

# Psycho-social and general health status after surgical treatment in cancer patients: An Indian prospect

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## ABSTRACT

**Objective:** The objective of this study was to evaluate the psychological, social well-being and general state of health in patients suffering from cancer, before and after surgical treatment. **Experimental/Computational Work Done:** Subjects were selected from HCG MEDI-SURGE Hospital, India, who had undertaken surgical treatment for various cancers. The present study consists of a single centered, behavioral, prospective study designed to evaluate 100 cancer patients with their psycho-social and general health status. The population of patients chosen for the study contained patients of both sexes. Data were obtained by using two questionnaires, i.e., General Health Questionnaire (GHQ-28) and Hospital Anxiety and Depression Scale (HADS). Obtained data were evaluated for correlation of incidence of psycho-sociological aspect with gender, age, and family background history. Statistical analysis was carried out by using the Student *t*-test and ANOVA. **Results and Discussion:** Higher percentage of depression and anxiety were observed after surgical treatment among breast cancer patients and head and neck cancer (HNC) patients. Stage I and III colorectal cancer, stage I-IV breast and HNC cancer patients did not show significant change in GHQ-28 and HADS scores after surgical treatment. The female patients of colorectal and HNC cancer showed higher total GHQ-28 and HADS scores compared to male. **Conclusions:** From this study it can be concluded that cancer patients after surgical treatment show an increase in the prevalence of psychiatric morbidity. Depression and anxiety disorders are especially common and detection of these disorders is an important in the overall disease management in India.

**Key words:** Anxiety, cancer, depression, general health status, psycho-oncology

## INTRODUCTION

The psycho-oncology study is an unexplored field of research in the Indian subcontinent. The centuries-old stigma attached to cancer and its consequences have been feared and thus delayed any exploration of how it is dealt with. This situation changed in the United States in the 1970s when patients began to be aware of their cancer diagnosis, permitting the first formal study of the psychological impact of cancer. Valid assessment instruments were developed which were used in well-designed studies. Data from these studies and clinical

observations led to increased recognition that psychosocial services are needed by many patients and provide significant assistance in coping with illness. Psycho-oncologist research in recent years has focused on assessment of distress and mental disorders in cancer patients. In developed nations, the psychosocial care is becoming more widely available due to higher number of cancer centers, even though the extent of distress is often not met or treated.<sup>[1-6]</sup>

The field of psycho-oncology is moving forward rapidly, especially for a relatively new field but there are advances in the areas psychopharmacology and psychiatric treatments for cancer patients and this information can be utilized to conduct tailor made psycho-social intervention to meet the needs of patients. Since 1985 clinical trials have been carried out to study the psychocological behavior of patients suffering from cancer. Clinical trials of antidepressants for depressive disorders in patients with cancer were reviewed extensively by Kash *et al.*<sup>[7]</sup> Cancer patients and survivors are willing to discuss their needs and interests relating to diagnosis and treatment.<sup>[7]</sup>

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<b>Quick Response Code:</b> 	<b>Website:</b> <a href="http://www.ccij-online.org">www.ccij-online.org</a>
	<b>DOI:</b> 10.4103/2278-0513.106269

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White *et al.*<sup>[8]</sup> studied on psychological aspects of cancer patients in rural areas of western Australia. They studied 2079 patients with demographic questionnaire and concluded that rural patients had unmet needs on psychological grounds and practical grounds. Pitcheatly *et al.*<sup>[9]</sup> conducted a randomized trial on 465 patients having different cancer subtypes to check development of anxiety and depression after 6 months and 12 months of detection of cancer. They concluded that newly diagnosed patients are at high risk of development of anxiety and depression disorder.<sup>[9]</sup>

The development of psychiatric comorbidity in cancer patients is best described as a continuum beginning with small distress followed by adjustment disorder and finally leading to depressive or anxiety disorder. Risk factors are categorized into biological, psychological, and social components.<sup>[10]</sup> As per previous reports the interests of cancer patients in psychological support correlated more with gender, age, and individual coping strategies than distress.<sup>[11]</sup>

The present study traces the changes in the understanding and management of the psychological aspect of cancer, and reviews some of the attitudinal barriers that contributed to the delay of psycho-oncology becoming an accepted subspecialty of oncology in India. In the present work, an approach has been made to study the psychological status of patients in India who have taken surgical treatment for cancer. A total of 100 patients were selected from India, who had undertaken surgery treatment for various cancers. Then the population of patients evaluated for their psycho-social status after surgical treatment by using different questionnaires and/or scales. The percentage of patients suffering from psycho-social problem calculated and reported. The results of the evaluation subjected to statistical analysis.

