

Innovations

Validity of becks depression inventory in patients treated for oral cancer

1. **Dr. Chenchulakshmi G**

Post graduate student,
Department of Oral Medicine and Radiology,
Saveetha Dental College and Hospitals,
Saveetha Institute of Medical and Technical Sciences (SIMATS)
Chennai – 600077

2. **Dr. Arvind M**

Head of Department,
Department of Oral Medicine and Radiology,
Saveetha Dental College and Hospitals,
Saveetha Institute of Medical and Technical Sciences (SIMATS)
Chennai – 600077

Corresponding Author: **Dr. Chenchulakshmi G**, 152010004.sdc@saveetha.com

Received: 18 May 2022 Accepted: 25 June 2022 Published: 30 June 2022

Abstract

Introduction: -Oral cancer is the 6th most common cancer affecting humans. Post treatment patients encounter symptoms as physical/somatic or emotional/ affective changes such as loss of appetite, fatigue, insomnia, sense of punishment. Symptoms in cancer patients and in patients with depression can be identical, e.g. loss of weight or appetite and fatigue. Widely used assessment instruments for screening are the Beck Depression Inventory (BDI), the Hospital Anxiety and Depression Scale (HADS) and the Structured Clinical Interview (SCID) according to the Statistical Manual of Mental Disorders (DSM-IV). Becks Depression Inventory is one of the most widely used tools to measure the intensity of depression and aim is to assess depression level in patients treated for oral carcinoma. **Methods:** - The present study was conducted to evaluate the validity of Becks Depression Inventory in patients treated for oral cancer. Total number of 50 patients having oral squamous cell carcinoma were included in this study. **Results:** - Out of 50 patients, Minimal Depression symptoms was observed in five patients, Mild Depression was observed in sixteen patients, Moderate Depression symptoms was observed in ten patients and Severe Depression symptoms was observed in nineteen patients. Out of 21 items Becks Depression Inventory, Mean and Standard deviation was highest in Social Withdrawal (1.60 ± 1.10) followed by Loss of Appetite (1.52 ± 1.11). **Conclusion:** - Becks Depression Inventory assesses the depression state in patients treated with oral cancer. Psychological status and supportive treatment are necessary to improve the quality of life in patients treated for oral squamous cell carcinoma.

Keyword : 1.Becks depression inventory, 2.oral cancer patients, 3.affective items, 4.somatic items.

Introduction

Oral cancer is the sixth commonest cancer affecting humans^[1]. Post treatment patients encounter symptoms such as physical/ somatic and emotional /affective changes such as loss of appetite, fatigue, insomnia, sense of punishment. Becks Depression inventory is one in every of the foremost widely used tool for depression and to measure the intensity of depression^[2]. A range of assessment techniques have been used to study depression in cancer patients^[3]. Self-report forms, brief screening instruments and structured clinical interviews are used. The Beck Depression Inventory (BDI), the Hospital Anxiety and Depression Scale (HADS), and hence the Structured Clinical Interview (SCID) in accordance with the Statistical Manual of Mental Disorders (DSM-IV) are widely used screening devices ^[4]. The Beck Depression Inventory (BDI) is one of the most extensively used tools for detecting depression and determining its severity^[5]. The BDI was created with the intention of being used in psychiatric patients^[6]. It was then utilized in different disease contexts as well as among the general public^[5]. It was afterwards translated into a variety of other languages^[7]. A variety of risk factors of depression in cancer patients and terminally ill patients have been identified such as pain, impaired functional status, social deficits, advanced illness and history of depression^[8]. Depression has been associated to a decreased risk of survival in cancer patients^[9]. Symptoms in cancer patients and in patients with depression can be identical, e.g. loss of weight or appetite and fatigue. Such symptoms can occur in cancer patients (a) as symptoms of cancer, (b) as a reaction on diagnosis and prognosis, (c) as side-effects of treatment and (d) as symptoms of a comorbid depression^[10]. Thus there is a risk of misclassifying symptoms of cancer as depression or symptoms of depression as cancer related^[11].

There are 21 items in the BDI. According to the severity of the item, each item can be rated on a four-point scale ranging from 0 to 3. The final score is calculated by adding the scores of all 21 items^[12]. The purpose of this study was to determine the validity of Beck's Depression Inventory in oral cancer patients.

