

## ORIGINAL ARTICLE

## RELATIONSHIP BETWEEN NEGATIVE COGNITIVE STYLE AND DEPRESSION AMONG MEDICAL STUDENTS

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**Background:** Depression is one of the major problems faced by medical students, which have significant adverse effects on their social, academic and occupational functioning. The objectives of the study were to estimate the prevalence of depression and to explore the gender differences and interrelationship between the depression and negative cognitive style among medical students of First year (FY) Last year (LY) MBBS. **Methods:** A Cross sectional questionnaire based study was conducted in Ayub medical college Abbottabad; Khyber medical college Peshawar; Bannu medical college; Rawalpindi medical college; Punjab medical college Faisalabad and Allama Iqbal medical college Lahore, Pakistan. Applying stratified sampling technique a battery of questionnaires naming depression screening test, self-report depression scale and cognitive style questionnaire was filed by a sample of 1000 (first and last year) medical students. The data was analysed by SPSS 16. **Results:** Positive relationship exists between depression and negative cognitive style ( $r=.57, p<.05$ ) among medical students. Forty one percent male and 61% female students of FY and 58% males and 69% female of LY students exhibited depressive symptoms. Females have higher scores on cognitive style questionnaire  $t(998) = 3.70, p<.05$ , and depression  $t(998) = 4.28, p<.05$ . The  $t$ -test analysis also revealed that FY students were holding more negative cognitive style  $t(998) = 6.21, p<.05$ , whereas LY medical students to be more depressed  $t(998) = 5.43, p<.05$ . **Conclusions:** The study revealed significant distress among medical students. Negative cognitive style positively correlates with depression among medical students. Furthermore, it is noticed that among female students the prevalence of depressive symptoms and negative cognitive style was higher. Moreover, it is concluded that the prevalence of depression in LY and negative cognitive styles among FY was higher respectively. Students should be provided proper counselling to avoid and cope with faulty thought patterns leading to depression.

**Keywords:** negative cognitive style, depression, gender

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## INTRODUCTION

Depression has deep impact on our daily life as it is associated and related with many adverse health conditions and work performance. Depression is known to be one of the major problems which reflect the mental health of the student population. Depression is associated with reduced energy and passion, feeling guilty, lack of concentration, poor appetite and thoughts of death and suicide and is accompanied with changes in activity level, cognitive abilities, speaking, sleep and other biological rhythms.<sup>1</sup> Based on the World Health Organization reports, mental disorders are the fourth major health problems in the world and among the mental disorders, the greatest disability and handicap in the world is related to depression.<sup>2</sup>

Depression is a major problem faced by many college students today. Students with depression can have significant impairments in many areas of functioning; including social, academic, and occupational.<sup>3</sup> A large number of researches reported depression among medical students, especially in their first academic year, suggesting that they suffer from academic stresses such as work burden, time

management, deficient rest time and academic assessment and tests.<sup>4</sup> As reported by the majority of the students; depression results in the anxiety, aggression, poor academic performance, and it can be linked with physical and mental health related problems.<sup>5</sup> A person who consistently holds faulty beliefs and thinks pessimistically about one's self are more likely to get depressed. Depression is known as a universal and devastating problem amongst student affecting energy level, concentration, mood and feelings of sense worth. The occurrence rate of depressive symptoms among university students ranges from 10.2% to 71.2%.<sup>6</sup> The prevalence of depression has been shown to be higher among students than in the general population, with around 30% of students at any given time with depression and around only 9% in the general population.<sup>7</sup>

Students in particular tend to face unique life challenges that can put them at an even greater risk for developing symptoms of depression.<sup>8</sup> Among physicians elevated levels of depression may have a negative effect on study skills<sup>9</sup> in addition, patient's maintenance and dealing is negatively affected by psychological problem such as poor interaction,

inappropriate care and medical blunders have been found to be related with depression.<sup>10</sup>

The severity of anxiety and depression with reference to gender differences has been reported in both fresh and experienced doctors, which mirrors series of studies demonstrating that depression is less frequent among males than females.<sup>11,12</sup> The majority of studies carried out on medical students, by means of various tool, shows similar pattern.<sup>13,14</sup> The most popular view is that anxiety and feeling of despair rise throughout medical education and this is more severe among females.<sup>15</sup>

Faulty thought process in particular, a negative cognitive style is a person's predisposition to assume negative life events in relation to constant causes that are persistent over time negatively affecting many fields of individual's life, with intrinsic natured inferences about depressing events.<sup>16</sup> Significant positive relationship was reported between the negative cognitive styles past experience of depressive episodes in university students.<sup>17</sup> Each year about one third of the students suffer from depression that negatively affects their abilities.<sup>18</sup> In addition, found that about 18% of students experience Major Depressive Disorder (MDD) later in their life about 53% of college student exhibits depressive symptoms at some point of life.

