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**Original research article**

# Depression and its associated factors among cancer patients receiving chemotherapy in a tertiary care institute, Guntur, Andhra Pradesh

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**Abstract**

**Background:** Cancer is one of the largest health problems in the world. About 10 million people die of cancer each year globally. The diagnosis of the cancer weakens the psychological status of a patient and causes a range of emotional disturbances such as fear, anxiety, distress and disbelief. Chemotherapy for cancer is associated with a number of side effects and that further adds up to the depression of the patients. The present study was conducted to know the depression and its associated sociodemographic factors among the patients receiving chemotherapy.

**Methods:** Present cross sectional study was conducted among the patients receiving chemotherapy at the Medical Oncology unit of GGH, Guntur. 110 patients were interviewed using a pretested and predesigned questionnaire based on Beck's Depression Inventory Scale.

**Results:** Among the participants, 59 (54%) had depression of which 43 (72.88%) had moderate depression, 7 (11.87%) had severe depression and 1 (1.69%) had extreme depression. Depression was higher among females, participants from urban area, middle class and those who have studied up to primary school only and these findings were statistically significant.

**Conclusions:** As there is a considerable amount of psychological distress among the cancer patients, the healthcare professionals, in addition to the treatment for cancer, may consider to get the patients screened for depression before and during the chemotherapy and if required, proper counselling and treatment from psychiatry department can be availed for better prognosis of the patients.

**Keywords:** Cancer, chemotherapy, depression, beck's depression inventory.

## Introduction

Cancer is the second most common cause of death after heart diseases and it accounted for 8.8 million deaths worldwide in 2015 [1]. In India, the incidence of cancer cases is likely to increase from 1.46 million in 2022 to 1.57 million in 2025. The National average for the year 2022 of crude rate of incidence per 100,000 is 100.4. For males, 95.6 and for females 105.4. Lung and breast cancers in males and females, respectively, remain to be the leading sites of cancer. The current estimates for cancer in India increased by five percent (14, 61, 427 in 2022 compared to 13, 92, 179 in 2020) [2]. An enormous amount of psychological distress succeeds the diagnosis of cancer. The unaddressed psychiatric comorbidities among cancer patients may cause increased morbidity, poor adherence to treatment, frequent and longer hospital stays contributing further to poor quality of life, poorer outcomes and increased mortality [3]. The psychiatric comorbidities in the cancer patients are often undiagnosed and underdiagnosed [4]. Depressive symptoms can be caused by the cancer directly or by the various chemotherapeutic agents used for its treatment. Depression can also occur as a functional response to the disabilities. The prevalence of depression in cancer patients also varies with cancer site, clinical course, type of treatment and presence of pain. The prevalence of major depression in cancer patients, on an average, ranges from 13% to 40% [5]. Detection of depression among cancer patients is very essential as it will be followed by appropriate interventions such as counselling, psychotherapy and introduction of complementary medicine like yoga/meditation. Also, it is required to know the appropriate time of referral to a psychiatrist for further treatment [6]. The data pertaining to depression among cancer patients from developing countries is scanty and more so from Indian community especially from the State of Andhra Pradesh. Hence the present cross-sectional observational study was taken up with an objective to estimate the prevalence of depression and its associated sociodemographic factors in cancer patients receiving chemotherapy in a tertiary care institute.

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**Methods**

**Study type and Setting:** A cross sectional observational study was conducted at Medical Oncology unit of Government General Hospital, Guntur during 1st November- 31st December 2023.

**Study population:** Basing on the prevalence of depression in patients undergoing chemotherapy from previous study [7], the sample size was calculated as 98 (95% Confidence interval and 10% absolute precision). Considering 10% non-responsive rate, the sample size was rounded off to 110. There were 356 patients undergoing chemotherapy every month and by systematic random sampling, so in the 2 months' time frame, every 6th patient was included in the study.

All cancer patients aged above 18 years receiving chemotherapy were included in the study.

Patients who were very sick and unable to communicate, patients with past psychiatric illness and cured patients and patients who didn't give consent were excluded from the study.

**Study tools**: The data was collected using predesigned and pretested questionnaire after taking informed consent from the participants.

Beck's depression inventory with 21 questions was used to evaluate the level of depression.