Materials and methods

The study was carried out in the Oral Medicine and Oncology Department in Saveetha Dental College, Chennai. The duration of the study is from December 2020 till February 2021. The sample was comprised of total number of 50 patients who are aged above 45 years treated for oral cancer who agreed to participate were included in this study. Patients with other cancers were excluded. The study was approved by Ethical committee of Saveetha Dental college and hospitals in Chennai (IHEC/SDC/OMED-2004/21/46). This was a prospective exploratory quantitative study of 50 patients with oral squamous cell carcinoma who underwent surgery/radiotherapy/chemotherapy who came for review after one month after their treatment. The Beck Depression Inventory was used to collect data, which was then examined quantitatively. The objective of this study was to evaluate the depression status with Beck Depression Inventory among the treated oral squamous cell carcinoma patients from December – February 2021 (3 months) and to improve their quality of life after treatment.

Beck depression inventory

There are 21 items in the BDI. Each item can be rated on a 4-point scale from 0 to 3 based on how intense it was in the previous week. The overall score is calculated using the sum of the 21 item scores. As a result, the highest possible score is 63. A total score of 0–9 indicates mild depression, 10–18 indicates mild depressed symptoms, 19–29 indicates moderate depression, and 30–63 indicates severe depression. The first 13 items make up the cognitive-affective subscale, whereas items 14–21 make up the somatic-performance subscale.

BDI: -

A) MOOD: -

0 – I do not feel sad

1 – I feel blue or sad

2a – I am blue or sad all the time and I cant snap out of it.

- 2b – I am so sad or unhappy that it is very painful
- 3 – I am so sad or unhappy that I can't stand it

B) Pessimism: -

- 0 – I am not particularly pessimistic or discouraged about the future.
- 1a – I feel discouraged about the future.
- 2a – I feel I have nothing to look forward.
- 2b – I feel that I won't ever get over my troubles.
- 3 – I feel that the future is hopeless and that things cannot improve.

C) Sense of Failure: -

- 0 – I do not feel like a failure.
- 1 – I feel I have failed more than the average person.
- 2a – I feel I have accomplished very little that is worthwhile or that means anything.
- 2b – As I look back on my life all I can see is a lot of failures
- 3 – I feel I am a complete failure as a person (parent, husband, wife)

D) Lack of Satisfaction: -

- 0 – I am not particularly dissatisfied.
- 1a – I feel bored most of the time.
- 1b – I don't enjoy things the way I used to.
- 2 – I don't get satisfaction out of anything anymore
- 3 – I am dissatisfied with everything.

E) Guilty Feeling: -

- 0 – I don't feel particularly guilty.
- 1 – I feel bad or unworthy a good part of the time.
- 2a – I feel quite guilty.
- 2a – I feel bad or unworthy practically all the time now.
- 3 – I feel as though I am very bad or worthless.

F) Sense of Punishment: -

- 0 – I don't feel I am being punished.
- 1 – I have a feeling that something bad may happen to me.
- 2 – I feel I am being punished or will be punished.
- 3a – I feel I deserve to be punished.
- 3b – I want to be punished.

G) Self-Hate: -

- 0 – I don't feel disappointed in myself.
- 1a – I am disappointed in myself.
- 1b – I don't like myself.
- 2 – I am disgusted with myself.
- 3 – I hate myself.

H) Self-Accusations: -

- 0 – I don't feel I am any worse than anybody else.
- 1 – I am very critical of myself for my weaknesses or mistakes.
- 2a – I blame myself for everything that goes wrong.
- 2b – I feel I have many bad faults.

I) Self-Punitive Wishes: -

- 0 - I don't have any thoughts of harming myself.
- 1 - I have thoughts of harming myself but I would not carry them out.
- 2a - I feel I would be better off dead.
- 2b - I have definite plans about committing suicide.
- 2c - I feel my family would be better off if I were dead.
- 3 - I would kill myself if I could.

J) Crying Spells: -

- 0 - I don't cry any more than usual.
- 1 - I cry more now than I used to.
- 2 - I cry all the time now, I can't stop it
- 3 - I used to be able to cry but now I can't cry at all even though I want to

K) Irritability: -

- 0 - I am no more irritated now than I ever am.
- 1 - I get annoyed or irritated more easily than I used to.
- 2 - I feel irritated all the time.
- 3 - I don't get irritated at all at the things that used to irritate me.

