

## ORIGINAL ARTICLE

## ROLE OF PHYSICAL ACTIVITY IN MENTAL WELL BEING OF MEDICAL STUDENTS

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**Background:** Mental disorders are a major issue these days. Physical activities improve disease outcomes but it is not an easy task for medical students to manage them. Aims and Objectives were to formulate the relationship between mental status and physical activities to can work for the betterment of health conditions among medical students. **Methods:** A cross-sectional qualitative study was conducted among students of Rawalpindi Medical University from March to May 2017. Sample size was 400. Students from all five years of MBBS participated. The questionnaires administered were Hospital Anxiety and Depression scale (HADS) and International Physical Activity Questionnaire (IPAQ). The results were categorized into active, minimally active and totally inactive for physical activity and four classes as normal (0–7), mild (8–10), moderate (11–15) and severe (16–21) were made for anxiety and depression. Chi square test was used for analysis. **Results:** Mean age of participants was 20.54±1.86. Mean value of anxiety was 8.29±3.89 and depression was 5.49±3.31. Non-anxious students were 72 (43%) and non-depressed were 297 (74.25%). Anxiety and depression had significant correlation ( $p=0.00$ ). Only 68.8% ( $n=86$ ) males and 56.73% ( $n=156$ ) females were active. Alliance of gender with levels of physical activity was established ( $p=0.007$ ). Anxiety and depression were low among active group ( $p=0.05$ ) and high among inactive group (0.069). **Conclusions:** Existence of mental disarray is prominent and physical activity is scarce among medical students. Their involvement in healthy recreation can contribute to better doctors' output in future for beneficence of human being.

**Keywords:** Medical students, physical activity, mental health, anxiety, depression

Pak J Physiol 2019;15(4):27–30

## INTRODUCTION

According to the World Health Organization (WHO), mental health includes "Mental disorders comprise a broad range of problems, with different symptoms. However, they are generally characterized by some combination of abnormal thoughts, emotions, behaviour and relationships with others.<sup>1</sup> Now-a-days, mental health is at greater risk especially among youngsters and adolescents.<sup>2</sup> It can result in stress, loneliness, depression, anxiety, relationship problems, suicidal thoughts, addiction, Attention Deficit Hyperactivity Disorder (ADHD), various mood disorders, other mental illnesses of varying degrees, learning disabilities and grief. As for medical students who are going to be future doctors, it has been shown by researches that those having better mental health are able to treat the patients in a better way.<sup>3</sup>

Physical activity is defined by World Health Organization as any bodily movement produced by skeletal muscles that requires energy expenditure.<sup>4</sup> Physical inactivity has been identified as the leading risk factor for global mortality. Exercises and any type of daily activity has played an important part in curing all type of bodily illnesses including mental and physical illness according to different research studies. So physical activity implication is a cost-free source of maintaining health.<sup>5</sup>

A medical student has to deal with studies along with patients in hospitals, exams, failures, and much more. Different researches have depicted that there is a continuous changing of behaviour and mental status in medical students during their successive years of studies.<sup>6</sup> Some studies have also proven that depression and anxiety are at a high level among students due to their concerns of studies.<sup>7</sup> Rules have been made in some medical institutes to ensure students' engagement in healthy physical activities but still implementation of such regulations require attention of management as well as students indeed. This study is done to see the effect of self-reported physical activity levels and its role in anxiety and depression status (self-reported) among medical students of all years in Rawalpindi Medical University.

## MATERIAL AND METHODS

A cross sectional study was done among students of Rawalpindi Medical University, Rawalpindi. 400 students participated in this research. Two questionnaires were provided to each undergraduate, after taking his/her written consent, for analytical examination of his/her opinion. These were Hospital Anxiety and Depression Scale (HADS) and International Physical Activity Questionnaire. Both of these questionnaires are adequately authentic, well founded and completely reliable as observed by various

studies.<sup>8</sup> Students were asked not to write their names to maintain confidentiality and rest of demographic profile of students was taken along with questionnaires which included gender, year of MBBS in which they were studying, temporary residence etc.

Students' mental health was measured by Hospital Anxiety and Depression Scale, a 14 items questionnaire in which 7 questions were for anxiety assessment and 7 for depression. Each question had four options which were numbered from 0–3 so maximum score for anxiety and depression separately was 21. Range of values was made in a way which depicted precisely that people lying between range 0–7 manifested no clinical symptoms of anxiety or depression, those between 8–10 had mild symptoms, between 10–14 had moderate symptoms and those from 15–21 had severe anxiety and depression clinically. The original design of this scale was done for checking elevated levels of anxiety and depression among hospitals and clinics in non-psychiatric wards so it was thought to be good enough for general public who were having no psychiatric disorder. This scale had good psychometric properties in terms of factor, structure and internal consistency.