Data entry was done in MS Excel and analysis was done using Epi Info.

**Results**

Total 110 patients undergoing chemotherapy participated in the study, aged between 32-73, with mean age being 50.25±8.68 years. Majority of the participants were females 81 (73.63%) and 29 were males (26.36%).

Among the study participants, most of them belonged to Hindu religion 89 (80.9%), urban area 68 (61.82%) and married 94 (85.45%). Majority of the participants 57 (51.81%) belonged to middle class as per revised BG Prasad classification. (Table 1).

**Table 1:** Sociodemographic details of the participants. N=110

| Variable | Category | No. of Participants | % |
|---|---|---|---|
| Age | 25-35 | 02 | 1.82 |
| | 36-45 | 17 | 15.45 |
| | 46-55 | 64 | 58.18 |
| | 56-65 | 23 | 20.91 |
| | 66-75 | 4 | 3.64 |
| Gender | Male | 29 | 26.36 |
| | Female | 81 | 73.64 |
| Geographical area | Urban | 68 | 61.82 |
| | Rural | 42 | 38.18 |
| Religion | Hindu | 89 | 80.91 |
| | Christian | 14 | 12.73 |
| | Muslim | 07 | 6.36 |
| Educational status | Illiterate | 32 | 29.1 |
| | Primary School | 39 | 35.45 |
| | Middle School | 14 | 12.73 |
| | High School and above | 25 | 22.72 |
| Marital status | Single | 6 | 5.45 |
| | Married | 94 | 85.45 |
| | Separated/Divorced | 8 | 7.27 |
| | Widowed | 2 | 1.82 |
| Socioeconomic status | Upper class | 7 | 6.36 |
| | Upper middle class | 18 | 16.36 |
| | Middle class | 57 | 51.82 |
| | Lower middle class | 16 | 14.55 |
| | Lower class | 12 | 10.91 |

Among the participants, 28 participants (25%) were normal, 23 (21%) had mild mood disturbances and 59 (54%) had depression. (Figure 1).

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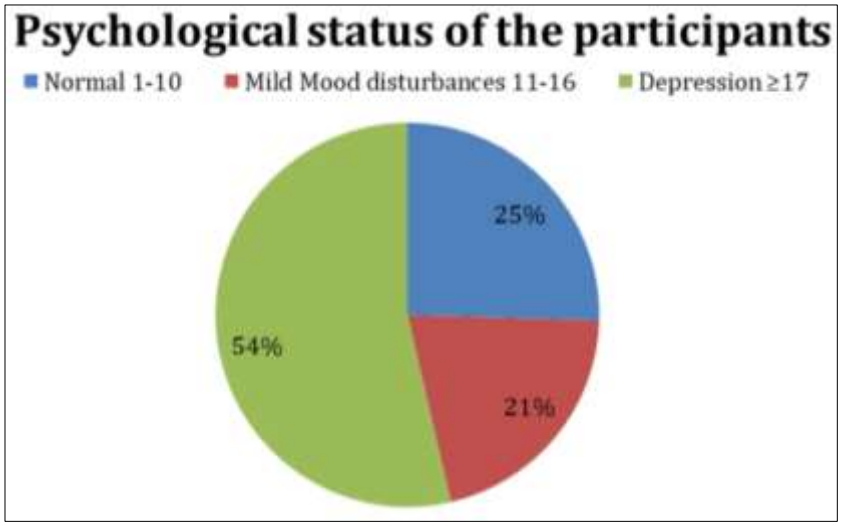


**Fig 1:** Psychological status of the cancer patients as per becks depression inventory score

Among the depressed participants (59), majority (72.88%) had moderate depression and only one had extreme depression. (Table 2).

**Table 2:** Classification of the participants on the basis of their level of depression. N=59

| Level of depression | Number (N) | Percentage (%) |
|---|---|---|
| Borderline clinical depression (17-20) | 08 | 13.56 |
| Moderate depression (21-30) | 43 | 72.88 |
| Severe depression (31-40) | 07 | 11.87 |
| Extreme depression (>40) | 01 | 1.69 |
| Total | 59 | 100 |

Depression was higher among females, participants from urban area, middle class and those who have studied up to primary school and these findings were statistically significant. (Table 3).

