

## Impact Of Depression Among Head And Neck Cancer Patients : A Prospective Observational Study

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### ABSTRACT

Head-and-neck cancers (HNCs) account for 30% of all cancer cases in India. HNC arises in structurally complex and functionally important areas and interfere with basic functions like eating, speech, swallowing, breathing and can have a profound effect on psychological state, social and physical effects on patients quality of life (QoL).

Depression is a serious mood disorder which affect patients with head and neck cancer. The risk of developing depression in patients is due to risk factors such as stress related to cancer diagnosis, treatment related side effects, loss of function (speech, swallowing, smell, taste, etc.), loss of self-esteem, poor nutrition & weight loss, disruption of daily life patterns, disrupted sleep due to side-effects of treatment for cancer (e.g. drymouth, pain, etc.). In Head and neck cancers, high rate of depression may increase the risk of poor immediate and long-term outcomes. The risk of depression (clinical diagnosis or symptoms of depression) among head and neck cancer patients is high and depends not only on type of measurement (diagnostic interview or patient-reported outcome measures [PROMs]) but also time of assessment. In case of HNC- specific symptoms, general cancer related symptoms and sociodemographic and clinical characteristics has also found an positive associated with depression. The purpose of this study was to assess the risk of depression associated with head and neck cancer, in patients receiving pre and post chemoradiation.

**KEYWORDS:** Quality of life (QOL); EORTC; Health related quality of life (HRQOL); Head and neck cancer (HNC), Patient reported outcome measures (PROMs).

### I. INTRODUCTION

Head and neck cancer (HNC) is the common cancer in India that consists of about one-third of all cancers. Many patients with head and neck cancer (HNC) has dealt with severe physical and psychosocial problems because of the disease and its treatment. These disorders have a noticeable impact on the health-related quality of life. The psychological factors for lowering quality of life in head and neck cancer patients, include depressed mood, feeling of guilt, insomnia, agitation, suicide. Some other factors associated with depression include sociodemographic factors (male gender, younger age, lower education, less social support, smoking, unemployment, and being unmarried or living alone) as well as clinical factors (comorbidities, higher stage of tumor, symptoms of depression before treatment).

There are limited pathways for psychosocial factors including depression, which may affect survival in cancer patients. These include medication adherence, biological pathways (eg, the tumor host biology interaction), and aspects of preventative self-care such as diet, exercise, and smoking. In case of carcinoma patients with depression may face obstacles related to depressive symptoms, such as low motivation, which may manifest behavioral difficulties in attending scheduled treatment appointment. Depression and survival may be linked through biological pathways. Depression may accelerate cancer progression through endocrine and immune changes that result in promotion of tumor.

Difficulty in coping with negative affect, which is common in depression, may lead to high susceptibility to engage high risk behaviors such as continuous use of tobacco after the diagnosis of cancer may result in poor diet and poor sleep.

The individual psychotherapy for quality of life was maintained throughout follow-up periods. The psychoeducational interventions has produced small effects on quality of life. Psychological (e.g. cognitive and behavioural) techniques delivered by a professional with an understanding of psychological distress, may be more beneficial for people with head and neck cancer than educational and emotionally supportive program. It is clear that psychological intervention need the evidence base regarding the efficacy of psychological intervention for improving quality of life for head and neck cancer patients.

#### MATERIALS AND METHODS

- **Study Place:** Department of Radiation oncology, Government General Hospital, Guntur.
- **Period of Study:** 6 months
- **Study Design:** Prospective observational study
- **Sample size:** A total of 80 Patients who were suffering with head and neck cancer and were advised for routine follow up in department of radiotherapy was chosen.

#### MATERIALS USED

- Patient consent form
- Patient data collection form
- Hamilton depression scale for the patient.
- Patient information leaflet.

#### SUBJECT RECRUITMENT CRITERIA

##### INCLUSION CRITERIA

- Patients whose origin of cancer (primary lesion) involved in head and neck.
- Patients who are diagnosed with head and neck cancer.
- Patients who are on chemotherapy and radiation therapy of head and neck cancer.
- Patients with age > 18 years.
- Those who are able to understand English or local language.
- Patients who concerned to participate in the study.
- Patients who are willing for regular follow up.

##### EXCLUSION CRITERIA

- Patients whose origin of cancer is other than head and neck cancer.
- Patients with age < 18 years.
- Female patients with pregnancy and lactation.
- Patients who are extremely ill and unable to answer.
- Patients with no valid informant.
- Patients with past history of psychiatric disorders.