Physical activity was measured by International Physical Activity Questionnaire (IPAQ). It was designed originally for surveillance of physical activity among adult population. The rationality and credibility of this questionnaire has been evidenced by numerous studies. It contained questions of physical activity of person at different places and also had questions calculating resting time in daily routine. The gradation of activities was done as mild, moderate and severe physical activity. The total duration of the physical activity was calculated to that nearest minute, along with which metabolic equivalents (MET) were calculated. Students who did mild, moderate or severe activity for 5–7 days were classified as “minimally active” and were achieving 600 MET min/week. Those students having mild, moderate or severe physical activity or combination of these for more than 7 days were labelled as ‘active’ or health enhancing physical activity with achievement of 3000MET min/week and those with physical activity of less than 5 days and having less than 600 MET min/week are considered as ‘inactive’.

## RESULTS

Proportion of students having different levels of anxiety, depression and physical activity were calculated. Chi-square test was used to formulate relation between different variables and significant and non-significant results were recorded.

For anxiety, mean value was  $8.29 \pm 3.89$ . This is within mild symptomatic range of anxiety classification. For depression, mean score was

$5.49 \pm 3.31$  and this fell within normal range of depressive classification. If we consider here the percentages of students who fell within different severity band ranges of anxiety and depression, 43% students were considered normal with reference to anxiety scale, and 74.25% students were considered as normal on depression scale. Only 15% students were labelled as severely anxious and only 5% were characterized as severely depressed. Prevalence of anxiety among females was 61.09% and among males was 48%. Prevalence of depression among females was 25.09% and in males was 27.02% and these are almost similar.

Overall 57% students appeared to be anxious while 25.75% students appeared to be depressed and their relation was statistically significant as calculated by Pearson chi square test ( $\chi^2=599.7$ ,  $df=320$ ,  $p=0.000$ ).

**Table-1: Levels of anxiety and depression among males and females [n (%)]**

	Male	Female	Total
<b>Anxiety</b>			
<b>Normal</b>	65 (52)	107 (38.91)	172 (43)
<b>Mild</b>	28 (22.4)	88 (32)	116 (29)
<b>Moderate</b>	28 (22.4)	69 (25.09)	97 (24.25)
<b>Severe</b>	4 (3.2)	11 (4)	15 (3.75)
<b>Total</b>	<b>125 (100)</b>	<b>275 (100)</b>	<b>400 (100)</b>
<b>Depression</b>			
<b>Normal</b>	91 (72.8)	206 (74.91)	297 (74.25)
<b>Mild</b>	18 (14.4)	48 (17.45)	66 (16.5)
<b>Moderate</b>	15 (12)	17 (6.18)	32 (8)
<b>Severe</b>	1 (0.8)	4 (1.45)	5 (1.25)
<b>Total</b>	<b>125 (100)</b>	<b>275 (100)</b>	<b>400 (100)</b>

Table-2 shows the status of physical activity among students. Mentioning the percentages of students who fell in different gradations, 60.25% students were highly active, 12.25% were minimally active and 27.25% students were considered to be inactive. Females were more physically inactive (32%) as compared to males (16.8%).

**Table-2: Physical activity levels among medical students**

	Males n (%)	Females n (%)	Total n (%)
<b>Inactive</b>	21 (16.8)	88 (32)	109 (27.25)
<b>Minimal Active</b>	18 (14.4)	31 (11.27)	49 (12.25)
<b>Active</b>	86 (68.8)	156 (56.73)	242 (60.5)
<b>TOTAL</b>	<b>125 (100)</b>	<b>275 (100)</b>	<b>400 (100)</b>

Relationship of levels of anxiety with physical inactivity level was established and it was statistically significant ( $\chi^2=2258$ ,  $df=2106$ ,  $p=0.010$ ). Especially relationship of gender with bicycling activity, which was an important question for physical activity analysis, was also found to be significant ( $p=0.000$ ).

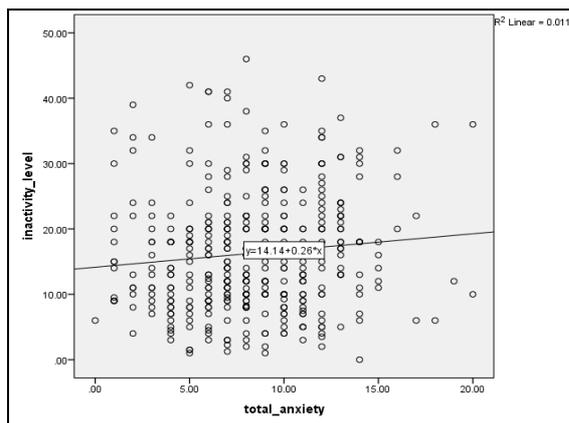
Anxiety and depression also vary with gender difference. It is clear from these results that anxiety was more closely related to females as compared to males as their inherent tendency is to be more anxious. Moreover,

depression levels almost same in both sexes. Physical activity has significant association with gender ( $p=0.007$ ).

