

# Integrated Medical Education System: Depression and Anxiety among Pakistani Medical Students

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## ABSTRACT

**Backgrounds:** In the modern era of medical teaching, medical college is a place full of stress, depression and anxiety among students that exert a negative effect on their academic performance and psychosocial well-being.

**Aim:** To determine the prevalence of depression and anxiety (by DASS scoring system) in male and female students of private medical school in integrated teaching system.

**Methodology:** This study with enrolled students (n=190) was carried out after research ethical committee's IIMC approval at Islamic International Medical college, Riphah university, Islamabad-Pakistan. Both male and female medical students were enrolled. Different levels of depression and anxiety among them were noted after filling DASS questionnaire proforma. Data was analyzed by SPSS. Chi square was used to determine the association of depression and anxiety with gender and year of study as p-value  $\leq 0.05$  was considered significant.

**Results:** The mean age of all enrolled students was  $22.5 \pm 1.6$  with the range of 20 to 24 years. The prevalence of depression was 46.3%, whereas anxiety was 71.6% among all enrolled subjects. The difference between male & female students depending on depression parameter was statistically significant with p-value of  $<0.001$ .

**Conclusion:** We concluded that female medical students develop more depression and anxiety in integrated medical education system than male students.

**Keywords:** Medical students, Depression, Anxiety and DASS system.

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## INTRODUCTION

Medical college is a place full of stress, depression and anxiety among students that exert a negative effect on their academic performance, physical health, and psychosocial well-being. They are easy target for many mental diseases like depression, anxiety and stress due to multiple factors like academic challenges, environmental changes, ultimate goal achievement plans and life challenges such as academic evolution from school to university and the difference including the ultimate responsibility from the vantage point of a student to a capable physician<sup>1,2</sup>. The prevalence of depression was variable among medical students in public universities. It was around 10.4% in Greece by Yusoff MS et al., 15.2% in USA, 24% in UK, 29.1% in India by Sida S et al. and 43.8% in Pakistan by Jadoon NA et al<sup>3</sup>.

Integrated medical education system was defined as "the organization of teaching matter to interrelate or unify subjects frequently taught in separate academic courses or departments"<sup>4</sup>. In USA Cleveland (1952) the new methodology of integrated system of medical teaching was introduced for the first time<sup>5</sup>.

The purpose of switching over from conventional teaching methodology to integrated system is to make the medical students to acquire knowledge, to apply the disciplinary content, become critical thinkers and master the skills of life-long learning, communication, and team building<sup>6</sup>.

In the modern era of medical teaching the application of the integrated medical education system has substituted boring conventional lectures with more student centered, interesting interactive techniques based on organ systems with clinical applications<sup>7</sup>. At the same time students are subjected to a series of regular formative, summative assessments, and objectively structured clinical examinations (OSCE) in the integrated modular system.<sup>8</sup> The implementation of integrated Curriculum is an important approach in medical education in order to help boost up a meaningful learning<sup>9</sup>. Stress is the body's unfocussed reaction to the burden put on it, or to distressing factors in the environment. It is a course of action by which we recognize and deal with environmental pressure and challenges. There are different kinds of stressors which a medical student has to face throughout its education like pressures of academics with a compulsion to pass with good grades from parents and difficulties in adapting with integrated modular system<sup>10</sup>.

The prevalence of depression and anxiety levels in the population are important indicators for mental health. Many studies have highlighted the occurrence of various mental and physical problems like autoimmune disorders, anxiety and depression more in females than males.<sup>11</sup> Physical and mental health problems due to too much stress result in reduced student's self-esteem and affect their academic performance. Many studies have highlighted the occurrence of various mental and physical problems like autoimmune disorders, anxiety and depression more in females than males<sup>13</sup>.