Cancer-specific screening instruments were developed to detect patients with significant needs. Established instruments are the hospital anxiety and depression scale (HADS) and NCCN distress thermometer.<sup>[11-14]</sup> Also, Petersen and Quinlivan, investigated the effect of psychosocial intervention on patients with gynecological cancer. Groups completed the Hospital Anxiety and Depression Scale (HADS) and General Health Questionnaire 28 (GHQ-28).<sup>[7,15]</sup> Thus both the above scales are used in the present study, to evaluate psychosocial status of patients who underwent surgery for cancer.

## MATERIALS AND METHODS

### Location

The present study was carried out in India.

### Study design

The study was carried out based on the design adopted previously by various researchers.<sup>[16-18]</sup> The prospective

study was done on 100 cancer patients receiving surgery and/or chemotherapy at a hospital in India between January 2011 and May 2011. Patients who were eligible for this study included those with age 18 years or more with newly diagnosed, histological confirmed stage I–IV carcinoma, and who were taking any surgical and/or chemotherapy treatment for any stages of cancer. Those who had received hormonal therapy and patients with end-stage disease were excluded from this study. Patients who were coming for check up after 2 weeks were screened as per inclusion and exclusion criteria of the study. Patients were explained completely about the study and after taking informed consent, patients were enrolled in the study for the only purpose of the data collection. After collection of data from all the patients within the study period, they patients were grouped according to age, gender, and family history for data and statistical analysis. This study was approved by the Independent Ethics Committee of the hospital.

### Selection of patients

#### Subjective eligibility criteria

- a. Inclusion criteria
  - Patients of either gender above 18 years who were under treatment for cancer.
  - Patients willing to provide informed consent prior to any study procedure.
  - Patients with life expectancy of more than 3 months.
  - Patients who were being recommended for surgery.
- b. Exclusion criteria
  - Female subjects who were pregnant and on lactation.
  - Patients who had congestive heart failure, myocardial infarction, and/or any other serious cardiac problem.
  - Subjects who were suffering from psychiatric disorder.
  - Subjects unable to provide informed consent.

#### Discontinuation of participation from the study

- Subjects could voluntarily withdraw consent at any time for any reason.
- The investigator may elect any subject at any time to withdraw from the study for any reason, if he considers the best.
- If the subject is discharged from the hospital and transferred to another facility or hospital for further treatment.

### Instruments for study

#### General health questionnaire

The questionnaire included 28 questions assessing patient's general state of health and emotional state. For each question, four codified answers were possible ("no"; "not more than usual"; "a little more than usual"; "much more than usual"). These answers were scored as the first answer score—0, second answer score—1, third answer score—2, and the last answer score—3, respectively.

A total score that equals or exceeds 4 was considered as pathologic.<sup>[16-18]</sup>

#### Hospital anxiety and depression scale

This questionnaire had 14 multiple-choice questions with two subscales: the even numbers were for anxiety and the odd numbers for depression. The final score detected had a range from normal (score 0-7), borderline abnormal (score 8-10), and abnormal (score 11-21) levels of anxiety or depression.<sup>[16-18]</sup>

#### Data collection

Data were collected over a period of 4 months using a standardized pretested interview questionnaire GHQ-28 and HADS which were translated into local language. They showed good validity and reliability properties both for the English original and the translations into various languages including Gujarati. The GHQ-28 and anxiety and depression-specific HADS questionnaires were administered after 2 weeks of completed treatment. It was specifically designed to reveal sociodemographic characteristics (age, marital status, education, etc.). Patients were interviewed and asked to score how each aspect of their psychosocial and general health status had been affected by their disease or after surgical treatment in 2 weeks. The interview was conducted on a single occasion for each patient. All demographic and clinical data were collected from the patient or from the hospital records.

#### Statistical analysis

Descriptive statistics have been reported as mean values and standard deviation. To compare quantitative and qualitative data the Student *t*-test was used. A *P*-value < 0.05 was considered to be statistically significant. All data had been collected in a suitable database and analyzed using statistical software (Graph pad Prism Version 5.00)<sup>®</sup>. Tests used in analysis of data were done at 5% level of significance. ANOVA (Analysis of Variance) was used for the comparison for different parameters. *Post hoc* test to analyze data after ANOVA was done using Dunnett's test (nonparametric).