**Table 3:** Prevalence of depression among sociodemographic variables N=59

| Variable | Depression | $X^2$ | P Value |
|---|---|---|---|
| **Gender** | | | |
| Male | 08 (7.27%) | 9.37 | 0.002♦♦ |
| Female | 51 (46.36%) | | |
| **Age group** | | | |
| 25-35 | 01 (0.91%) | 7.07 | 0.13 |
| 36-45 | 06 (5.45%) | | |
| 46-55 | 41 (37.27%) | | |
| 56-65 | 09 (8.18%) | | |
| 66-75 | 02 (1.82%) | | |
| **Geographical area** | | | |
| Urban | 49 (44.55%) | 22.4 | 0.00001♦♦ |
| Rural | 10 (9.09%) | | |
| **Educational status** | | | |
| Illiterate | 11 (10%) | 19.76 | 0.0002♦♦ |
| Primary | 30 (27.27%) | | |
| Middle | 10 (9.1%) | | |
| High school& above | 08 (7.27%) | | |
| **Marital status** | | | |
| Single | 01 (0.91%) | 7.004 | 0.07 |
| Married | 50 (45.45%) | | |
| Separated/Divorced | 07 (6.36%) | | |
| Widowed | 01 (0.91%) | | |
| **Socioeconomic status** | | | |
| Upper class | 01 (0.91%) | 16.58 | 0.002□□ |
| Upper middle class | 04 (3.64%) | | |
| Middle class | 36 (32.73%) | | |
| Lower middle class | 12 (10.91%) | | |
| Lower class | 06 (5.45%) | | |

□□ indicates statistically significant at $p<0.05$

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**Discussion**

While treating the patients of cancer, it is utmost important to evaluate their psychological status as it significantly interferes with the recovery and thereby their morbidity and mortality. In this study, the proportion of depression was found to be 54% which was similar to findings of Bhattacharya *et al*. [7] (55.7%) and Sahoonja C *et al*. [8] (60%). But it was low compared to other studies like those of Vaidya SS *et al*. [1] (73.69%) and Jadoon *et al*. [9] (66%). Lower prevalence of depression was observed in some other studies like Nakaguchi *et al*. [10] (8-9%), Pandey *et al*. [11] (16.23%) and Mansoor *et al*. [12] (26.8%).

The higher prevalence in this study compared to those with lower prevalence may be attributed to the participation of higher number of females and Keller and Henrich[13] found that women are more likely than men to engage in illness related behavior including perceiving and reporting symptoms, utilizing informal and health care services. In the present study, 13.56% had borderline clinical depression, 72.88% had moderate depression, 11.87% severe depression and 1.69% extreme depression. Similar findings were noted in the studies of Vaidya SS *et al*. [1] and Yusof *et al*. and Jang *et al*. [14, 15]. In this study, females showed higher prevalence of depression which was statistically significant in accordance with the study done by Bakhiet TE *et al*. [16] but this finding is in contrast to the studies done by Pandey *et al*. [11] and Gour S *et al*. [17] wherein males had higher depression than their female counterparts.

In the present study, patients aged 46-55 years had higher depression which was similar to a finding in the study conducted by Gour S *et al*. [17] which can be explained by the fact that older patients tend to have other comorbid conditions that adds up to the depression and other psychological illnesses. The variation in the prevalence of depression can be attributed to use of different study samples, different scales and difference in study settings.

**Conclusion**

This study was undertaken to estimate the prevalence of depression among cancer patients receiving chemotherapy and to know the sociodemographic factors associated with it. As there is a considerable amount of psychological distress among the cancer patients, the healthcare professionals, in addition to the treatment for cancer, may consider to get the patients screened for depression before and during the chemotherapy and if required, proper counselling and treatment from psychiatry department can be availed for better prognosis of the patients. The limitations of this study are all of them pertaining to a cross sectional study, the staging of the cancer was not taken into account during the present study due to lack of access to the medical case sheets and as some patients receive radiotherapy and surgery in addition to the chemotherapy which could add up to the burden of depression among the patients but was not considered during the study.

Large scale studies with larger population size and different study designs may be taken up to address the important but neglected psychological aspects of the cancer patients.

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**Declarations**

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**Conflict of interest:** None declared.

**Ethical approval:** The study was approved by the Institutional Ethics Committee.

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