PREVALENCE OF DEPRESSION AND ITS TREATMENT PATTERN AMONG DIABETIC PATIENTS ATTENDING HEALTH CARE CLINIC IN TIRUPATI

V Harika, S Thaarani, V Thanishka, B Yugandhar, A Venkatesh, Priyanka KS, Lavanya Yaidikar*

Seven Hills College of Pharmacy, Tirupati – 517561, Andhra Pradesh, India
For Correspondence: Dr. Lavanya Yaidikar, Professor, Department of Pharmacology, Seven Hills College of Pharmacy, Tirupati, Andhra Pradesh – 517561; ylavanya.balaji@gmail.com

ABSTRACT

Depression is one of major complicating health issue associated with various medical illnesses including diabetes mellitus. Among all the illnesses, depression and diabetes mellitus are significantly linked each other contributing for their major public health problem. Treating depression and associated illnesses remains challenging due to numerous adverse effects and drug interactions. The present study was undertaken to study the prevalence of depression and its treatment pattern among diabetic patients attending health care clinics in Tirupati. It's a prospective study which was carried out among 100 diabetic patients. Patient Health Questionnaire 9 (PHQ-9) depression scale was used to estimate the prevalence of depression. Socio-demographic details such as age, marital status, education, economic status, personal history, family history, past and present disease history, physical and other health factors associated with depression were noted using patient data collection form. We found 58.3% diabetic patients with depression, significant in married employed women of age between 31-40 years with elevated glucose levels, physical inactivity and poor life style modifications. We also found 80.1% prescriptions with selective serotonin reuptake inhibitors, than tricyclic antidepressants followed by monoamine oxidase inhibitors, atypical antipsychotics and other newer antidepressants.

KEYWORDS: Depression, prevalence, diabetes mellitus, prescribing patterns.

INTRODUCTION:

Depression is a common mental disorder that prevails with depressed mood, loss of interest or pleasure, along with feelings of guilt or low self-worth, disturbed sleep and appetite, low energy, and poor concentration (Bair et al., 2003; Alexopoulos, 2005). It usually occurs as a result of adverse life events, such as: loss of a significant person, object, relationship or health, but it can also occur due to no apparent cause and associated illnesses such as epilepsy, chronic pain, renal impairment including diabetes mellitus (Beurel et al., 2020; Ménard et al., 2016). These problems can become chronic or recurrent and lead to substantial impairments within life of an individual leading to decreased ability to take care of his or her every day responsibilities. Mood disorders are treatable conditions, with each type requiring different treatment approaches and modalities. Antidepressant medications and psychotherapies offer useful treatment and are commonly employed in treating the debilitating effects of depression. If mood disorders like depression are left untreated for long periods of time, they cause unnecessary suffering that intervenes with people's daily-life activities (Pearce et al., 2022; Sjöberg et al., 2017; Zhang et al., 2018).

Depression usually starts in early adulthood. It affects women more often than men, and unemployed people are also at high risk (Maier et al., 2021; Correa et al., 2020). An episode of depression may be characterized by sadness, indifference or apathy, or irritability. It is usually associated with change in a number of neurovegetative functions, (such as sleep patterns, appetite and weight, motor agitation or retardation, fatigue, impaired concentration and decision-making) as well as feelings of shame and guilt paired with thoughts of death. In 2019, major depressive disorder (MDD) accounted for a total of 63.2 million (2.5%) DALYs (disability adjusted life years) worldwide. Major depressive disorder caused 63 million (years lived with disability (YLDs) in 2019, whereas in 1990 it only caused 36 million YLDs, demonstrating a 45% increase over the past three decades. MDD was ranked second by global YLDs ranks in both 1990 and 2019 (Fisher et al., 2016; Moyneur et al., 2020).

MATERIALS AND METHODS

Study design and site: It's a prospective observational study carried out in Manas Hospital and Rehabilitation Centre, Tirupati.