##### STUDY PROCEDURE

The study was conducted after getting approval from the Institutional Human Ethics Committee and informed consent from patients. Then patients were screened based on inclusion and exclusion criteria. Patients who satisfy inclusion criteria were included in the study. After included the subjects into the study the data was collected in the designed validated data collection form. The self designed and validated questionnaire was used to assess the Depression in head and neck cancer patients which consist of 17 questions. The collected data was tabulated and interpreted using suitable statistical software.

After completion of treatment, patients were followed up as outlined below:

- i. First follow up was done at 4 weeks (1 month) from the completion of treatment.
- ii. Second follow up at 12 weeks (3 months) from the completion of treatment.
- iii. Patients were assessed for the risk of depression by using Hamilton depression scale (HMD).
- iv. Patients were also encouraged to visit earlier if any new or progressive symptoms developed.
- v. Only patients who completed Hamilton depression on all the 5 occasions (before treatment, 4th week of treatment, just on completion of treatment, 1 month post treatment and 3 months post treatment) were considered for analysis.

##### STATISTICAL ANALYSIS

The data obtained was entered in advanced Microsoft excel spread sheet and evaluated. For statistical analysis, Epi info 3.5.1 version was used and Chi-square test as done with the 95% confidence interval at alpha value 0.05 and the p-values < 0.05 are considered to be significant.

## II. RESULTS

| S.NO        | COMPONENTS                         | FREQUENCY  |
|-------------|------------------------------------|------------|
| 1.          | <b>GENDER</b>                      |            |
|             | Male                               | 67(83.75%) |
|             | Female                             | 13(16.25%) |
| 2           | <b>AGE</b>                         |            |
|             | 21-30 years                        | 5          |
|             | 31-40 years                        | 13         |
|             | 41-50 years                        | 18         |
|             | 51-60 years                        | 24         |
|             | 61-70 years                        | 14         |
|             | 71-80 years                        | 5          |
| 81-90 years | 1                                  |            |
| 3.          | <b>SOCIOECONOMIC STATUS</b>        |            |
|             | Low                                | 60(75%)    |
|             | Moderate                           | 16(20%)    |
|             | High                               | 4(5%)      |
| 4.          | <b>OCCUPATION</b>                  |            |
|             | Government employee                | 3(3.75%)   |
|             | Business                           | 16(20%)    |
|             | Farmer                             | 29(36.25)  |
|             | Private                            | 26(32.5%)  |
|             | House wife                         | 6(7.5%)    |
| 5.          | <b>FAMILY HISTORY OF CARCINOMA</b> |            |
|             | YES                                | 1(1.25)    |
|             | NO                                 | 79(98.75%) |
| 6.          | <b>HOSPITALISATION HISTORY</b>     |            |
|             | YES                                | 5(6.25%)   |
|             | NO                                 | 75(93.75%) |

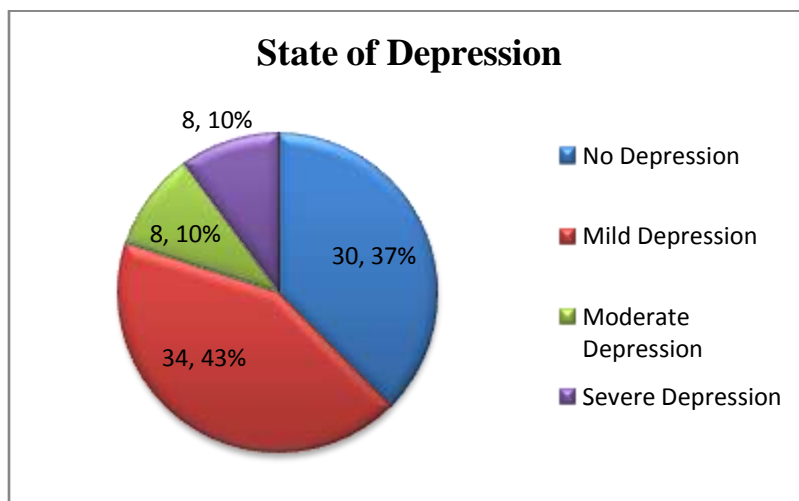
**TABLE : 1 : SOCIODEMOGRAPHIC FACTORS**

In a sample of 80 patients taken , 67 are males(83.75%) and 13 are females (16.25%) with the mean age of 20-80yrs belonging to low socioeconomic status 60 (75%), moderate 16(20%),

high 4 (5%) with the occupation of farmer 29 (36.25%), private 26 (32.5%), business 16 (20%), house wife 6 (7.5%), government employ 3(3.75%) having 1 subject with family history of carcinoma.