#### Ethics

The study was performed in accordance with the ethical standards of the Helsinki Declaration and Good Clinical Practice guidelines. The Ethics committee at the HCG MEDI-SURGE HOSPITAL gave approval for the study. All the patients received verbal and written information and written consent was obtained before their inclusion in the study.

## RESULTS

#### Patients' characteristics

The sample consisted of 58 males and 42 females, aged 18-81. None of these patients were known to suffer from

psychiatric illnesses. As far as civil status is concerned, 98 of the total patients (98%) were married, none was a widow, and 2 were unmarried. All patients were Indian citizens. Only 10-15% had achieved a higher education up to graduation level. The prevalence of colorectal cancer (CC) was 42.9% in the age range of 58-67 years whereas in breast cancer (BC) and head and neck cancer (HNC), it was 34.5% and 35.9% in the age range of 38-47 years, respectively. When the cancer patients were categorized according to their gender, 71.4% (CC), 94.9% (HNC), and 54.5% (other cancers) consisted of male patients whereas 28.6% (CC), 100% (BC), 5.1% (HNC), and 45.5% (other cancers) were female patients. CC (42.9%), HNC (43.6%), and other cancers (54.5%) patients had family income 5000-8000/rupees per month and belonged to middle socio-economic status and had financial burden whereas BC patients were mainly housewives. CC patients (42.9%) had mainly stage-III cancer and BC patients (51.7%) had mainly stage-II cancer whereas HNC patients (66.7%) had mainly stage-IV cancer [Table 1].

**Table 1: Demographics and clinical characteristics of the cancer patients (n = 100)**

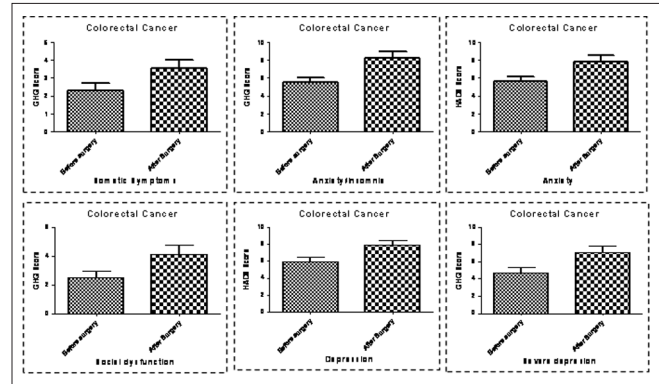
Parameters	Surgical treatment (n=100)			
	Colorectal cancer	Breast cancer	Head and neck cancer	Other cancers
Age groups				
18-27	01 (04.8)	01 (03.4)	00	02 (18.2)
28-37	01 (04.8)	04 (13.8)	07 (17.9)	01 (09.1)
38-47	02 (09.5)	10 (34.5)	14 (35.9)	00
48-57	05 (23.8)	06 (20.7)	09 (23.1)	03 (27.3)
58-67	09 (42.9)	06 (20.7)	07 (17.9)	02 (18.2)
68>	03 (14.3)	02 (06.9)	02 (05.1)	03 (27.3)
Total patients	21 (100)	29 (100)	39 (100)	11 (100)
Education status				
Illiterate	02 (09.5)	03 (10.3)	04 (10.3)	00
Primary	04 (19.0)	08 (27.6)	09 (23.1)	02 (18.2)
Secondary	05 (23.8)	05 (17.2)	09 (23.1)	04 (36.4)
Higher secondary	08 (38.0)	09 (31.0)	14 (35.9)	04 (36.4)
U.G./P.G.	02 (09.5)	04 (13.8)	03 (07.7)	01 (09.1)
Marital status				
Single	00	01 (3.44)	00	01 (9.09)
Married	21 (100)	28 (96.55)	39 (100)	10 (90.9)
Widowed	00	00	00	00
Family income				
No income	00	16 (55.2)	02 (05.1)	01 (09.1)
< Rs. 3000	02 (09.5)	02 (06.9)	03 (07.7)	00
Rs. 3000-5000	08 (38.0)	07 (24.1)	12 (30.8)	03 (27.3)
Rs. 5000-8000	09 (42.9)	03 (10.3)	17 (43.6)	06 (54.5)
> Rs. 8000	02 (09.5)	01 (03.4)	05 (12.8)	01 (09.1)
Gender				
Male	15 (71.4)	00	37 (94.9)	06 (54.5)
Female	06 (28.6)	29 (100)	02 (05.1)	05 (45.5)
Stage				
I	05 (23.8)	05 (17.2)	01 (02.6)	00
II	07 (33.3)	15 (51.7)	04 (10.3)	03 (27.3)
III	09 (42.9)	08 (27.6)	08 (20.5)	08 (72.7)
IV	0 (0)	01 (03.4)	26 (66.7)	00