Table-3 indicates how anxiety and depression are associated with levels of physical activity. Table of depression clearly indicates that inactive students are more severely depressed as compared to the active group. Severe anxiety has almost equal prevalence among both groups. Depression levels are also significantly related to activity level ( $p=0.050$ ) as shown above.

**Table-3: Association between physical activity and mental status [n (%)]**

	Mild	Moderate	Severe	Total	<i>p</i>
<b>Part 1: Physically Active or Inactive with Anxiety</b>					
Inactive	37 (31.9)	30 (30.93)	6 (40)	73 (32.02)	0.069
Active	71 (61.21)	56 (57.73)	8 (53.33)	135 (59.21)	0.079
<b>Total</b>	<b>116 (100)</b>	<b>97 (100)</b>	<b>15 (100)</b>	<b>228 (100)</b>	
<b>Part 2: Physically Active or Inactive with Depression</b>					
Inactive	21 (31.82)	5 (15.63)	4 (80)	30 (29.13)	0.069
Active	34 (51.52)	24 (75)	1 (20)	59 (57.28)	0.05
<b>Total</b>	<b>66 (100)</b>	<b>32 (100)</b>	<b>5 (100)</b>	<b>103 (100)</b>	



**Figure-1: Association of yearly performance with mental status**

We also calculated the mental status of students of specific year of MBBS. By calculation of Chi-square it is clear that anxiety has significant relation with students of specific year of MBBS ( $p=0.034$ ) while this relation is non-significant in case of depression ( $p=0.115$ ).

**DISCUSSION**

Average reported perceived levels of anxiety and depression manifested that total anxiety in males was 48% and in females it was 96%; whereas depression was 27.2% and 25.08% respectively. It is recorded that 3.75% students were engaged in severe depression and 1.25% in severe anxiety. Thirty-two percent students were anxious along with being inactive whereas 29.13% students were inactive and depressed. These values indicate high risk of mental disorders among medical students.

Many of the anxiety disorders develop in the early childhood and tend to persist if not treated. They are only diagnosed when symptoms are persistent and are associated with some specific functional limitations. Previous studies by different people also indicate increased risk of generalized anxiety disorder, panic disorder and social phobia among population in general and among students in particular.<sup>9</sup> This shows that although the aim of any education is to make students responsible, knowledgeable, trustworthy citizens of society who can play a better part in development and progress of nation and specially educating students for profession of medical is even more noble, magnanimous, virtuous for not only the same person but for people around him but despite of that it is imparting some unknown type of stressors upon students and deteriorating their health conditions.<sup>6</sup>

The results of this study show that prevalence of anxiety among students is more as compared to depression and in particular female students have still much more high level of this parameter as compared to male students and this is depicted in some other studies as well.<sup>10</sup> This may be due to natural tendency of female towards anxiety and their habitual character and unable to cope with all the problems in time. Females anxiety levels were significantly high (96%) as compared to males (48%) but depression levels are almost similar. This difference might be due to gender differences in self-reporting styles because females label any situation as problematic and stress giving much earlier than males. These findings are an indicator that more mental health care should be provided to females in order to have better doctors.

Students involved in physical activity had decreased levels of severe anxiety and depression as compared to inactive group. Various other studies indicate that anxiety and depression are associated with decreased physical activity level.<sup>11</sup> Although it is not a cause and effect type of relationship so it cannot be said that the more anyone exercises, the less the symptoms of anxiety and depression because these parameters have many other causes of occurrence also in an individual. But it is mostly seen as a positive correlation and most of the time, there is decrease in these parameters with increasing physical activity levels.<sup>12</sup> So there must be some management for reduction of these levels in medical institutions and there students should be given efficient time for relieving this to make their own and other people's life better.

In our study, lack of physical activity was shown to be a cause of disturbed mental health of medical students. It has been postulated that burnout, a measure of distress common among residents and physicians in practice, has its origin in medical school.<sup>13</sup> A number of factors including academic pressure, workload<sup>14</sup>, financial concerns<sup>14</sup>, sleep deprivation<sup>14</sup>,

exposure to patients' suffering and deaths<sup>15</sup>, student abuse<sup>16</sup>, and a 'hidden curriculum' of cynicism<sup>17-19</sup> have been hypothesized to contribute to this decline in students' mental health. Some have suggested that psychological distress among students may adversely influence their academic performance<sup>20</sup>, contribute to academic dishonesty<sup>21-22</sup>, and play a role in alcohol and substance abuse.<sup>23,24</sup>

## CONCLUSION

Anxiety and depression were high among medical students. Anxiety levels were prominent in females. Involvement in any positive physical activity reduces these high levels in most of the students. Provision of better physical activities in medical institutions is important in improvement of students' mental health.

## ACKNOWLEDGMENTS

We are highly thankful to all students of Rawalpindi Medical University for their participation in the research. We are indebted to Department of Physiology in Rawalpindi Medical University for taking keen interest in our research and providing us proper guidance and their precious time.

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Received: 17 Jun 2019

Reviewed: 1 Jan 2020

Accepted: 31 Jan 2020