**TABLE 2 : HAMILTON DEPRESSION**

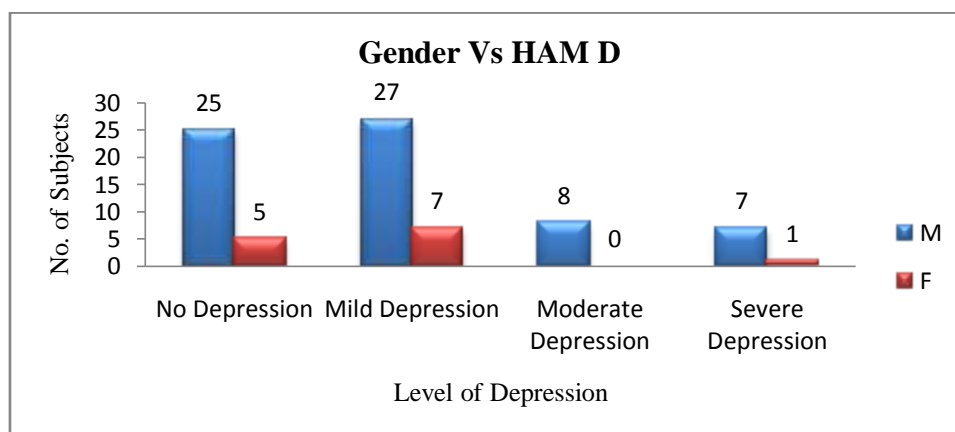
| NO DEPRESSION | MILD DEPRESSION | MODERATE DEPRESSION | SEVERE DEPRESSION |
|---------------|-----------------|---------------------|-------------------|
| 30            | 34              | 8                   | 8                 |



In table 2, Subjects who are suffering with no depression are 30(37.5%), mild depression 34(42.5%), moderate depression 8 (10%) and severe depression 8 (10%).

**TABLE 3 : GENDER VS HAMILTON DEPRESSION**

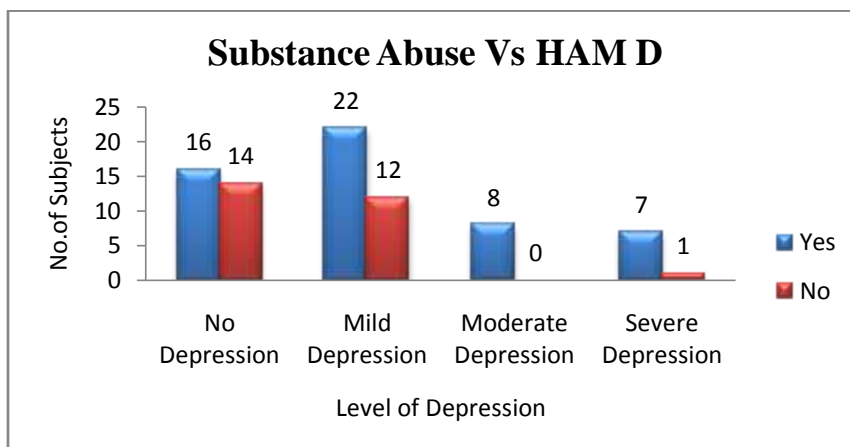
| GENDER | NO DEPRESSION | MILD DEPRESSION | MODERATE DEPRESSION | SEVERE DEPRESSION |
|--------|---------------|-----------------|---------------------|-------------------|
| M      | 25            | 27              | 8                   | 7                 |
| F      | 5             | 7               | 0                   | 1                 |



It is depicted as males 67 (83.75%) are suffering with more depression when compared to females 13 (16.25%).

