

Mental Well-Being in Healthcare: Prevalence and Severity of Subthreshold Depression Among Healthcare Students and Professionals in Tamil Nadu: A Cross-Sectional Study

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Abstract

Background: Psychological distress, particularly depression, is increasingly prevalent among students and professionals in the healthcare sector in Tamil Nadu. Identifying subthreshold depression and its severity is essential for early intervention and mental health management. **Aim:** This study aims to assess subthreshold depression and its severity among healthcare students and professionals in Tamil Nadu. **Materials and Methods:** A cross-sectional online survey was conducted among healthcare students and professionals in Tamil Nadu. Depression was assessed using the Patient Health Questionnaire-9 (PHQ-9), which categorizes depression as mild, moderate, or severe, and the Zung Self-Rating Depression Scale (SDS), which classifies scores as normal (<50), mild depression (50–59), moderate to marked major depression (60–69), and severe to extreme major depression (>70). Data were analyzed using the chi-square test, with statistical significance set at $p < 0.05$. **Results:** A total of 495 students and professionals participated in the survey. The distribution based on profession included dentists (54.55%), doctors (30.10%), nurses (11.11%), and other healthcare professionals (4.24%). Data were collected and assessed using PHQ-9 and SDS, with statistical analysis performed using the chi-square test. The findings indicated a high prevalence of depressive symptoms among healthcare professionals. **Conclusion:** The study highlights a significant burden of depression among healthcare students and professionals in Tamil Nadu. Given the demanding nature of the healthcare sector, regular mental health assessments and targeted interventions are necessary to support the well-being of these individuals.

Keywords: Depression, Healthcare Professionals, Mental Health, PHQ-9, Zung Self-Rating Depression Scale, Psychological Distress

INTRODUCTION:

Depression is recognized by the World Health Organization as one of the most significant mental health disorders, affecting individuals worldwide.¹ It is a common condition characterized by a persistently low mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy levels, and impaired concentration.² Depression manifests as a combination of psychological, behavioural, and physical symptoms, often impacting an individual's overall well-being.³

While depression can affect anyone, healthcare professionals are particularly vulnerable due to the demanding nature of their work. Factors such as extended working hours, high workloads, increasing job complexity, significant professional responsibility, and

constant advancements in healthcare contribute to heightened stress levels.⁴ Institutional barriers, including workplace bias, lack of autonomy, inadequate support, job dissatisfaction, and an inability to balance personal life, further exacerbate mental health challenges.⁵ Additionally, the fear of making clinical errors and concerns regarding patient care can lead to overwhelming feelings of guilt, failure, shame, and diminished self-esteem among healthcare professionals.⁶

Medical and dental schools are widely recognized as rigorous and high-pressure learning environments. Students are required to develop academic, clinical, and interpersonal skills within a limited timeframe, often leading to significant psychological stress.⁷ Major stressors contributing to depression among students include academic workload,

frequent examinations, fear of failure, fulfilling course requirements, critical evaluations from supervisors, patient responsibility, personal life challenges, professional identity concerns, financial burdens, and uncertainty regarding employment opportunities post-graduation.⁸

Several standardized screening tools are used for both research and clinical diagnosis of depression, including the Patient Health Questionnaire (PHQ), Beck Depression Inventory (BDI), Center for Epidemiologic Studies Depression Scale (CES-D), and Zung Self-Rating Depression Scale (ZSDS). Given the increasing prevalence of depression among healthcare students and professionals, this study aimed to assess subthreshold depression and its severity in this population using the Patient Health Questionnaire (PHQ-9) and the Zung Self-Rating Depression Scale (SDS).

MATERIALS AND METHODS:

A cross-sectional online questionnaire survey was conducted among medical and dental students, medical practitioners, dental practitioners, nurses, and other healthcare professionals in Tamil Nadu, India, over a period of five months (November 2022 – March 2023). Participants were recruited using convenience sampling through personal contacts and social media platforms. The survey comprised three sections: professional background, the Patient Health Questionnaire-9 (PHQ-9), and the Zung Self-Rating Depression Scale (SDS). All responses were collected anonymously.

The PHQ-9 is a widely used self-reported screening tool for depression, with scores categorized as follows: minimal/no depression (0–4), mild depression (5–9), moderate depression (10–14), and severe depression (15–27). The Zung Self-Rating Depression Scale (SDS) consists of 20 items, with total scores ranging from 20 to 80. Based on the scale, scores of 20–44 indicate normal mental health, 45–59 suggest mild depression, 60–69 correspond to moderate depression, and scores of 70 and above signify severe depression.