L) Social Withdrawal: -

- 0 - I have not lost interest in other people.
- 1 - I am less interested in other people now than I used to be.
- 2 - I have lost most of my interest in other people and have little feeling for them.
- 3 - I have lost all my interest in other people and don't care about them at all.

M) Indecisiveness: -

- 0 - I make decisions about as well as ever.
- 1 - I am less sure of myself now and try to put off making decisions.
- 2 - I can't make decisions any more without help.
- 3 - I can't make any decisions at all any more.

N) Body Image: -

- 0 - I don't feel I look any worse than I used to.
- 1 - I am worried that I am looking old or unattractive.
- 2 - I feel that there are permanent changes in my appearance and they make me look unattractive.
- 3 - I feel that I am ugly or repulsive looking.

O) Work Inhibition: -

- 0 - I can work about as well as before.
- 1a - It takes extra effort to get started at doing something.
- 1b - I don't work as well as I used to.
- 2 - I have to push myself very hard to do anything.
- 3 - I can't do any work at all.

P) Sleep Disturbance: -

- 0 - I can sleep as well as usual.
- 1 - I wake up more tired in the morning than I used to.
- 2 - I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
- 3 - I wake up early every day and can't get more than 5 hours sleep.

Q) Fatigability: -

- 0 - I don't get any more tired than usual.
- 1 - I get tired more easily than I used to.
- 2 - I get tired from doing anything.
- 3 - I get too tired to do anything.

R) Loss of Appetite: -

- 0 - My appetite is no worse than usual.
- 1 - My appetite is not as good as it used to be.
- 2 - My appetite is much worse now.
- 3 - I have no appetite at all any more.

S) Weight Loss: -

- 0 - I haven't lost much weight, if any lately.
- 1 - I have lost more than 5 pounds.
- 2 - I have lost more than 10 pounds.
- 3 - I have lost more than 15 pounds.

T) Somatic Preoccupation: -

- 0 - I am no more concerned about my health than usual.
- 1 - I am concerned about aches and pains or upset stomach or constipation or other unpleasant feelings in my body.
- 2 - I am so concerned with how I feel or what I feel that it's hard to think of much else.
- 3 - I am completely absorbed in what I feel.

U) Loss of Libido: -

- 0- I have not noticed any recent change in my interest in sex.
- 1 - I am less interested in sex than I used to be.
- 2 - I am much less interested in sex now.
- 3 - I have lost interest in sex completely.

Scores: -	Interpretation:-
0-9	Minimal depression
10-18	Mild Depression
19-29	Moderate Depression
30-63	Severe Depression

Table 1:- The above table represents interpretation of BDI scores.

Data management and data analysis were performed with the statistical packages SPSS software. Statistical measurements (frequency, relative frequency, mean and standard deviation (SD) were calculated for the variables and results were tabulated.