**TABLE 4 : SUBSTANCE ABUSE VS HAMILTON DEPRESSION**

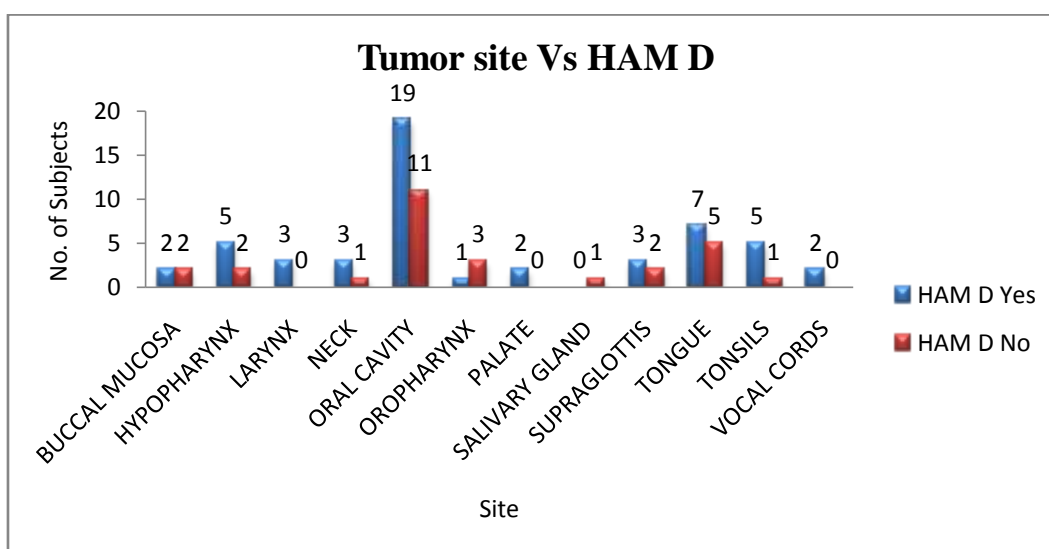
| NO. OF SUBJECTS | NO DEPRESSION | MILD DEPRESSION | MODERATE DEPRESSION | SEVERE DEPRESSION |
|-----------------|---------------|-----------------|---------------------|-------------------|
| Yes             | 16            | 22              | 8                   | 7                 |
| No              | 14            | 12              | 0                   | 1                 |



Subjects who have the habit of substance abuse are suffering with more depression 53 (66.25%) when compare with subjects who don't abuse substance 27 (33.75%), which is statistically significant with p value of 0.0467.

**TABLE 5 : TUMORSITE VS HAMILTON DEPRESSION**

|           | BUCCAL MUCOSA | HYPOPHARYNX | LARYNX | NECK | ORAL CAVITY | OROPHARYNX | PALATE | SALIVARY GLAND | SUPRAGLOTTIS | TONGUE | TONSILS | VOCAL CORDS |
|-----------|---------------|-------------|--------|------|-------------|------------|--------|----------------|--------------|--------|---------|-------------|
| HAM D Yes | 2             | 5           | 3      | 3    | 19          | 1          | 2      | 0              | 3            | 7      | 5       | 2           |
| HAM D No  | 2             | 2           | 0      | 1    | 11          | 3          | 0      | 1              | 2            | 5      | 1       | 0           |

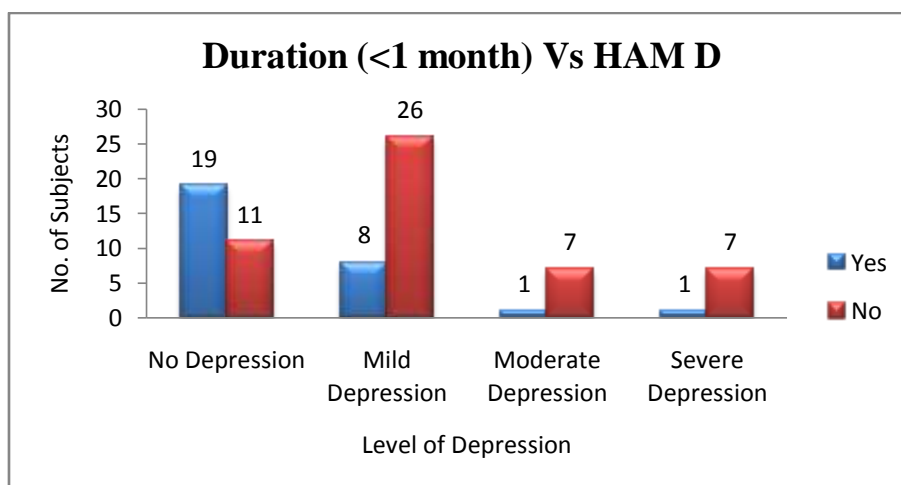


In the above graph, Subjects with carcinoma of ORAL CAVITY 19 (36.53%) are having more depression than the persons with carcinoma of tongue 7(13.46%), tonsil 5(9.61%),

hypopharynx 5 (9.61%), larynx 3(5.76%), supraglottis 3 (5.76%), neck 3(5.76%) , buccal mucosa 2 (3.84%), vocal cord 2 (3.84%), palate 2(3.84%), oropharynx 1 (1.92%).