The collected data were analyzed using the chi-square test, and the resulting P-value was assessed for statistical significance.

RESULTS:

The data was divided based on jobs; dentists were 54.55%, doctors 30.10%, nurse 11.11% and others 4.24%. When asked about diminished interest in doing their daily activities, 51.11% said several days and only 4.04% said nearly every day. When asked about depression and hopeless behavior 47.88% said more than half the days and only 7.68% said nearly every day. The participants were asked about Trouble falling or staying asleep or sleeping too much 38.79% said more than half days and 9.90% said nearly every day. 40.40% felt tiredness more than half the days and 10.91% said not at all. Poor appetite or overeating was reported in 39.19% more than half the days and 12.73% nearly every day. When questioned about feeling bad about themselves 37.98% felt so on several days and 10.91% felt so every day. 36.97% had trouble concentrating on things several days and 9.90% had it every day. Moving or speaking so slowly that other people could have noticed or being restless 37.78% said several days and 11.52% said nearly every day. When questioned about suicidal and self-harming thoughts 36.57% of the participants said that they felt so more than half the days and 12.53% felt so every day.

The study participants were questioned about feeling down hearted and blue, 40.40% of them felt so some of the time and 8.08% of them answered most of the time; also, when questioned if morning is when the person feels best, 44.04% said good part of the time and 8.28% said little of the time. Upon questioning if the person has a crying spell 38.59% said good part of the time and 13.54% said most of the time; when asked if they have trouble sleeping at night 36.36% said good part of the time and 13.94% said little of the time. When asked if the person eat as much as I do 36.16% of the study participants answered good part of the time and 12.32% of them answered most of the time. When questioned if the person noticed that he/she is losing weight 45.25% of study participants answered good part of the time and 8.08% of them answered most of the time. When questioned if they have trouble with constipation, 34.55% of the study participants answered good part of the time whereas 14.14% of them answered little of the time. When questioned if

their heart beats faster than usual, 37.98% of the study participants answered good part of the time and 11.11% of them answered most of the time. When asked if they are getting tired for no reason, 35.96% of the study participants said they felt so some of the time and 14.14% of them felt it little of the time. When questioned if their mind is clear at present than before, 39.80% of the study participants answered good part of the time whereas 13.54% of them answered most of the time. Furthermore, when questioned if they find it easy to do their things, they used to do 36.36% of the study participants said some of the time and 14.14% of them answered most of the time. When questioned if they feel restless and cannot stand still, 39.39% of the study participants answered they felt so good part of the time and 11.31% of them answered most of the time. When questioned if they feel hopeful about the future, 37.17% of the study participants answered good part of the time and 13.74% answered most of the time. When asked if they feel irritable than the usual 41.41% of the study participants felt so a good part of the time and 12.53% of them felt so most of the time. When questioned if they find it easy to make decision 38.18% of the study participants answered good part of the time and 11.52% of them answered most of the time. Upon questioning if they feel useful and needed, 38.59% of them answered they felt so a good part of the time and 13.74% of them answered they felt so little as well as most of the time. When questioned if their life is pretty full 36.77% of the study participants felt so some of the time and 13.94% of them felt so little of the time. When questioned if they felt that others would be better off if they were dead, 37.98% of the study participants answered some of the time and 10.91% of them answered most of the time. When questioned if they still enjoy the things, they used to do 37.37% of the study participants answered some of the time and 12.93% of them answered most of the time.

Participants of various professions were analyzed using these two scales and the results were interpreted (Table -2)

DISCUSSION:

Depression is a prevalent mood disorder characterized by persistent sadness, lack of interest, and diminished ability to experience

pleasure in daily activities. It has been classified under mental and behavioural disorders due to its impact on cognitive and emotional well-being.¹ Studies have reported that healthcare professionals, including medical and dental students, practitioners, and nurses, are at an increased risk of experiencing psychological distress due to the demanding nature of their profession.^{7,9}

The present study aimed to assess subthreshold depression and its severity among students and professionals in the healthcare sector in Tamil Nadu using validated screening tools—the Patient Health Questionnaire (PHQ-9) and the Zung Self-Rating Depression Scale (SDS). The PHQ-9 is a self-reported measure used to classify depression severity into minimal (0-4), mild (5-9), moderate (10-14), moderately severe (15-19), and severe (20-27) categories, while the SDS categorizes depression based on scores ranging from normal (20-44), mild (45-59), moderate (60-69), and severe (>70).