\*Numbers in parenthesis indicate percentage

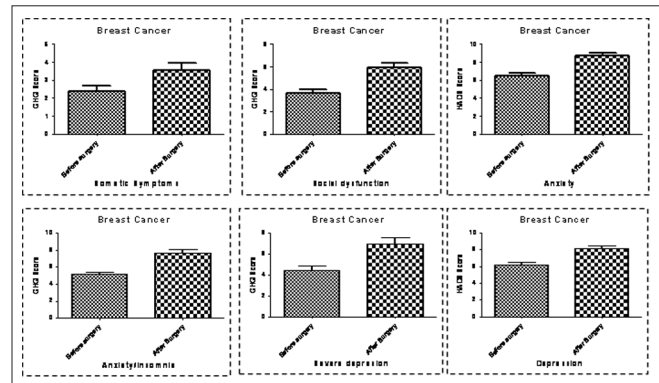
*Evaluation of GHQ-28 and HADS scores before and after surgical treatment in cancer*

The GHQ-28 provides scores on four subscales; anxiety/insomnia, depression, somatic symptoms, and social dysfunctions [Table 2]. As shown in Figure 1, there was a significant increasing total GHQ-28 score in CC patients who underwent colectomy therapy (surgical) indicative of overall psychiatric morbidity ( $P < 0.01$ ), and GHQ-28 subscores also indicative of greater social dysfunction ( $P < 0.01$ ), anxiety/insomnia ( $P < 0.01$ ), somatic symptoms ( $P < 0.05$ ), and severe depression ( $P < 0.01$ ). The HAD scale was also known to show the correlation between those patients having high levels of both depression and anxiety. Anxiety and depression levels increased significantly ( $P < 0.01$ ) after surgical treatment in colorectal cancer patients [Figure 1]. The GHQ-28 for breast cancer patients is shown in [Table 3]. As shown in Figure 2, there was a significant increasing total GHQ-28 score in breast cancer patients who underwent modified radical mastectomy or breast conservative surgery therapy indicative of overall psychiatric morbidity ( $P < 0.001$ ), and GHQ-28 subscores also indicative of greater social dysfunction ( $P < 0.001$ ), anxiety/insomnia ( $P < 0.001$ ), somatic symptoms ( $P < 0.01$ ), and severe depression ( $P < 0.001$ ). Anxiety and depression levels increased significantly ( $P < 0.01$ ) after surgical treatment in breast cancer patients from the HAD scale [Figure 2]. The GHQ-28 for HNC patients is shown in Table 4. As shown in Figure 3, there was a significant increasing

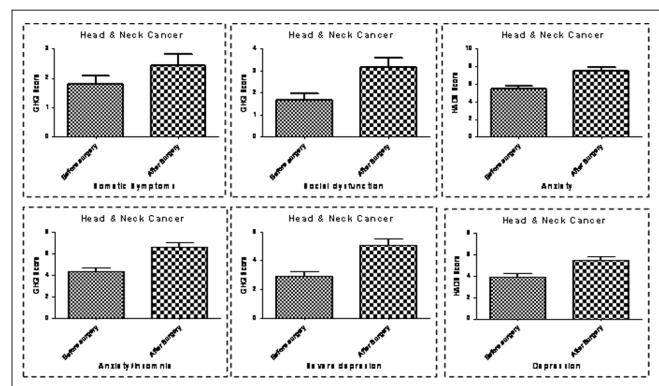
total GHQ-28 score in HNC patients who underwent total thyroidectomy, laryngectomy, oesophagogastratomy, etc. therapy (surgical) indicative of overall psychiatric morbidity ( $P < 0.01$ ), and GHQ-28 subscores also indicative of greater social dysfunction ( $P < 0.01$ ), anxiety/insomnia