Results

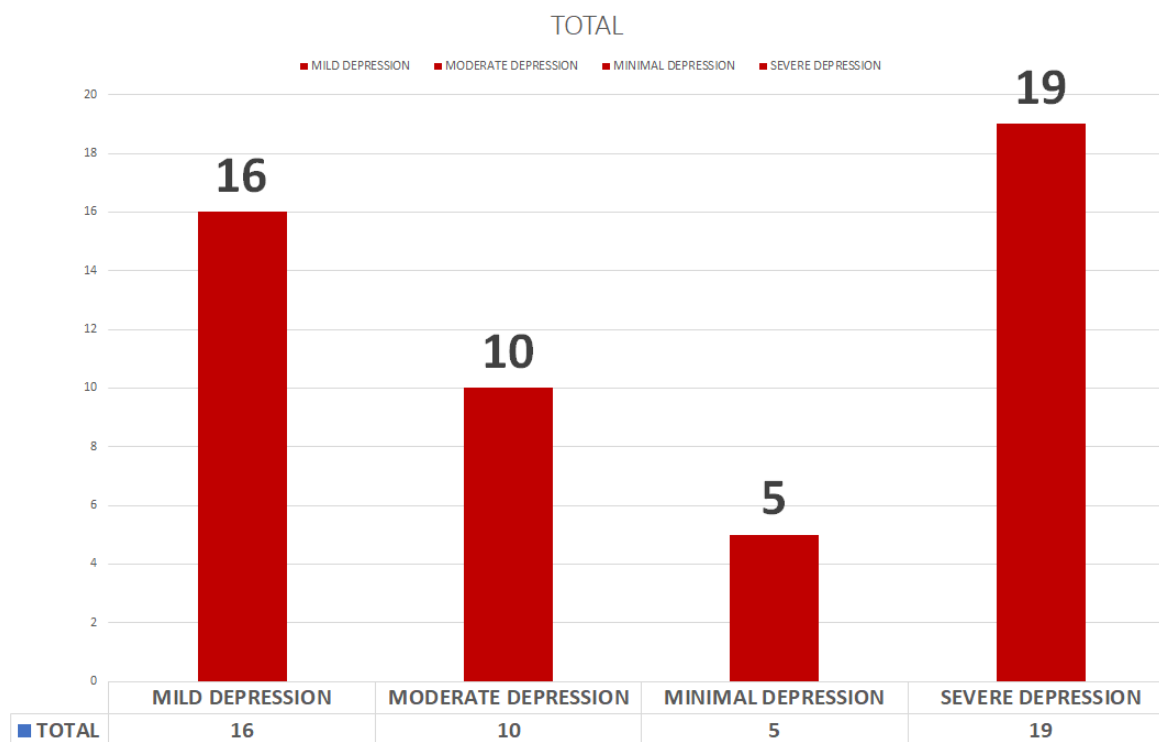
A total number of 50 patients who underwent treatment surgery/chemotherapy/radiotherapy for oral squamous cell carcinoma who came for review after one month were included in the study. Table 2 represents mean and standard deviation of somatic and affective items of Becks Depression Inventory in

patients treated for oral cancer. In them, mean and SD in mood of the patient is 1.36 ± 1.05 , Pessimism is about 1.04 ± 0.96 , feeling of sense of failure is 1.04 ± 1.12 , lack of satisfaction feeling is 1.28 ± 1.01 , Guilty feeling is 0.96 ± 1.19 , sense of punishment is 1.08 ± 0.70 , self-hate is 0.60 ± 0.70 , feeling of self-accusation is 0.80 ± 0.73 , feeling of self-punitive wishes is 1.18 ± 1.06 , feeling of crying is 1.16 ± 0.98 , feeling of getting irritated is 1.02 ± 0.92 , feeling of social withdrawal is 1.60 ± 1.10 , feeling indecisiveness is 0.82 ± 0.83 , feeling of change in their body image is 1.30 ± 0.82 , feeling of work inhibition is 1.32 ± 1.01 , feeling of self-disturbance is 1.00 ± 1.03 , feeling of fatigability is 1.10 ± 0.97 , feeling of loss of appetite is 1.52 ± 1.11 , weight loss is 0.86 ± 0.99 , feeling of somatic preoccupation is 1.14 ± 0.73 , feeling of loss of libido is 1.30 ± 0.95 . The questions on the scale which have 5-6 statements (e.g:- 2a,2b) is given a score as 2. Bar chart 1 representing frequency of minimal, mild, moderate and severe depression in oral carcinoma patients. Minimal depression symptoms seen in 5 patients, mild depression symptoms seen in 16 patients, moderate depression symptoms seen in 10 patients and severe depression symptoms seen in 19 patients.

S. No	BDI items	Mean	Standard deviation
1	Mood	1.36	1.05
2	Pessimism	1.04	0.96
3	Sense of failure	1.04	1.12
4	Lack of Satisfaction	1.28	1.01
5	Guilty feeling	0.96	1.19
6	Sense of Punishment	1.08	0.70
7	Self Hate	0.60	0.70
8	Self Accusation	0.80	0.73
9	Self Punitive wishes	1.18	1.06
10	Crying spells	1.16	0.98
11	Irritability	1.02	0.92
12	Social withdrawal	1.60	1.10
13	Indecisiveness	0.82	0.83
14	Body image	1.30	0.82
15	Work inhibition	1.32	1.01
16	Self-Disturbance	1.00	1.03
17	Fatigability	1.10	0.97
18	Loss of appetite	1.52	1.11
19	Weight loss	0.86	0.99

20	Somatic Preoccupation	1.14	0.73
21	Loss of libido	1.30	0.95

Table 2:- The above table represents mean and standard deviation for somatic and affective depression symptoms.