The study utilized an online questionnaire distributed among medical and dental students, practitioners, nurses, and other healthcare workers in Tamil Nadu. The collected data were analyzed using the chi-square test, with significance determined by the p-value.

Among the respondents, 54.55% were dentists, 30.10% were doctors, 11.11% were nurses, and 4.24% were other healthcare workers. When assessing depressive symptoms, 47.88% reported experiencing feelings of depression and hopelessness for more than half the days, while 7.68% reported experiencing them nearly every day. Disturbances in sleep patterns were reported by a significant portion of participants, with 60.2% experiencing difficulty sleeping most of the time.⁸ Additionally, 34.55% reported frequent constipation, and 14.4% experienced it occasionally. Physiological symptoms, such as increased heart rate, were also observed, with 37.98% of participants experiencing palpitations frequently and 11.11% experiencing them most of the time.¹⁰

Cognitive difficulties, such as trouble concentrating, were reported by 36.97% on several days and 9.90% nearly every day.¹¹ The overall rate of depression was categorized based on the PHQ-9 and SDS scores, with results

stratified according to professional categories. The findings are consistent with previous studies indicating that dental and medical students are particularly vulnerable to stress and depressive symptoms due to academic pressures, workload, and professional responsibilities.¹²⁻¹⁵

These results emphasize the need for early screening, mental health awareness, and structured interventions to mitigate depression among healthcare professionals. Implementing wellness programs, stress management strategies, and accessible mental health services

can play a critical role in improving psychological well-being in this population.⁶

A key limitation of this study is its reliance on self-reported questionnaires, which may be subject to response bias and social desirability bias, potentially affecting the accuracy of the results. Additionally, the study design did not account for external factors such as personal life stressors, socioeconomic status, or past psychiatric history, which may influence depression severity.

Sl no.	Question	Response	Dentist	Doctor	Nurse	Others	P value
PHQ-9							
1.	Little interest in doing things	Not at all	21(28.4)	30(40.5)	21(28.4)	2(2.7)	<0.01*
		Several days	142(56.1)	78(30.8)	22(8.7)	11(4.3)	
		More than half the days	96(64.9)	34(23)	11(7.4)	7(4.7)	
		Nearly every day	11(5.5)	7(35)	1(5)	1(5)	
2.	Feeling down, depressed or hopeless	Not at all	21(45.7)	15(32.6)	6(13)	4(8.7)	<0.01*
		Several days	76(43.7)	59(33.9)	29(16.7)	10(5.7)	
		More than half the days	148(62.4)	66(27.8)	16(6.8)	7(3)	
		Nearly every day	25(65.8)	9(23.7)	4(10.5)	0	
3.	Trouble falling or staying asleep or sleeping too much	Not at all	36(42.4)	26(30.6)	15(17.6)	8(9.4)	<0.05*
		Several days	84(49.7)	58(34.3)	22(13)	5(3)	
		More than half the days	117(60.9)	54(28.1)	15(7.8)	6(3.1)	
		Nearly every day	33(67.3)	11(22.4)	3(6.1)	2(4.1)	
4.	Feeling tired or having little energy	Not at all	24(44.4)	12(22.2)	13(24.1)	5(9.3)	<0.01*
		Several days	80(48.5)	70(42.4)	10(6.1)	5(3)	
		More than half the days	120(60)	48(24)	24(12)	8(4)	