**Figure 1:** Mean score of subscales of GHQ-28 and HADS before and after surgical treatment in colorectal cancer patients ( $n = 21$ ). Data expressed as Mean  $\pm$  S.E.M. The statistical significance of GHQ-28 and HADS subscales before and after surgical treatment was determined using Student's *t*-test



**Figure 2:** Mean score of sub-scales of GHQ-28 and HADS before and after surgical treatment in breast cancer patients ( $n = 29$ ). Data expressed as Mean  $\pm$  S.E.M. The statistical significance of GHQ-28 and HADS subscales before and after surgical treatment was determined using Student's *t*-test



**Figure 3:** Mean score of sub-scales of GHQ-28 and HADS before and after surgical treatment in head and neck cancer patients ( $n = 39$ ). Data expressed as mean  $\pm$  S.E.M. The statistical significance of GHQ-28 and HADS subscales before and after surgical treatment was determined using Student's *t*-test

**Table 2: Distribution of GHQ-28 and HADS subscale scoring for CC patients**

Colorectal cancer GHQ-28 scores		
Subscales	Before surgery <sup>#</sup>	After surgery <sup>#</sup>
Somatic symptoms	2.28 $\pm$ 0.44	3.52 $\pm$ 0.51*
Anxiety/insomnia	5.52 $\pm$ 0.55	8.19 $\pm$ 0.74**
Social dysfunction	2.52 $\pm$ 0.45	4.14 $\pm$ 0.67**
Severe depression	4.71 $\pm$ 0.58	7.04 $\pm$ 0.77**
HADS scores		
Anxiety	5.66 $\pm$ 0.51	7.85 $\pm$ 0.63**
Depression	5.90 $\pm$ 0.51	7.85 $\pm$ 0.58**

<sup>#</sup>Data expressed as Mean  $\pm$  S.E.M, \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$

**Table 3: Distribution of GHQ-28 and HADS subscale scoring for BC patients**

Breast cancer GHQ-28 scores		
Subscales	Before surgery <sup>#</sup>	After surgery <sup>#</sup>
Somatic symptoms	2.37 $\pm$ 0.32	3.55 $\pm$ 0.38**
Anxiety/insomnia	5.13 $\pm$ 0.29	7.69 $\pm$ 0.35***
Social dysfunction	3.65 $\pm$ 0.31	5.96 $\pm$ 0.37***
Severe depression	4.41 $\pm$ 0.43	6.93 $\pm$ 0.60***
HADS scores		
Anxiety	6.48 $\pm$ 0.30	8.69 $\pm$ 0.35***
Depression	6.17 $\pm$ 0.33	8.10 $\pm$ 0.34***

<sup>#</sup>Data expressed as Mean  $\pm$  S.E.M, \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$

( $P < 0.01$ ), somatic symptoms ( $P < 0.05$ ), and severe depression ( $P < 0.01$ ).

*Stagewise evaluation of total GHQ-28 and HADS scores stagewise in cancer patients*

As shown in Figures 4, 5 there was no significant difference in GHQ-28 and HADS scores in different stages of CC patients. The GHQ-28 and HADS scores were low before surgical treatment in CC patients which were increased after surgical treatment. As shown in Figure 5, there was no significant difference in GHQ-28 scores in different stages of BC patients whereas HADS scores significantly decreased in stage-IV BC patients after and before surgical treatment, so a negative correlation was found between HADS score and stage of tumors. The GHQ-28 and HADS scores were low before surgical treatment in BC patients which were increased after surgical treatment. As shown in Figure 6, there was no significant difference in GHQ-28 scores in different stages of HNC patients whereas HADS scores significantly decreased in stage-IV HNC patients after and before surgical treatment, so a negative correlation was found between GHQ-28 score and stage of tumors. The GHQ-28 and HADS scores were low before surgical treatment in HNC patients which were increased after surgical treatment.