Subjects: 100 diabetic patients based on Inclusion Criteria of patients who were diagnosed with moderate to severe depression in diabetics and willing to participate in study with informed consent. Patients with any significant illness including renal, hepatic or cardiac disease were excluded. Those with any substance abuse like alcohol, tobacco or other drug abuse, on radiation therapy or surgical intervention and who are not willing to participate were excluded (Zhou et al., 2020; Jarso et al., 2020).

Methodology:

This study was carried out during the year January 2020 –March 2020. Patients diagnosed with depression are taken up for study after the exclusion criteria are ruled out. Informed consent is obtained from every patient or patient's relatives. Data Collection Procedure was done based on Survey by using tools PHQ-9 depression scale- The outcome was the total score obtained on administration of the English and telugu version of the Patient

Health Questionnaire – 9 depression scale. The socio - demographic details and determinants of depression were collected using a structured interview schedule (Alkaabi et al., 2022; Kamrul-Hasan et al., 2019; Gendelman et al., 2009).

The ICD–10 (International Classification of Diseases, 10th edition), DSM–IV (*Diagnostic and Statistical Manual of Mental Disorders* of the American Psychiatric Association, 4[th]edition) and PHQ 9 (Patient Health Questionnaire) are the three most commonly used tools to diagnose depression. They all have very similar diagnostic features for the treatment and reducing the severity of depression.[102] The ICD–10 requires at least one of the following core symptoms to be present for at least two weeks:Depressed mood, Anhedonia And Loss of interest

The DSM-1V and PHQ 9 requires a minimum of five out of the nine following symptoms (which must include depressed mood and /or anhedonia).

1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g. feels sad or empty) or observation made by others (e.g. appears tearful). Note: in children and adolescents, it can be confirmed as an irritable mood.

2. Anhedonia: Markedly diminished interest or pleasure in all, or almost all, activities of the day , nearly every day (as indicated by either subjective account or observation made by others)

3. Significant weight loss when not dieting or weight gain (e.g. a change of more than five per cent of body weight in a month), or a decrease or an increase in appetite every day .Note: in children a failure to make expected weight gains should be considered.

4. Insomnia or hypersomnia nearly everyday

5. Psychomotor agitation or retardation nearly everyday (observable by others, not merely subjective feelings of restlessness or being slowed down)

6. Fatigue or loss of energy nearly everyday

7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-re approach or guilt about being sick)

8. Diminished ability to think or concentrate , or indecisiveness nearly every day (either by subjective account or as observed by others)

Treatment: progressive discussions are effectively carried out in management of common mental health problems and being followed in general practice. Since the introduction of the monoamine oxidase inhibitors (MAOIs) and the first TCA (Tricyclic antidepressant), imipramine, in the late 1950s, many new antidepressants have been introduced and approximately 35 different antidepressants are currently available worldwide.

This study was selected and framed after the through literature review and detailed discussion concerning the practical possibilities and difficulties. The study proposal was prepared and approval was obtained from the Head of the Institute and Institutional Ethical Committee. A detailed data collection from with a bilingual patient informed consent form was prepared. Data collection was done according to the inclusion and exclusion criteria. The detailed purpose of the study and benefits were explained in local language to the individual patients and care takers before obtaining the informed consent without any force or compulsion. All the patients who attended in gynecology ward were enrolled in the study. Every patient was assigned with the informed consent form and obtained their demographic

details, answers for the questions were taken and tabulated in the EXCEL SHEET. The details of the scores were tabulated and were categorized as the knowledged as well as poor knowledged patients.

STASTISTICAL ANALYSIS

All the data were obtained from patient data collection form. Data on continuous variables were summarized as mean and standard deviation. Comparison of means was made by paired t-test. Categorical data were presented as number and percentages. Results with $p<0.05$ were considered as significant.

RESULTS AND DISCUSSION

Between January 2020 and March 2020, 100 diabetic patients in and around Tirupati and nearby districts who have visited tertiary care clinic were recruited through a convenience sampling strategy. Potential participants were described that their participation in the study will involve responding to survey questions before and after receiving information about their mental health issue (Arambewela et al., 2019; Ebrahim et al., 2021). Potential participants were also advised that although their responses to survey questions would be practical , some survey questions may cover personal or sensitive topics. It was also made clear to the recruited people that if they agreed to participate , they would have the option to decline responding to any questions they were uncomfortable with /or terminate their participation in the study at any point during data collection. Distribution of study subjects were estimated and found that 58.3% were from chittoor, 20.8% from Kadapa, 4.16% from Anantapur and 16% from Nellore districts (Table 1; Figure 1).