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Literature review has revealed there is increase in prevalence stress among medical students globally in integrated teaching due to less social interaction and limited student/faculty longitudinal relationships but limited data is available in private medical colleges of Pakistan. In the light of this increasing burden of depression and anxiety among our medical students, we planned this present study to determine the prevalence of depression and anxiety (by DASS scoring system) in male and female students of private medical college where integrated teaching system was adopted. It helped us in assessing these mental health issues among students so that they can be properly managed in-order to reduce this mental burden.

**METHODS**

This cross sectional study was carried out after research ethical committee’s IIMC approval at Islamic International Medical college, Riphah university from June 2017 to December 2017 Islamabad, Pakistan. The sample size of 190 was calculated using WHO software taking proportion of depression among medical students is equal to 40.9%, confidence level equal to 95% and margin of error equal to 7%. Both male and female medical students were enrolled. Students who did not give informed consent and had any disease were ruled out of the project. Students were informed and written consent was taken. Level of depression and anxiety among them were noted after filling DASS questionnaire profoma.<sup>14</sup>

**Statistical Analysis:** The data were analysis by using SPSS 23. Frequency and percentage were given for gender, year of study, depression and anxiety status. Chi square was used to determine the association of depression and anxiety with gender and year of study as p-value ≤ 0.05 was considered significant.

**RESULTS**

Frequency and percentages (%) were given for gender and year of study for enrolled subjects in table-1. Out of 190 subjects, 112 (58.9%) were females and 78 (41.1%) were males. Parameters like age in years was noted at the time of enrollment as well as presented by mean± S.D (Table 1).

The distribution of students with respect to mental health issues like depression and anxiety in the current

study are shown in table-2 below. In current project, results showed that the prevalence of depression was 46.3%, whereas anxiety was 71.6% among all enrolled subjects.

In our study, results according to DASS scoring showed that 66.7% male students did not have depression whereas 44.6% of female students had no depression among enrolled subjects. This difference between male and female students depending on depression parameter was statistically significant (p value < 0.001) as shown in table-3. There was insignificant difference among both genders depending on anxiety parameter with p-value > 0.05.

In current project, results showed that 60% of first year students had depression of different levels whereas 32.6% of second year students had depression with statistically significant p value of 0.004 as shown in table-4. There was insignificant difference among students of different medical years depending on anxiety parameter with p-value > 0.05.

Table 1: Demographic Parameters Of Enrolled students (n=190)

Variables	Categories	Frequency	%age
Gender	Male	78	41.1%
	Female	112	58.9%
Year of study	First year	95	50.0%
	Second year	95	50.0%
Age (years)	<b>Mean± SD</b>	<b>Minimum</b>	<b>Maximum</b>
	22.5± 1.6	20	24

Table-2: Prevalence of depression and anxiety among enrolled medical students (n=190)

Variables	Categories	Frequency	%age
Depression	Normal	102	53.7%
	Mild	24	12.6%
	Moderate	35	18.4%
	Severe	22	11.6%
	Extremely Severe	7	3.7%
Anxiety	Normal	54	28.4%
	Mild	24	12.6%
	Moderate	52	27.4%
	Severe	38	20.0%
	Extremely Severe	22	11.6%

Table-3: Different levels of depression and anxiety betw een both genders enrolled (n=190)

Variable	Categories	Male		Female		p-value
		n	%	n	%	
Depression	Normal	52	66.7%	50	44.6%	0.039*
	Mild	7	9.0%	17	15.2%	
	Moderate	10	12.8%	25	22.3%	
	Severe	8	10.3%	14	12.5%	
	Extremely Severe	1	1.3%	6	5.4%	
Anxiety	Normal	30	38.5%	24	21.4%	0.108
	Mild	10	12.8%	14	12.5%	
	Moderate	18	23.1%	34	30.4%	
	Severe	14	17.9%	24	21.4%	
	Extremely Severe	6	7.7%	16	14.3%	

Table-4: Different levels of depression and anxiety among enrolled medical students