		Nearly every day	46(6 0.5)	19(2 5)	8(10. 5)	3(3.9)	
5.	Poor appetite or overeating	Not at all	24(3 5.3)	22(3 2.4)	14(2 0.6)	8(11. 8)	<0. 001 **
		Several days	95(5 5.9)	55(3 2.4)	15(8. 8)	5(2.9)	
		More than half the days	109(56.2)	57(2 9.4)	22(1 1.3)	6(3.1)	
		Nearly every day	42(6 6.7)	15(2 3.8)	4(6.3)	2(3.2)	
6.	Feeling bad about yourself - or that you are a failure or have let yourself or your family down	Not at all	37(3 5.9)	43(4 1.7)	15(1 4.6)	8(7.8)	<0. 01* *
		Several days	97(5 1.6)	64(3 4)	22(1 1.7)	5(2.7)	
		More than half the days	99(6 6)	32(2 1.3)	14(9. 3)	5(3.3)	
		Nearly every day	37(6 8.5)	10(1 8.5)	4(7.4)	3(5.6)	
7.	Trouble concentrating on things, such as reading the newspaper or watching television	Not at all	32(3 7.6)	35(4 1.2)	11(1 2.9)	7(8.2)	<0. 05*
		Several days	105(57.4)	54(2 9.5)	22(1 2)	2(1.1)	
		More than half the days	104(58.4)	48(2 7)	17(9. 6)	9(5.1)	
		Nearly every day	29(5 9.2)	12(2 4.5)	5(10. 2)	3(6.1)	
8.	Moving or speaking so slowly that other people could have noticed or being restless a lot more than usual	Not at all	32(3 6.8)	28(3 2.2)	16(1 8.4)	11(1 2.6)	<0. 01* *
		Several days	100(53.5)	65(3 4.8)	17(9. 1)	5(2.7)	
		More than half the days	107(65.2)	38(2 3.2)	17(1 0.4)	2(1.2)	
		Nearly every day	31(5 4.4)	18(3 1.6)	5(8.8)	3(5.3)	
9.	Thoughts that you would be better off dead or of hurting yourself	Not at all	39(4 2.9)	29(3 1.9)	15(1 6.5)	8(8.8)	0.0 7
		Several days	87(5 4)	49(3 0.4)	19(1 1.8)	6(3.7)	
		More than half the days	110(60.8)	53(2 9.3)	15(8. 3)	3(1.7)	
		Nearly every day	34(5 4.8)	18(2 9)	6(9.7)	4(6.5)	
ZUNG SELF RATING DEPRESSION SCALE							
10.	I feel downhearted and blue	A little of the time	47(3 7)	49(3 8.6)	22(1 7.3)	9(7.1)	<0. 01* *
		Some of	106(56.2)	61(3 9.4)	23(1 1.3)	10(5.1)	

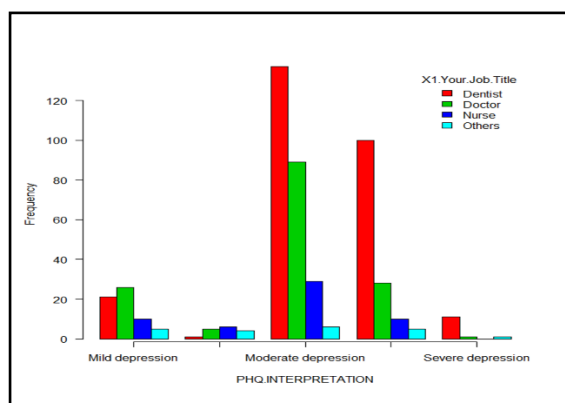
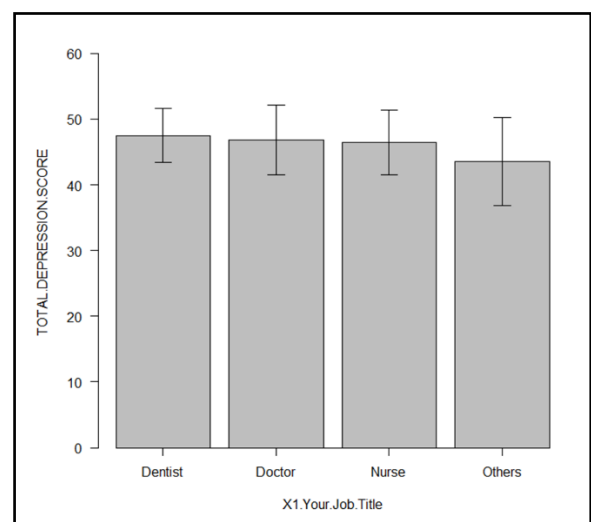
		the time	53)	0.5)	1.5)		
		Good part of the time	89(6 9.5)	29(2 2.7)	9(7)	1(0.8)	
		Most of the time	28(7 0)	10(2 5)	1((2. 5)	1(2.5)	
11.	Morning is when I feel the best	A little of the time	16(3 9)	17(4 1.5)	5(12. 2)	3(7.3)	0.0 59
		Some of the time	80(4 8.2)	56(3 3.7)	23(1 3.9)	7(4.2)	
		Good part of the time	130(59.6)	63(2 8.9)	19(8. 7)	6(2.8)	
		Most of the time	44(6 2.9)	13(1 8.6)	8(11. 4)	5(7.1)	
12.	I have crying spells or feel like it	A little of the time	25(3 6.2)	22(3 1.9)	15(2 1.7)	7(10. 1)	<0. 01* *
		Some of the time	84(5 0)	58(3 4.5)	18(1 0.7)	8(4.8)	
		Good part of the time	111(58.1)	56(2 9.3)	20(1 0.5)	4(2.1)	
		Most of the time	50(7 4.6)	13(1 9.4)	2(3)	2(3)	
13.	I have trouble sleeping at night	A little of the time	26(3 7.7)	22(3 1.9)	13(1 8.8)	8(11. 6)	<0. 01* *
		Some of the time	86(5 4.4)	53(3 3.5)	11(7)	8(5.1)	
		Good part of the time	105(58.3)	49(2 7.2)	22(1 2.2)	4(2.2)	
		Most of the time	53(6 0.2)	25(2 8.4)	9(10. 2)	1(1.1)	
14.	I eat as much as I do	A little of the time	31(3 8.3)	30(3 7)	13(1 6)	7(8.6)	<0. 05*
		Some of the time	98(5 6.3)	51(2 9.3)	17(9. 8)	8(4.6)	
		Good part of the time	103(57.5)	56(3 1.3)	15(8. 4)	5(2.8)	
		Most of the time	38(6 2.3)	12(1 9.7)	10(1 6.4)	1(1.6)	
15.	I notice that I am losing my weight	A little of the time	27(3 4.6)	29(3 7.2)	15(1 9.2)	7(9)	<0. 01* *
		Some of the time	80(5 2.3)	51(3 3.3)	17(1 1.1)	5(3.3)	
		Good part of the time	139(62.1)	62(2 7.7)	17(7. 6)	6(2.7)	
		Most of the time	24(6 0)	7(17. 5)	6(15)	3(7.5)	
16.	I have trouble with constipation	A little of the time	28(4 0)	28(4 0)	8(11. 4)	6(8.6)	<0. 01* *
		Some of the time	87(5 1.5)	51(3 0.2)	25(1 4.8)	6(3.6)	
		Good part	96(5)	55(3)	17(9.)	3(1.8)	