Table 1. Distribution of Study Participants by Districts of Rayalaseema.

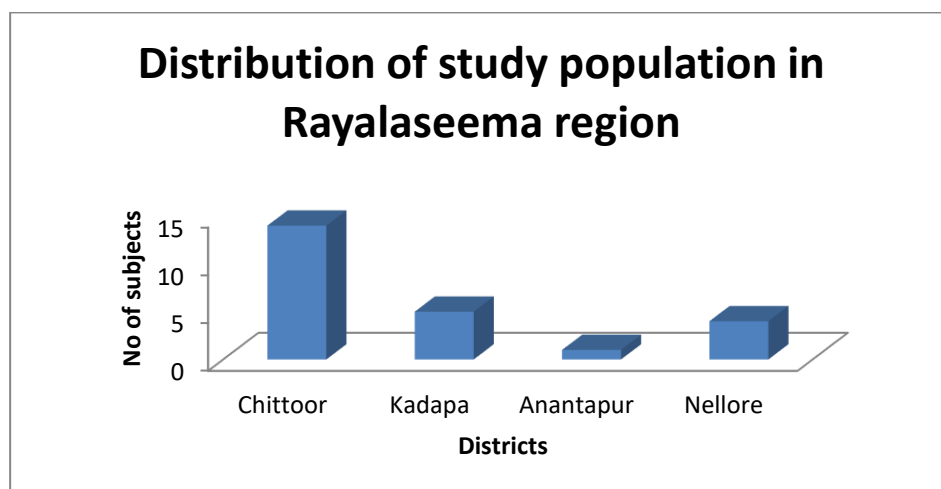| S.No	District	No of Participants	% of Population
1	Chittoor	68	58.3
2	Kadapa	12	20.8
3	Anantapur	04	4.16
4	Nellore	16	16.6

Figure 1. Study participant distribution according to residing districts

Table 2: Sex distribution of patients

Sex	No. of Patients	Percentage (%)
Male	22	22
Female	78	78
Total	100	100

The relative frequency of depression was more in females (78%) than in males (22%). It was further observed that the tendency to commit suicide was more in the age group of 21-30 years in both males and females. Nearly 61.8% of female patients and 39.2% of male patients were of the age group 21-30 years.

100 diabetics patients were included in data collection and quantitative analyses of this study. The distribution of sociodemographic characteristics of 50 patients who participated in the study are presented in Table 2. The people in this study were mostly students, employees, married, few were well educated and few were educated at the primary level. Participants ranged in age group between 13 to 66 years with a mean age of 42.2 years (Engum et al., 2005; Liu et al., 2022).

Overall, the surveyed population represented a non-random, convenience sample and was relatively homogeneous across many sociodemographic characteristics, particularly literacy and marital status (Hussain et al., 2018). (Table 3).

Table 3. Distribution of Study Population by Sociodemographic Factors (N =1000)

S.no	Characteristics	N	%
1	**Age**		
	10-20	6	6
	21-30	16	16
	31-40	30	30
	41-50	22	22
	51-60	18	18
	61 above	8	8
2	**Marital status**		
	Married	64	64
	Unmarried	18	18
	Divorced	10	10
	Widower	8	8
3	**Age of Marriage**		
	<20	12	12
	20-30	56	56
	30-40	14	14

	40>	-	
4	**Education**		
	Primary	10	10
	Secondary	16	16
	Graduation	70	70
	Illiterate	4	4
5	**Occupation**		
	Students	16	16
	Employed	28	28
	Unemployed	24	24
	Farming labour	8	8
	House wife	16	16
	Self –employed	8	8

Operational definitions:-

No Depression: Patients who have a score of 9 or below on the PHQ 9 depression scale were classified as not having depression.

Depression: Patients who have a score of 10 or above in the PHQ 9 depression scale were classified as having depression.