Bar chart 1: The above bar chart represents the frequency of mild, moderate, minimal and severe depression in oral cancer patients.

Discussion

The symptoms of cancer and of depression can be identical, there is a risk of misdiagnosing cancer patients as depressive or to overlook depression in cancer patients (Symptoms of cancer was meant as in the sense of depression or mood of patient after diagnosed by cancer- i.e –sense of loneliness / sense of withdrawal from society, etc which happens same in the depression case- depression can be due to various factors in normal patients. So we need to evaluate these symptoms and differentiate them). Symptoms resulting in the diagnosis of depression can be classified as somatic or affective^[13]. We analysed to what extent the prevalence of major depression or depressive symptoms in the reported oral cancer patients was related to somatic or affective items^[7]. If major depression and depressive symptoms were mainly caused by changes in somatic items, the items might in fact be changed by cancer-related symptoms and not by depression. According to the literature study, depression is the most frequent psychiatric disease in cancer patients, with a prevalence ranging from 22 to 29 percent depending on the tumor's location, clinical stage, pain, functional and physical performance, and social support.

As summarized in Table 2, mean and standard deviation of somatic and affective depression symptoms of oral cancer patients were tabulated. Out of 21 items Beck's Depression Inventory, Mean and Standard deviation was highest in Social Withdrawal (1.60 ± 1.10) followed by Loss of Appetite (1.52 ± 1.11). Out of 50 patients, Minimal Depression symptoms was observed in 5 patients, Mild Depression was observed in 16 patients, Moderate Depression symptoms was observed in 10 patients and Severe Depression symptoms was observed in 19 patients.

Our major findings are that major depression and depressive symptoms according to BDI criteria are mainly related to somatic and not to affective items. A detailed analysis of changes in somatic and affective items has only been done by very few other authors reporting results of BDI measurement in cancer patients. Plumb and Holland measured BDI in 97 cancer patients, 66 of their relatives and in 99 physically healthy persons who attempted suicide^[14]. No difference in somatic depressive symptoms was found between the two patient groups and no difference between affective depressive symptoms between the cancer patients and their relatives^[15]. The authors therefore conclude that somatic depressive symptoms reflect advanced disease, but affective symptoms should be a reason for psychiatric consultation.. Hahn et al. reported a prevalence of depression measured by BDI in 19 of 124 patients (15%). All depressed patients agreed that they had some somatic symptoms, but according to their research, these were inadequate to place them in the depression range^[16].The analysis has some limitations. The group of cancer patients is heterogeneous, including patients with different diagnoses, different stages and different treatment approaches^[16].The distribution of the different diagnoses does not well reflect their frequency in the general population^[17].Data on prevalence of depression in cancer patients^[18] and on the adverse effect of depression on survival, at least when diagnosed according to BDI criteria, have to be requisitioned^[19].Psycho Oncologists and oncologists should be aware that somatic items of depression may be misleading in cancer patients^[20].The patients which were included in this study did not undergo or receive psychological counselling before/during/after treatment .The analysis has some limitations like the group of oral cancer patients included is heterogenous which include patients with different stages and different treatment approaches. To improve the quality of life of cancer patients, more research is needed in this area. Close interaction between oncologists and psycho oncologists is necessary to identify those patients in whom somatic symptoms similar to that of depression are related directly to the tumour and may improve through effective cancer treatment, and not to overlook those cancer patients with comorbid depression so that appropriate treatment may be initiated.

Conclusion

Becks Depression Inventory assesses the depression state in patients treated with oral cancer. Psychological status and supportive treatment is necessary to improve the quality of life in patients treated for oral squamous cell carcinoma. Becks Depression Inventory is relatively simple to use and can be employed in routine outpatient practice.