**TABLE 6 : DURATION <1 MONTH VS HAMILTON DEPRESSION**

|     | NO DEPRESSION | MILD DEPRESSION | MODERATE DEPRESSION | SEVERE DEPRESSION |
|-----|---------------|-----------------|---------------------|-------------------|
| Yes | 19            | 8               | 1                   | 1                 |
| No  | 11            | 26              | 7                   | 7                 |

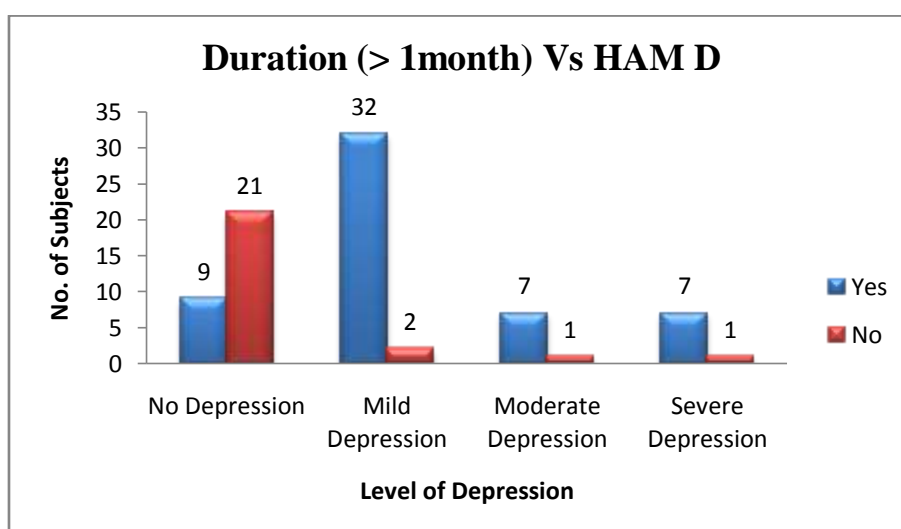


Among the subjects who are receiving concurrent chemoradiation less than 1 month and presenting with no depression 51 (63.75%) are

greater than subjects who are having depression 29 (36.25%), which is statistically significant with P value of 0.0012.

**TABLE 7 : DURATION >1MONTH VS HAMILTON DEPRESSION**

|     | NO DEPRESSION | MILD DEPRESSION | MODERATE DEPRESSION | SEVERE DEPRESSION |
|-----|---------------|-----------------|---------------------|-------------------|
| Yes | 9             | 32              | 7                   | 7                 |
| No  | 21            | 2               | 1                   | 1                 |



Subjects who are on concurrent chemotherapy greater than 1 month are having more depression 55 (68.75%) is greater than

subjects who are not having depression 25 (31.25%), which is statistically significant with P value of 0.0000.

### III. DISCUSSION

A prospective observational study was carried out on "Assessment of quality of life in head and neck cancer in pre and post chemoradiation and pharmaceutical management" conducted at NATCO Cancer Center, Government General Hospital, Guntur. A total of 80 patients with head and neck cancer met the inclusion criteria and were included in the study. The data obtained was tabulated and analysed. Earlier studies on psychiatric aspects among carcinoma patients mainly dealt with either quality of life or only psychiatric disorders.

#### Sociodemographic factors

The demographic data showed that head and neck cancer is more common in the males 67 (83.75%) when compared to females 13 (16.25%). For the assessment of results we categorised the obtained patients within the age of 21-90 years were as follows. In our study with we found that majority of the patients were under the age group of 51-60yrs : 24 (30%), 41-50yrs : 18 (22.5%) followed by 61-70yrs :14 (17.5%) ,31-40yrs :13(16.25%),21-30yrs : 5 (6.25%), 71-80yrs :5 (6.25%) , 81-90yrs :1(1.25%). In this study the occupation of subjects are such as farmer 29 (36.25%), private 26 (32.5%), business 16 (20%), house wife 6 (7.5%), government employ 3(3.75%).

In our study we found subjects with low socioeconomic status 60 (75%), moderate socioeconomic status16 (20%) and high socioeconomic status 4 (5%). Our study showed an increased risk in those people belonging to low socioeconomic status, which might be a reason for emotional instability and hence, resulting in increased psychological stress. This suggests that psychological stress is a key factor leading to the consumption of tobacco, betel nut, or alcohol which directly or indirectly leading to depression or anxiety.