Variable	Categories	First year		Second year		p-value
		n	%	n	%	
Depression	Normal	38	40.0%	64	67.4%	0.004*
	Mild	14	14.7%	10	10.5%	
	Moderate	22	23.2%	13	13.7%	
	Severe	16	16.8%	6	6.3%	
	Extremely Severe	5	5.3%	2	2.1%	
Anxiety	Normal	21	22.1%	33	34.7%	0.416
	Mild	14	14.7%	10	10.5%	
	Moderate	28	29.5%	24	25.3%	
	Severe	20	21.1%	18	18.9%	
	Extremely Severe	12	12.6%	10	10.5%	

## DISCUSSION

Different levels of depression and anxiety among humans in a social community are measured as exact indicators for anyone's mental health status.<sup>15</sup> Literature review revealed that anxious students often practice more frustrations. This may be due to issues like failure to accomplish their work, daily hassles, delays in reaching goals, many assignments, too many test activities and inability to answer for lecturers. With advancement in professional as well as in their medical program, these stressors gradually diminish. Unfortunately, some depressed and anxious students fail to overcome these stressors, thus resulting in poor academic performance, substance abuse, and other mental illnesses<sup>14</sup>. As the incidence of these two mental diseases among our population especially female students is high and has impacted their lives badly. Unfortunately, due to limited resources, these health problems remained untouched. Thus we examined the prevalence of depression and anxiety due to integrated medical education system.

In our project, mental status (depression & anxiety) of students due integrated education system was evaluated among enrolled medical students (n=190). They were categorized into mild, moderate, severe and extremely severe levels (Table 2). There was gradual increase in grades of both parameters among all subjects. The prevalence of depression was seen in 88 students (46.3%) whereas anxiety was present in 136 students (71.6%) among all enrolled subjects in our project. Our findings were in line with one study that was held at India among their medical students attending private universities with prevalence of depression calculated was 40.9% whereas the prevalence of anxiety was 74.2% as reported by Singh A et al<sup>16</sup>.

Both males and females medical students were recruited in our work as in other previous studies. Females were 112(58.9%) while males were 78(41.1%) (Table 1). Selection of gender among subjects was in line with other previous study i.e 29% males and 71% females (majority) in a study held in 2011 at University of Amsterdam.<sup>17</sup>

In current projects, we enrolled medical students only from 1<sup>st</sup> and 2<sup>nd</sup> academic years so total enrolled subjects were 190. Paradoxically, in another previous study conducted at King Saud University, Saudi Arabia, they enrolled a total of 774 medical students from the five academic years of the College of Medicine<sup>18</sup>.

In current study, the frequency of both depression and anxiety of varying grades were compared among students

of both genders as done in many previous studies. Results showed that there was significant difference in frequency of depression among genders (table-3). In our study, females (55.4%) whereas (33.3%) males students were depressed. Our work was in lines with one previous studies who showed similar results in their study.<sup>19,14</sup> This difference may be due to the fact that females by nature are more competitive and concerned regarding their education.

In current study, the frequency of depression and anxiety was compared between students of 1<sup>st</sup> and 2<sup>nd</sup> year of medical college as done in one Saudi study where stress was compared. Results showed that there was significant difference in frequency of depression among them with p-value of 0.004\* (table-4). In our study, first year medical students (60%) were more depressed whereas depression among 2<sup>nd</sup> year students was 32.6%. This revealed that students with time adapt to environment but still have mental health issues. Our work was in lines with one previous study that showed similar results in their study<sup>18</sup>.

## CONCLUSION

We concluded that there is a high prevalence of depression and anxiety among medical students during their academic training due to integrated education system. Future studies are required to evaluate the reasons that lead to the development of these mental issues among our students. Only then the preventive measures can be done to minimize the overall burden of these stressors among our students.

**Limitations:** Our study has number of limitations as we failed to assess the causes for depression and anxiety, their academic performance, memory skills and stress hormones levels. Other limitations included too small sample size, financial constraints, lack of resources.

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**Conflict of Interest:** None to declare

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