A plethora of research support suggests that as students' related problems are increasing day by day.<sup>19</sup> With the recognition that learning environment, gender role may cause depressive symptomology among students,<sup>20</sup> it became an important research question to identify what aspects of cognition, contribute in determining student's mental health. The current study is aimed at (1) exploring the prevalence of depression and negative cognitive styles among First and final year medical students (2) exploring the relationship between the depression and negative cognitive style (3) investigating the gender differences among medical students on negative cognitive style and depression scale. This study may help in designing appropriate intervention strategies to enhance the learning abilities which will improve the patient care by achieving good communication, increasing quality of care and decreasing medical errors in addition to burden the costs paid by the society through anxiety and depression attenuation

## MATERIAL AND METHODS

This was a questionnaire-based, cross-sectional study. Population of the study included First year (FY) Last year (LY) females and males medical students studying in 6 medical colleges namely Ayub medical college Abbottabad; Khyber medical college Peshawar; Bannu medical college; Rawalpindi medical college; Punjab medical college Faisalabad

and Allama Iqbal medical college Lahore. Sample size of 1000 was calculated with a confidence level of 95% and keeping bound of error to be 2.5% we obtain sample size of approximately 1000. One thousand medical students of both genders (male=431 and female 569) were selected through stratified sampling technique. The sample was further divided into subgroups first year (FY, n=578) and last year (LY, n=422) respectively.

Potential participants of the study were the male and female medical students from first and last academic year, scoring higher than the cut-off point of depression screening test. Participants diagnosed with any severe psychological disorder and who scored less than the cut-off point of the depression screening test were excluded from the study.

Initially 1769 subjects were personally approached by the researcher. After getting the informed consent, screening test was applied. 1000 Participants with standard cut point of nine or more out of a possible 30 points on QIDS were screened out positive for considerable depressive symptoms. Subjects were ensured about the confidentiality of the results, and that they can terminate the study at any phase. Only screened participants were then given remaining questionnaires and were asked to give their responses honestly.

The Quick Inventory of Depressive Symptomology–Self Report sixteen item having. Ninety-five alpha coefficients with three point response category (0=never, 1=rarely, 2=often and 3=always) was used as screening tool.<sup>21</sup> It has been validated for use as screening test of depression.<sup>22</sup> The score higher than 9 on QIDS suggests depressive symptomology. The twenty-items Centre for Epidemiologic Studies Depression Scale having an alpha value of .85 with 4 point Likert scale ranging from where (0) (use for rarely) to 3 (use for most the time (5-7) days was used to assess depressive symptoms.<sup>23</sup> It has been used in many cross-cultural studies.<sup>24</sup> CES-D has been previously validated in Pakistan on adult population.<sup>25</sup>

To measure the negative cognitive style of the students the Cognitive Style Questionnaire Short Form CSQ-SF was used.<sup>26</sup> It consists of 72 items depicting eight different life situations with four subscales named; stability, globality, internally and negative consequences. It is a five-point Likert scale ranging from (1=strongly disagree. 2.=Disagree, 3.=Undecided, 4.=Agree and 5.=Strongly agree). On each scenario the internality subscale score was derived by summing items 1 and 6; the stability subscale score was derived by adding items 3 and 8, the globality subscale by adding the scores on item 2 and 7, and the negative consequences by adding the

scores obtained on item 4 and 8. Cronbach alpha for the current sample was found to be .81.

Data was analysed using SPSS software 16 Version. Mean and standard deviation and percentages for categorical variables data was presented. Independent sample t-test was used to explore the gender and academic year differences on depression and cognitive style questionnaire and Pearson-product correlation was calculated to explore the relationship between study variables among medical students.

## RESULTS

In the present study the data of 1000 medical students (female n=569, male n=431) have been analysed. As regard to a prevalence rate of depression, it was found that 41% males and 61% female students, in the FY, exhibited of depressive symptomology; this number increased to 58% (males) and 69% (females) in the LY. Results in table-1 reveal that significant positive relationship exists ( $r=.57, p<.05$ ) between the negative cognitive style and depression.

As depicted in table-2, female medical students were significantly higher in negative cognitive style ( $M=187.55, SD=39.95$ ) than the intensity of negative cognitive style in male students ( $M=176.6, SD=53.147$ ),  $t(998)=3.70, p<.05$ . The study results also revealed that the level of depression was in female students were higher ( $M=25.48, SD=7.69$ ) than the level of depression in male students ( $M=23.48, SD=7.17$ ),  $t(998)=4.2, p<.05$ .

As shown in table-3, it was observed that level of depression was higher in last year students ( $M=25.25, SD=7.62$ ) than the level of depression in first year students ( $M=22.61, SD=7.56$ ),  $t(998)=5.43, p<.05$ . First year medical students experience more negative thought pattern ( $M=191.13, SD=47.30$ ) as compared to last year students ( $M=173.05, SD=44.72$ ),  $t(998)=6.21, p<.05$ .