*Genderwise evaluation of total GHQ-28 and HADS scores in cancer patients*

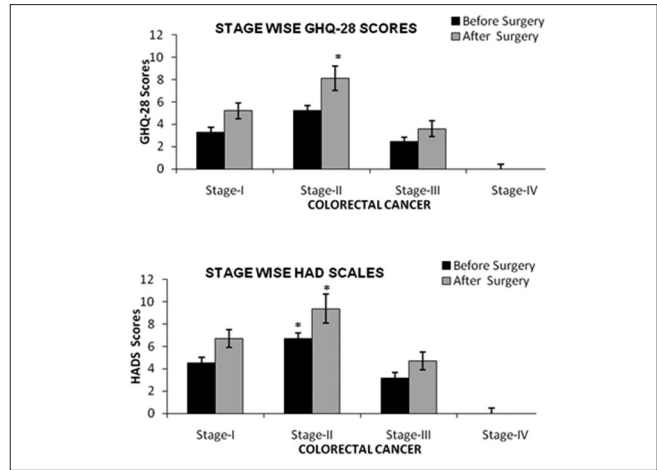
The female patients of CC and HNC were shown higher total GHQ-28 and HADS scores compared to male. Our results indicated that female patients of CC and HNC were more sensitive to somatic symptoms, social dysfunctioning, anxiety, and depression compared to male colorectal cancer patients [Figures 7 and 8].

**DISCUSSION**

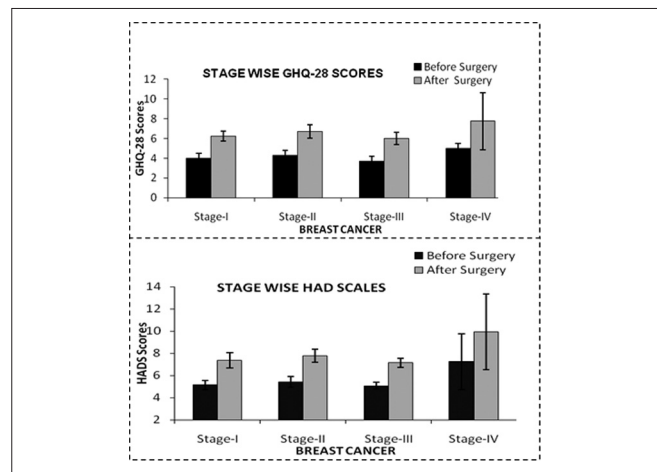
The population of patients chosen for the study contained patients of both sexes and nearly all age group between 18 and 81 years of age. It was found that more male patients suffered from colorectal cancer and head and neck cancer than females. This study demonstrates that psychiatric morbidity and general health status can be detected by

Table 4: Distribution of GHQ-28 and HADS subscale scoring for HNC patients		
Head and neck cancer GHQ-28 scores		
Subscales	Before surgery <sup>#</sup>	After surgery <sup>#</sup>
Somatic symptoms	1.79 ± 0.29	2.43 ± 0.37*
Anxiety/insomnia	4.35 ± 0.28	6.59 ± 0.41**
Social dysfunction	1.69 ± 0.28	3.17 ± 0.42**
Severe depression	2.92 ± 0.33	5.07 ± 0.45**
HADS scores		
Anxiety	5.48 ± 0.33	7.51 ± 0.37**
Depression	3.94 ± 0.35	5.46 ± 0.41**

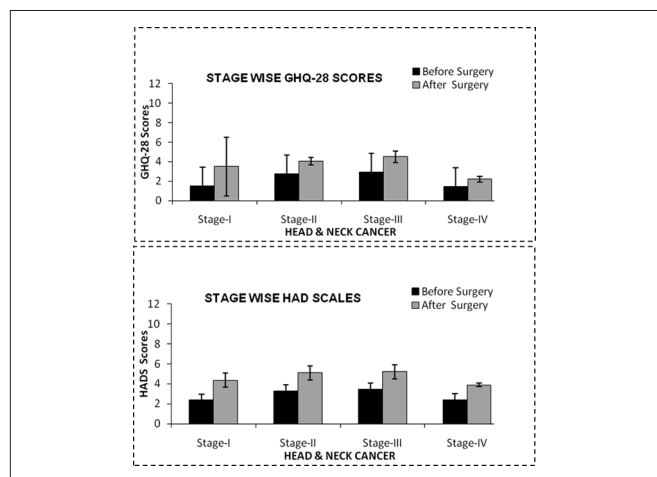
<sup>#</sup>Data expressed as Mean ± S.E.M, \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$