Table 4: Prescribing pattern of Depression among Diabetic patients

Prescribed drugs	Number of prescriptions	Percentage
Selective serotonin reuptake inhibitors	78	78
Tricyclic antidepressants	16	16
Monoamine oxidase inhibitors	2	2
Atypical antipsychotics	1	1
Newer antidepressants	3	3

We found 58.3% diabetic patients with depression, significant in married employed women of age between 31-40 years with elevated glucose levels, physical inactivity and poor life style modifications. We also found 80% prescriptions with selective serotonin reuptake inhibitors, than tricyclic antidepressants followed by monoamine oxidase inhibitors, atypical antipsychotics and other newer antidepressants (Tripathi et al., 2016; Lind et al., 2012; Conn et al., 1992; Grover et al.,. 2015).

CONCLUSION

Depression is the most common disorder which is prevalent with associated complications such as diabetes, chronic pain, chronic kidney injury, cancer etc., In this study, we have studies the percentage of prevalence of depression in diabetic patients due to its epidemiology. From the results, it can be concluded that 58.3% diabetic patients are with depression, more prevalent in married employed women of age between 31-40 years and might be due to stress, elevated glucose levels, physical inactivity and poor life style

modifications. 80% of prescriptions are reported with selective serotonin reuptake inhibitors, than tricyclic antidepressants followed by monoamine oxidase inhibitors, atypical antipsychotics and other newer antidepressants.

REFERENCES

- Bair MJ, Robinson RL, Katon W, Kroenke K. Depression and pain comorbidity: a literature review. Arch Intern Med. 2003 Nov 10;163(20):2433-45.

- Alexopoulos GS. Depression in the elderly. Lancet. 2005 Jun 4-10;365(9475):1961-70.

- Ménard C, Hodes GE, Russo SJ. Pathogenesis of depression: Insights from human and rodent studies. Neuroscience. 2016 May 3;321:138-162.

- Beurel E, Toups M, Nemeroff CB. The Bidirectional Relationship of Depression and Inflammation: Double Trouble. Neuron. 2020 Jul 22;107(2):234-256.

- Sjöberg L, Karlsson B, Atti AR, Skoog I, Fratiglioni L, Wang HX. Prevalence of depression: Comparisons of different depression definitions in population-based samples of older adults. J Affect Disord. 2017 Oct 15;221:123-131.

- Zhang Y, Chen Y, Ma L. Depression and cardiovascular disease in elderly: Current understanding. J Clin Neurosci. 2018 Jan;47:1-5.

- Pearce M, Garcia L, Abbas A, Strain T, Schuch FB, Golubic R, Kelly P, Khan S, Utukuri M, Laird Y, Mok A, Smith A, Tainio M, Brage S, Woodcock J. Association Between Physical Activity and Risk of Depression: A Systematic Review and Meta-analysis. JAMA Psychiatry. 2022 Jun 1;79(6):550-559.

- Maier A, Riedel-Heller SG, Pabst A, Luppa M. Risk factors and protective factors of depression in older people 65+. A systematic review. PLoS One. 2021 May 13;16(5):e0251326.

- Corrêa ML, Carpena MX, Meucci RD, Neiva-Silva L. Depression in the elderly of a rural region in Southern Brazil. Cien Saude Colet. 2020 Jun;25(6):2083-2092.

- Fisher L, Hessler DM, Polonsky WH, Masharani U, Peters AL, Blumer I, Strycker LA. Prevalence of depression in Type 1 diabetes and the problem of over-diagnosis. Diabet Med. 2016 Nov;33(11):1590-1597.

- Moyneur E, Dea K, Derogatis LR, Vekeman F, Dury AY, Labrie F. Prevalence of depression and anxiety in women newly diagnosed with vulvovaginal atrophy and dyspareunia. Menopause. 2020 Feb;27(2):134-142.

- Zhou SJ, Zhang LG, Wang LL, Guo ZC, Wang JQ, Chen JC, Liu M, Chen X, Chen JX. Prevalence and socio-demographic correlates of psychological health problems in Chinese adolescents during the outbreak of COVID-19. Eur Child Adolesc Psychiatry. 2020 Jun;29(6):749-758.