Bibliography

1. Brand D, Bernard Ackerman A. Squamous cell carcinoma, not basal cell carcinoma, is the most common cancer in humans [Internet]. Vol. 42, *Journal of the American Academy of Dermatology*. 2000. p. 523–6.
2. Yeo S, Lee J, Kim K, Kim HJ, Chung S. Depression, Rather Than Cancer-Related Fatigue or Insomnia, Decreased the Quality of Life of Cancer Patients [Internet]. *Cancer Research and Treatment*. 2020.
3. Jasper HH. The measurement of depression-elation and its relation to a measure of extraversion-introversion [Internet]. Vol. 25, *The Journal of Abnormal and Social Psychology*. 1930. p. 307–18.
4. Supplemental Material for Validity of the Brief Symptom Inventory-18 (BSI-18) for Identifying Depression and Anxiety in Young Adult Cancer Survivors: Comparison With a Structured Clinical Diagnostic Interview [Internet]. *Psychological Assessment*. 2017.
5. Bukberg J, Penman D, Holland JC. Depression in hospitalized cancer patients. *Psychosom Med*. 1984 May;46(3):199–212.
6. Ross G. The Community Care of Chronic Psychiatric Patients as Developed by PRA in East London [Internet]. *Social Psychiatry*. 1984. p. 649–58
7. Neitzer A, Sun S, Doss S, Moran J, Schiller B. Beck Depression Inventory-Fast Screen (BDI-FS): An efficient tool for depression screening in patients with end-stage renal disease [Internet]. Vol. 16, *Hemodialysis International*. 2012. p. 207–13.

8. Hahn CA, Dunn R, Halperin EC. Routine screening for depression in radiation oncology patients. *Am J Clin Oncol*. 2004 Oct;27(5):497–9.
9. Lowery AE, Holland JC. Screening cancer patients for distress: guidelines for routine implementation [Internet]. Vol. 8, *Community Oncology*. 2011. p. 502–5.
10. Tu C-H, Hsu M-C, Chi S-C, Lin H-Y, Yen Y-C. Routine depression screening and diagnosing strategy for cancer inpatients [Internet]. Vol. 23, *Psycho-Oncology*. 2014. p. 1057–67.
11. Behl D, Jatoi A. Pharmacological options for advanced cancer patients with loss of appetite and weight [Internet]. Vol. 8, *Expert Opinion on Pharmacotherapy*. 2007. p. 1085–90.
12. Beck AT. An Inventory for Measuring Depression [Internet]. Vol. 4, *Archives of General Psychiatry*. 1961. p. 561.
13. Wedding U, Koch A, Röhrig B, Pientka L, Sauer H, Höffken K, et al. Questioning depression in patients with cancer: Contribution of somatic and affective symptoms to Beck's Depression Inventory [Internet]. Vol. 18, *Annals of Oncology*. 2007. p. 1875–81.
14. Leiber L, Plumb MM, Gerstenzang ML, Holland J. The Communication of Affection Between Cancer Patients and Their Spouses [Internet]. Vol. 38, *Psychosomatic Medicine*. 1976. p. 379–89.
15. Fortin M, Steenbakkers K, Hudon C, Poitras M-E, Almirall J, van den Akker M. The electronic Cumulative Illness Rating Scale: a reliable and valid tool to assess multi-morbidity in primary care [Internet]. Vol. 17, *Journal of Evaluation in Clinical Practice*. 2011. p. 1089–93.
16. Graner KM, Rolim GS, Moraes ABA, Padovani CR, Lopes MA, Santos-Silva AR, et al. Feelings, perceptions, and expectations of patients during the process of oral cancer diagnosis. *Support Care Cancer*. 2016 May;24(5):2323–32.
17. Radhakrishnan R, Shrestha B, Bajrachary D. Oral Cancer - An Overview [Internet]. *Oral Cancer*. 2012.
18. Laidsaar-Powell R, Butow P, Bu S, Dear R, Fisher A, Coll J, et al. Exploring the communication of oncologists, patients and family members in cancer consultations: development and application of a coding system capturing family-relevant behaviours (KINcode) [Internet]. Vol. 25, *Psycho-Oncology*. 2016. p. 787–94.
19. Ivan M, Ana P. Oral Cancer: Incidence and Management [Internet]. Vol. 2, *Journal of Oral Cancer and Research*. 2018.
20. Cavalli-Björkman N. Implications of patients' socioeconomic status – what oncologists should be aware of [Internet]. Vol. 53, *Acta Oncologica*. 2014. p. 161–3.