		of the time	6.1)	2.2)	9))	
		Most of the time	59(6 9.4)	15(1 7.6)	5(5.9)	6(7.1)	
17.	My heart beats faster than usual	A little of the time	36(4 4.4)	25(3 0.9)	13(1 6)	7(8.6)	<0. 05*
		Some of the time	85(4 9.7)	54(3 1.6)	21(1 2.3)	11(6. 4)	
		Good part of the time	114(60.6)	55(2 9.3)	17(9)	2(1.1)	
		Most of the time	35(6 3.6)	15(2 7.3)	4(7.3)	1(1.8)	
18.	I get tired for no reason	A little of the time	32(4 5.7)	22(3 1.4)	12(1 7.1)	4(5.7)	0.0 7
		Some of the time	86(4 8.3)	59(3 3.1)	23(1 2.9)	10(5. 6)	
		Good part of the time	106(60.2)	47(2 6.7)	16(9. 1)	7(4)	
		Most of the time	46(6 4.8)	21(2 9.6)	4(5.6)	0	
19.	My mind is clear than it used to be	A little of the time	26(3 5.6)	30(4 1.1)	14(1 9.2)	3(4.1)	<0. 01* *
		Some of the time	78(4 9.4)	52(3 2.9)	20(1 2.7)	8(5.1)	
		Good part of the time	126(64)	50(2 5.4)	15(7. 6)	6(3)	
		Most of the time	40(5 9.7)	17(2 5.4)	6(9)	4(6)	
20.	I find it easy to do the things I used to	A little of the time	33(4 6.5)	24(3 3.8)	10(1 4.1)	4(5.6)	0.1 8
		Some of the time	86(4 7.8)	65(3 6.1)	22(1 2.2)	7(3.9)	
		Good part of the time	109(62.6)	44(2 5.3)	15(8. 6)	6(3.4)	
		Most of the time	42(6 0)	16(2 2.9)	8(11. 4)	4(5.7)	
21.	I am restless and can't keep still	A little of the time	35(4 3.8)	25(3 1.2)	9(11. 2)	11(1 3.8)	<0. 01* *
		Some of the time	81(4 9.4)	56(3 4.1)	22(1 3.4)	5(3)	
		Good part of the time	115(59)	55(2 8.2)	21(1 0.8)	4(2.1)	
		Most of the time	39(6 9.6)	13(2 3.2)	3(5.4)	1(1.8)	
22.	I feel hopeful about the future	A little of the time	29(4 1.4)	22(3 1.4)	13(1 8.6)	6(8.6)	0.1 3
		Some of the time	100(57.8)	49(2 8.3)	16(9. 2)	8(4.6)	
		Good part of the time	102(55.4)	55(2 9.9)	20(1 0.9)	7(3.8)	
		Most of the	39(5)	23(3)	6(8.8)	0	