- Alkaabi AJ, Alkous A, Mahmoud K, AlMansoori A, Elbarazi I, Suliman A, Alam Z, AlAwadi F, Al-Maskari F. The prevalence and correlates of depression among patients with chronic diseases in the United Arab Emirates. PLoS One. 2022 Dec 14;17(12):e0278818.

- Jarso MH, Likasa DD. Prevalence and Associated Factors of Depression Among Diabetic Outpatients in Ethiopia. Prim Care Companion CNS Disord. 2020 Apr 2;22(2):19m02479.

- Kamrul-Hasan AB, Palash-Molla M, Mainul-Ahsan M, Gaffar AJ, Asaduzzaman M, Saifuddin M, Rahman MS, Akter F, Rahman H, Talukder SK, Islam M, Chanda PK, Siddiqui NI, Selim S. Prevalence and Predictors of Depression among Patients with Type 2 Diabetes: A Multicenter Cross-sectional Study from Bangladesh. Mymensingh Med J. 2019 Jan;28(1):23-30.

- Gendelman N, Snell-Bergeon JK, McFann K, Kinney G, Paul Wadwa R, Bishop F, Rewers M, Maahs DM. Prevalence and correlates of depression in individuals with and without type 1 diabetes. Diabetes Care. 2009 Apr;32(4):575-9.

- Arambewela MH, Somasundaram NP, Jayasekara HBPR, Kumbukage MP. Prevalence of Depression and Associated Factors among Patients with Type 2 Diabetes Attending the Diabetic Clinic at a Tertiary Care Hospital in Sri Lanka: A Descriptive Study. Psychiatry J. 2019 Feb 3;2019:7468363.

- Ebrahim M, Tamiru D, Hawulte B, Misgana T. Prevalence and associated factors of depression among diabetic outpatients attending diabetic clinic at public hospitals in Eastern Ethiopia: A cross-sectional study. SAGE Open Med. 2021 Dec 22;9:20503121211066244.

- Engum A, Mykletun A, Midthjell K, Holen A, Dahl AA. Depression and diabetes: a large population-based study of sociodemographic, lifestyle, and clinical factors associated with depression in type 1 and type 2 diabetes. Diabetes Care. 2005 Aug;28(8):1904-9.

- Liu X, Wang S, Wang G. Prevalence and Risk Factors of Postpartum Depression in Women: A Systematic Review and Meta-analysis. J Clin Nurs. 2022 Oct;31(19-20):2665-2677.

- Hussain S, Habib A, Singh A, Akhtar M, Najmi AK. Prevalence of depression among type 2 diabetes mellitus patients in India: A meta-analysis. Psychiatry Res. 2018 Dec;270:264-273.

- Tripathi A, Avasthi A, Desousa A, Bhagabati D, Shah N, Kallivayalil RA, Grover S, Trivedi JK, Shinfuku N. Prescription pattern of antidepressants in five tertiary care psychiatric centres of India. Indian J Med Res. 2016 Apr;143(4):507-13.

- Conn DK, Goldman Z. Pattern of use of antidepressants in long-term care facilities for the elderly. J Geriatr Psychiatry Neurol. 1992 Oct-Dec;5(4):228-32.

- Lind T, Waernbaum I, Berhan Y, Dahlquist G. Socioeconomic factors, rather than diabetes mellitus per se, contribute to an excessive use of antidepressants among young adults with childhood onset type 1 diabetes mellitus: a register-based study. Diabetologia. 2012 Mar;55(3):617-24.

- Grover S, Avasthi A, Tripathi A, Tanra AJ, Chee KY, He YL, Chiu HF, Kuga H, Lee MS, Chong MY, Udomratn P, Kanba S, Yang SY, Si TM, Sim K, Tan CH, Shen WW, Xiang YT, Sartorius N, Shinfuku N. Antidepressant Prescription Pattern in the Presence of Medical Co-morbidity: REAP-AD 2013 Study. East Asian Arch Psychiatry. 2015 Sep;25(3):99-107.