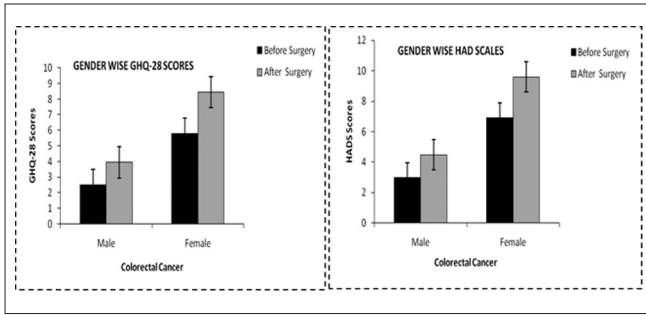
**Figure 4:** Stagewise mean score of total GHQ-28 and HADS before and after surgical treatment in colorectal cancer patients ( $n = 21$ ). (Data expressed as mean ± S.E.M. (\* $P < 0.05$  compared with before surgical treatment). (ANOVA followed by Tukey's test (Parametric) or Dunnett's test (nonparametric))



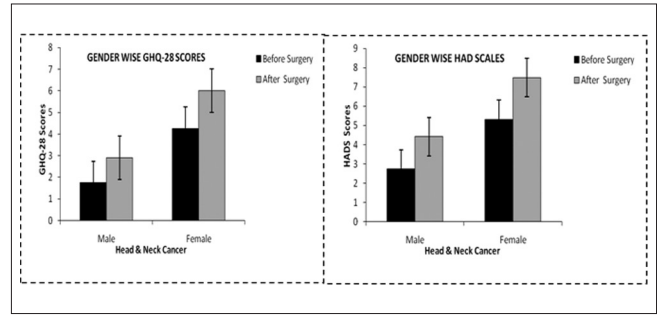
**Figure 5:** Stagewise mean score of total GHQ-28 and HADS before and after surgical treatment in breast cancer patients ( $n = 21$ ). (Data expressed as mean ± S.E.M compared with before surgical treatment). (ANOVA followed by Tukey's test (Parametric) or Dunnett's test (nonparametric))



**Figure 6:** Stagewise mean score of total GHQ-28 and HADS before and after surgical treatment in head and neck cancer patients ( $n = 21$ ). (Data expressed as mean ± S.E.M. compared with before surgical treatment). (ANOVA followed by Tukey's test (Parametric) or Dunnett's test (nonparametric))



**Figure 7:** Stagewise mean score of total GHQ-28 and HADS before and after surgical treatment in head and neck cancer patients ( $n = 21$ ). (Data expressed as mean  $\pm$  S.E.M compared with before surgical treatment) (Student's *t*-test)



**Figure 8:** Genderwise mean score of total GHQ-28 and HADS before and after surgical treatment in head and neck cancer patients ( $n = 21$ ). (Data expressed as mean  $\pm$  S.E.M. compared with before surgical treatment) (Student's *t*-test)

GHQ-28 and HADS. Similar results have been reported in an earlier study where the population consisted of 58 males and 42 females in which 29 females had breast cancer whereas 13 females had other cancers.<sup>[19]</sup> In a previous study with a large sample of cancer patients ( $n = 4496$ ), the overall prevalence rate of psychological distress was reported to be 35.1%; the rate varied from 43.4% for lung cancer to 29.6% for gynecological cancer.<sup>[20]</sup> As reported by Notani *et al.*<sup>[21]</sup> colorectal cancer burden has been steadily rising in women and was the fourth most common cancer in 1975 and has reached the second position by 1990. Also, the disease is more common in women of the developed countries than in the developing countries of Asia and Africa.<sup>[22]</sup>

Multidimensional instruments like the symptoms check list-90 can be used if one wants to assess a patient's position on several dimensions simultaneously, for instant when one is interested in the course of outcome of depression— anxiety comorbidity. For this purpose, Goldberg and Hillier (1979) developed a multidimensional version of the General Health Questionnaire, the GHQ-28(Validity). Both GHQ-28 and HADS have advantage that they can be used for all three purposes, i.e., as an overall measure of severity, as a screening device, and as a multidimensional measure of specific psychopathology. This is probably the reason why they have been so extensively used in psychiatric research.<sup>[22]</sup>

In the present study, the prevalence of colorectal cancer was 42.9% in the age range of 58–67 years whereas in breast and head and neck cancer in age range of 38–47 years. This results are consistent with earlier studies carried out by Safaee *et al.*<sup>[23]</sup> the present study detected somatic symptoms, anxiety/insomnia, social dysfunction, severe depression by the GHQ-28 and HADS, and revealed significant changes after surgical treatment in CC patients, BC patients, and HNC patients when compared with before surgical therapy.