#### Risk factors

In our study, we observed risk factors associated with head and neck cancer patients include smokers: 45(56.25%), non- smokers: 35(43.75%), with the history of smoking 1- 10 yrs : 16(20%), 11-20yrs: 19(23.75%), 21-30yrs: 3(3.75%) ; alcoholics: 41(51.25%), non-alcoholics: 39 (48.75%) with history of drinking alcohol 1-10 yrs: 18 (43.9%), 11-20yrs: 13(31.70%), 21-30yrs: 1 (2.43%) and abuse of

substance – 30(37.5%) including Kainee-13(43.33%), Ghutka- 5 (16.66%), Paan- 5 (16.66%), Chutta - 4 (13.33%) and factor of exposure to sunlight 1-5hrs : 30 (37.5%), 6-10hrs: 40(50%), 11-17hrs: 10 (12.5%) ; radiation 3 (3.75%) 77 (96.25%) ; preserved salt foods 57(71.25%) 23(28.75%).

#### Gender Vs Hamilton Depression

In the assessment of depression among head and neck carcinoma patients, males - 67 (83.75%) are suffering with more depression when compared to females- 13 (16.25%). In case of males, Subjects suffering with mild depression 27 (40.29%) and no depression25 (37.3%) are more when compared with subjects having moderate 8 (11.94%) and severe 7 (10.44%) state of depression. In case of females, subjects having mild state 7 (53.84%) are more when compared with no depression 5 (38.46%) and severe state 1(7.69%).

#### Substance Abuse Vs Hamilton Depression

Subjects who have the habit of substance abuse are suffering with more depression 53 (66.25%) when compare with subjects who don't abuse substance 27 (33.75%), which is statistically significant with p value of 0.0467. Subjects who are in mild state 22 (41.50%) are more when compared with subjects who are with no depression 16 (30.18%), moderate 8 (15.09%) and severe 7 (13.20%). In case of subjects who are not having the habbit of substance abuse, patients with no depression 14 (82.35%) are more when compared with subjects who are in , mild state 12 (70.05%) severe state 1 (13.20%).

#### Tumor site Vs Hamilton Depression

When we assessed depression associated with tumor site subjects with carcinoma of oral cavity 19 (36.53%) are having more depression than the persons with carcinoma of tongue 7(13.46%), tonsil 5(9.61%), hypopharynx 5 (9.61%), larynx 3(5.76%), suporaglottis 3 (5.76%), neck 3(5.76%) , buccal mucosa 2 (3.84%), vocal cord 2 (3.84%), palate 2(3.84%), oropharynx 1 (1.92%).

#### Duration < 1 month Vs Hamilton Depression

Among the subjects who are receiving concurrent chemoradiation less than 1 month and presenting with no depression 51 (63.75%) are greater than subjects who are having depression 29 (36.25%), which is statistically significant with P

value of 0.0012. In case of subjects presented with depression, patients presented with mild state 26 (50.90%) are more when compared with no depression 11 (21.56%) , severe 7 (13.72%) and moderate state are 7 (13.72%).

#### Duration > 1 month Vs Hamilton Depression

Subjects who are on concurrent therapy more than 1 month are having more depression 55 (68.75%) is greater than subjects who are not having depression 25 (31.25%), Which is statistically significant with P value of 0.0000. In case of subjects having depression presented with mild state 32 (58.18%) depression are more when compared with no depression 9 (16.36%) moderate 7 (12.72%) and severe 7 (12.72%) depression [Table 7].

Overall, depression rate among patients receiving concurrent chemoradiation less than 1month, are having less depression 29 (36.25%) compared to subjects receiving treatment greater than 1 month depression 55 (68.75%).

There was some improvement in the physical and emotional function while the other three variables decreased post-treatment, including role performance, cognitive, and social function. It is likely due to post-treatment supportive care factors.

Support and care should not only be provided for the prevention of complications and further progression of the disease but also to facilitate management of pain, psychosocial instability and towards prevention of the loss of function after treatment.

#### IV. CONCLUSION

Increased risk of depression rate was observed among Head and neck cancer patients due to decline in quality of life. Maintenance of proper diet, lifestyle modifications and supportive care are required for the improvement quality of life to decrease the risk of depression. To reduce the rate

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of depression in cancer survivors screening of depression, identifying the intervention and treatment of individual psychological symptoms is beneficial by providing professional counselling to the patient.

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