depression.

There was no statistically significant relation between ongoing cycle of chemotherapy and depression in the present study. Our result reinforces the results of previous studies by Yusof S, *et al*;^[20] Khudhair AK, *et al*;^[33] Beyer K;^[24] and Polikandrioti M, *et al*.^[23] However, Jim HSL, *et al*^[34] and Bhattacharyya S, *et al*^[15] observed that depression was higher during initial cycles of chemotherapy than later.

Having a co-existent illness is one of the strongest risk factors for having depression in cancer patients.^[11,35] The statistical analysis showed that there was no significant relation between depression and presence of co-existing morbidity in this study. But Polikandrioti M, *et al* found that the co-existence of another disease increases the levels of depression because it worsens the total damaging condition of patient's health.^[23] However, the study of Bhattacharyya S, *et al* revealed that depression among the patients who had other disease conditions was lower (37%) compared to those who did not have other diseases (59.2%).^[15]

Depression remains an under-diagnosed comorbidity in cancer patients, with major implications in patient suffering, mortality and healthcare expenditure.^[36] Underdiagnoses of depression is due to uncertainty in making the diagnosis of depression, false assumption that all cancer patients are "understandably depressed", physician's discomfort in probing too deeply into the psychological distress of patients and lack of familiarity with the treatment options available.^[37,38]

Both psychosocial interventions and pharmacotherapy are effective in treating depression in cancer patients, but the optimal combination and delivery of treatment are unknown.^[39] Some level of sadness is inevitable in all patients suffering from terminal and life-threatening illnesses. However, clinical depression is a treatable illness, and clinician's awareness and assistance can help patients in improving their quality of life and survival.

CONCLUSION

The proportion of depression in cancer patients receiving chemotherapy is quite high. Factors like SES and type of treatment play an important role in contributing to depressive symptoms.

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