This study also showed clearly a higher percentage of depression and anxiety was observed after surgical treatment among BC patients and HNC patients. Surprisingly,

opposite result was obtained in colorectal cancer patients which may be due to lack of patients of stage-IV colorectal cancer in our study. The study data showed significant influence of gender on anxiety and depression. Significant levels of anxiety and depression were observed in females when compared with males. Similar reports have show female patients reported significantly more anxiety than man, patients less than 30 years old expressed less anxiety than all other patient.<sup>[19]</sup> Aass *et al.*, reported age and gender had no influence in the occurrence of depression.<sup>[24]</sup>

The present study did not include measurement influence of age on anxiety, depression, and others. Here, colorectal cancer patients, breast cancer patients, and head and neck cancer patients showed a significant increase in the GHQ-28 subscale score such as anxiety/insomnia, depression, somatic symptoms, and social dysfunctions after surgical treatment and anxiety and depression scores for the HAD scale. Out of four subscales of GHQ- 28, cancer patients revealed significant increase in anxiety, social dysfunctions, and severe depression, so it can be said that levels of anxiety and depression increased drastically after surgical treatment in cancer patients. HAD scale results also supported to the GHQ-28 results for anxiety and depression. Similarly, Vincenzo *et al.*<sup>[16]</sup> reported comparatively assessment of the psychological, social well-being, and general state of health in patients with stage 1 renal cell carcinoma (RCC). Based on report of Vincenzo *et al.*<sup>[16]</sup> it can be said that surgical treatment in cancer patients affect the psycho-social and general health status. The general health status was impaired in 12.5% of cases after radical nephrectomy and in 7% after elective nephron sparing surgery. Hartl *et al.*<sup>[22]</sup> reported quality of life, anxiety, and oncological factors for breast cancer patients, QoL scores of breast cancer patients improved over time, but impairments in terms of anxiety, body image, and sexual functioning were still observed.

In the stagewise evaluation of GHQ-28 and HADS score, stage I and stage III colorectal cancer patients did not show significant change in GHQ-28 and HADS scores

after surgical treatment, whereas stage II colorectal cancer patients showed a significant change in GHQ-28 and HADS scores after surgical treatment. Sandin *et al.*<sup>[25]</sup> studied the psychopathological impact associated with a second-stage screening for breast cancer and found out that women attending the second-stage screening exhibited significantly higher levels of breast cancer worries, fears, and beliefs than women attending for routine screening before obtaining the results of the mammogram.

In the present study, for BC and HNC patients, there was no significant difference between the score of GHQ-28 and HAD scale before and after surgical treatment from stages I-IV. Similarly, Kissane *et al.*<sup>[26]</sup> studied psychological disorder in women with early stage and advanced breast cancer. Hidderley *et al.*<sup>[27]</sup> studied the effect autogenic training in early-stage cancer patients in relation to psychological status used on a group of early-stage breast cancer patients and reported that HADS scores remained similar in the women who did not receive autogenic training.

The female patients of CC and HNC were shown higher total GHQ-28 and HADS scores compared to male. Results do not go in hand with findings of Goldzweig *et al.*<sup>[28]</sup> who carried out a similar study on gender and psychological distress among colorectal cancer patients and found out that men were found to be more distressed than their wives ( $P < 0.0001$ ).

## CONCLUSION

This study indicates that cancer patients after surgical treatment show an increase in the prevalence of psychiatric morbidity in the community. Depression and anxiety disorders are especially common among cancer patients. Detection of these disorders is an essential risk in the overall management plan. GHQ-28 and HADS are a reliable screening tool to detect psychiatric distress among cancer patients. Failure to detect and to treat elevated levels of distress jeopardizes the outcome of cancer therapies, decreases patients' quality of life, and increases health care costs. We feel however that additional clinical trials are warranted to confirm results and expand further on the issues related to psychological distress among cancer patients its management. Future studies require use of a bigger sample population to arrive to a firm conclusion.

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**Cite this article as:** Brahmbhatt AP, Bothara SB, Kaushal AM. Psycho-social and general health status after surgical treatment in cancer patients: An Indian prospect. *Clin Cancer Investig J* 2012;1:222-9.

**Source of Support:** Nil, **Conflict of Interest:** No.

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