**Table-1: Correlation coefficients between the CSQ and CES-D (N=1000)**

Scale	CES-D
CSQ-SF	.57*

\* $p<.05$

**Table-2: Mean, standard deviation, and t-values of male and female medical students on centre for epidemiologic studies depression scale and cognitive style questionnaire (CES-D; N=1000)**

Scales	Male (n=431) M SD		Female (n=569) M SD		t (998)	p	CI 95%		Cohen's d
	LL	UL	LL	UL			LL	UL	
CSQ-SF	176.6	53.147	187.55	38.95	3.70	.000	-5.26	2.96	0.24
CES-D	23.48	7.17	25.50	7.69	4.28	.000	-0.95	0.36	0.27

CI= Confidence Interval, LL= Lower Limit, UL= Upper Limit, CSQ-SF=Cognitive style Questionnaire Short form, CES-D = Centre for Epidemiologic Studies Depression Scale.

**Table-3: Mean, standard deviation, and t-values of first and last academic year on cognitive style questionnaire and centre for epidemiologic studies depression scale (CSQ-SFQ; n=1000)**

Scales	First Year (n=578) M SD		Last Year (n=422) M SD		t (998)	p	CI 95%		Cohen's d
	LL	UL	LL	UL			LL	UL	
CSQ-SF	191.13	47.30	173.05	44.72	6.21	.000	-3.46	4.66	0.39
CES-D	22.61	7.56	25.25	7.62	5.43	.000	-0.96	0.38	0.35

CI=Confidence Interval, LL=Lower Limit, UL=Upper Limit, CSQ-SF=Cognitive style Questionnaire Short form, CES-D=Centre for Epidemiologic Studies Depression Scale.

## DISCUSSION

The current study was based on two objectives; to explore the relationship between depression and negative cognitive style and to find the gender based differences on depression and negative cognitive styles among the sample of medical students. Study findings showed that the Centre for Epidemiologic Studies Depression Scale has a significant positive association with negative cognitive styles. Samonthrong also showed results in line with Abela *et al.* confirm the significant positive correlation between negative cognitive styles and depression.<sup>27,28</sup> Consistent with the results of our study Xiaoting *et al.* demonstrated a positive relationship between negative thinking styles in relation to depression among students.<sup>29</sup> In another study by Mahmoud

positive association between depression and thinking styles was proved.<sup>30</sup>

The analysis of the current study revealed significant gender differences on the Centre for Epidemiologic Studies Depression Scale. These results indicate that female exhibit more depressive symptomology than male students. This finding is similar to studies by and Waghachavare *et al.* which have proved that female scored higher on the depression scale than male.<sup>31</sup> The observation of our is consistent with the study by Asgari & Almasi which found that females tend to experience more depressive symptoms and display more maladaptive cognitive style than males.<sup>32</sup> Female students in our study exhibited depressive symptomology and this finding is augmented by another study by Pearson *et al.*<sup>33</sup>

Our study also showed a preponderance of females on negative cognitive style suggesting that females display more negative consequences based inferences than males. This observation of ours is similar to study findings by Hofmann et al. which also demonstrated that females tend to hold a stronger negative perception and beliefs than males.<sup>34</sup>

Exploring the academic year base differences among students our findings confirmed that as compared to first year, students belonging to last year of their academic life suffer more from depression. This result is consistent with the study by Chen & Hongjing which have shown that the intensity of mental health related problems differ with reference to academic years of the students.<sup>35</sup> Same result was achieved by Afridi *et al.* who found significant impact of academic years on the psychological health of students.<sup>36</sup>

The results of our study also revealed academic year base differences in negative cognitive style suggesting that first year medical students hold more negative thoughts and beliefs as compared to last year MBBS students. Very little is known and explored typically about the prevalence and rate of negative cognitive styles among medical students.

The results of our study are much in line with the already available empirical evidence at hand. So is safe to conclude that a positive relationship exists between depression and negative cognitive style and that significant gender and academic year base differences exist among medical students. The current study like any other research has its limitations. Firstly the present study was conducted only on the first year and last year medical students ignored those students who are in the midway of their academic life or were in practice. The study was based on the data obtained with the help of battery of self-inventories, which are susceptible to subjective biases. In spite of its limitations in the current study has established a fact that a positive relationship exists between negative cognitive style and depression. The present study can be helpful in understanding the negative cognitive styles of individuals with respect to gender and academic year based differences in relation to depressive symptomology.

## CONCLUSION

The study has provided fact based findings suggesting a significant positive relationship between negative cognitive styles and depression. Female medical students have stronger negative cognitive styles and were suffering more from depression as compared to male students. Similarly, students from first academic year hold more negative cognitive style, whereas, comparing first year students from

last academic year were more depressed. These findings can help educationists to know about the variables that negatively affect and may help in taking measures for improving psychological health of students. The findings of the current study also have important implications in the fields of education, health and management. Specifically with context to Pakistan on this field very limited studies were conducted on the said variables.

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## AUTHORS CONTRIBUTION

SP, SFK and AR contributed equally in designing, literature review, data collection, data interpretation, manuscript writing and proof reading.

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