		time	7.4)	3.8))		
23.	I am more irritable than the usual	A little of the time	32(4 6.4)	19(2 7.5)	13(1 8.8)	5(7.2)	0.0 7
		Some of the time	80(5 0.3)	50(3 1.4)	19(1 1.9)	10(6. 3)	
		Good part of the time	126(61.5)	58(2 8.3)	16(7. 8)	5(2.4)	
		Most of the time	32(5 1.6)	22(3 5.5)	7(11. 3)	1(1.6)	
24.	I find it easy to make decisions	A little of the time	30(3 8.5)	30(3 8.5)	14(1 7.9)	4(5.1)	0.0 9
		Some of the time	91(5 3.2)	52(3 0.4)	18(1 0.5)	10(5. 8)	
		Good part of the time	116(61.4)	49(2 5.9)	18(9. 5)	6(3.2)	
		Most of the time	33(5 7.9)	18(3 1.6)	5(8.8)	1(1.8)	
25.	I feel that I am useful and needed	A little of the time	31(4 5.6)	24(3 5.3)	10(1 4.7)	3(4.4)	0.4 6
		Some of the time	87(5 1.8)	52(3 1)	23(1 3.7)	6(3.6)	
		Good part of the time	115(60.2)	52(2 7.2)	14(7. 3)	10(5. 2)	
		Most of the time	37(5 4.4)	21(3 0.9)	8(11. 8)	2(2.9)	
26.	My life is pretty full	A little of the time	29(4 2)	25(3 6.2)	12(1 7.4)	3(4.3)	0.3 9
		Some of the time	97(5 3.3)	58(3 1.9)	20(1 1)	6(3.5)	
		Good part of the time	103(60.2)	46(2 6.9)	16(9. 4)	5(6.8)	
		Most of the time	41(5 6.2)	20(2 7.4)	7(9.6)	7(3.8)	
27.	I feel that others would be better off if I were dead	A little of the time	32(3 6.8)	34(3 9.1)	13(1 4.9)	8(9.2)	<0. 01* *
		Some of the time	94(5 0)	60(2 5.9)	26(6. 6)	8(4.3)	
		Good part of the time	109(65.7)	43(2 2.2)	11(9. 3)	3(1.8)	
		Most of the time	35(6 4.8)	12(3 1.9)	5(13. 8)	2(3.7)	
28.	I still enjoy the things I used to do	A little of the time	25(3 4.7)	24(3 3.3)	19(2 6.4)	4(5.6)	<0. 01* *
		Some of the time	105(56.8)	54(2 9.2)	21(1 1.4)	5(2.7)	
		Good part of the time	105(60.3)	51(2 9.3)	11(6. 3)	7(4)	
		Most of the time	35(5 4.7)	20(3 1.2)	4(6.2)	5(7.8)	

TABLE - 1

Sl no .	Question	Response	Dentist	Doctor	Nurse	Others	P value
1.	PHQ-9	Minimal depression	1(6.2)	5(31.2)	6(37.5)	4(25)	<0.01**
		Mild depression	21(33.9)	26(41.9)	10(16.1)	5(8.1)	
		Moderate depression	137(52.5)	89(34.1)	29(11.1)	6(2.3)	
		Moderately severe depression	100(69.9)	28(19.6)	10(7)	5(3.5)	
		Severe depression	11(84.6)	1(7.7)	0	1(7.7)	
2.	ZUNG SELF RATING DEPRESSION SCALE		47.50±4.10	46.86±5.30	46.46±4.95	43.52±6.66	<0.01**

TABLE - 2

Figure -1: PHQ Interpretation

Figure 2: Total depression scores among the professionals
CONCLUSION:

The study has a limitation such as the self-responding of the questionnaire has there is no assessor to interrogate in the case of any miscommunication between the evaluator and the respondent. The study reports increased prevalence of depression among medical professionals. This put forwards a need for improved curriculum and structure of course that provides an optimal stress-free learning environment to the students who are future professionals in the healthcare sector. This would improve the wellbeing of medical professionals.

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