

Rates of depression and anxiety among female medical students in Pakistan

F. Rab,¹ R. Mamdouh² and S. Nasir¹

معدلات الاكتئاب والقلق بين طالبات الطب في باكستان

فايزة عبد الرب، رانيا ممدوح، سارة ناصر

الخلاصة: حدّدت هذه الدراسة التي أجريت عام 2002، معدلات القلق والاكتئاب والعوامل الاجتماعية والبيئية المرتبطة بها، وذلك في ما بين 87 طالبة أخترن عشوائياً من بين طالبات إحدى كليات الطب في لاهور، بباكستان. وقد أكملت الطالبات السُّلم الذي يستخدم في المستشفيات لقياس معدلات القلق والاكتئاب، إضافة إلى استبيان حول الأحداث الحياتية والسلوك الاجتماعي، والتاريخ المرضي السابق. وسجّلت 43.7% من الطالبات إصابتهن بالقلق، و19.5% بالاكتئاب. وكانت الطالبات اللاتي يسكنّ في بيوت الطالبات أكثر قلقاً واكتئاباً بشكل يُعتدُّ به إحصائياً، من زميلاتهنّ اللاتي يسكنّ في منازلهن. وارتفعت احتمالات الإصابة بالاكتئاب لدى الطالبات اللاتي تعرضن لأحداث حياتية سلبية في الماضي القريب. وكانت طالبات السنتين الأولى في الكلية أكثر إحساساً بالكرب، في حين كانت الطالبات اللاتي لديهن صديقات أكثر، أقل قلقاً واكتئاباً.

ABSTRACT This study in 2002 determined the rate of anxiety and depression, and the associated social and environmental factors, among 87 randomly selected female medical students at a medical college in Lahore, Pakistan. Students completed the hospital anxiety and depression scale and a questionnaire about life events, social behaviour and past medical history. Overall, 43.7% of students reported anxiety and 19.5% depression. Students living in university dormitories were significantly more depressed and anxious than those living at home. Those having a history of negative life events in the recent past were more likely to be depressed. Students in their first 2 years of medical school were more stressed, and those who had more friends were less anxious and depressed.

Taux de dépression et d'anxiété chez les étudiantes en médecine au Pakistan

RÉSUMÉ Cette étude, menée en 2002, avait pour objectif de déterminer le taux d'anxiété et de dépression, ainsi que les facteurs sociaux et environnementaux qui leur sont associés, au sein d'un échantillon aléatoire de 87 étudiantes en médecine d'une école de médecine de Lahore, au Pakistan. Les étudiantes ont répondu à deux questionnaires : celui de l'échelle HAD (*hospital anxiety and depression scale* – échelle d'évaluation de l'anxiété et de la dépression à usage hospitalier) et un deuxième portant sur le vécu, le comportement social et l'histoire médicale. Globalement, 43,7 % des étudiantes ont fait état d'anxiété et 19,5 % ont décrit une dépression. L'hébergement en résidence universitaire s'accompagnait d'une dépression et d'une anxiété significativement plus intenses que le logement au sein du foyer familial. Les étudiantes ayant vécu des événements négatifs dans un passé récent étaient davantage exposées à la dépression. Les jeunes femmes effectuant leurs 2 premières années d'études médicales étaient plus stressées et celles ayant un plus grand cercle d'amis étaient moins anxieuses et déprimées.

¹Allama Iqbal Medical College, Lahore, Pakistan (Correspondence to F. Rab: faiza_rab@yahoo.com).

²Department of Psychiatry, University of Cairo, Cairo, Egypt.

Received: 28/03/05; accepted: 03/01/06

Introduction

In the more competitive environment that accompanied the increasing industrialization of the 20th century, there has been a widespread increase in stress-related mental disorders. It is estimated that by the year 2020, anxiety and depression will be the second most common cause of disability worldwide [1]. Environmental and social circumstances play a major role in the onset of stress-related diseases. Developing countries share the heavy burden of social and economic challenges [2]. In Pakistan, social adversity experienced by a large proportion of the population has resulted in a higher level of depression [3]. Social attitudes and norms as well as cultural practices contribute to the continued marginalization of women in Pakistan, which has been shown to have an adverse psychological impact, with almost half of the female population suffering from anxiety or depression [4].

Academic pursuits take a heavy toll on the mental capacities of all students and medical students are more prone to depression than their non-medical peers [5]. Female students can be particularly vulnerable; in a study among medical students in Shiraz, Islamic Republic of Iran, women were reported to be more anxious, phobic and depressed than men [6]. Among Pakistani female physicians, 34% were found to be stressed, of whom 32% were house officers [7].

The aim of our study was to determine the rate of anxiety and depression symptoms among female medical students at a medical college in Lahore, Pakistan, and to observe the impact of social factors such as their residential status, school year, number of friends and life events on the occurrence of anxiety and depression.

Methods

Setting

This study was carried out among the female medical students of Allama Iqbal Medical College, Lahore, Pakistan in 2002. Data were collected over a period of 2 months. The number of enrolled female students at the time was 435; we randomly selected a sample of 87 (20%) from the list of enrolled students. All of them completed the study. The objectives of the study were explained to each participant and consent was obtained for inclusion in the study.

Questionnaire and measurements

A questionnaire was developed and reviewed by an assistant professor of psychiatry at the Medical College. The questionnaire included personal data, residential status (home or dormitory), number of friends, history of psychiatric disorders, family history and history of important life events. Important life events were independent events occurring over the previous 6 months and included: success or failure in examinations, celebrations or loss of friends. Successes and failures were categorized as positive and negative events. No objective scale was used to qualify life events and the participants evaluated these subjectively. The questionnaire incorporated the hospital anxiety and depression scale [8], which is a self-screening tool for depression and anxiety. This scale, which includes 14 questions, 7 for anxiety and 7 for depression, has been used before in a Pakistani population [4].

Data analysis

The data were analysed using *Epi-Info*, version 6.01. Chi-squared tests were used to ascertain the difference between the anxiety and depression variables.

Results

The mean age of the participants was 20.7 years (standard deviation 1.9) (range 18–23 years). Of the 87 students participating in the study, 59% resided in the dormitories and 41% lived at home (Table 1). The participants in the study residing in the dormitories were from regions outside of Lahore.

The social characteristics and recent life events of respondents were compared according to place of residence (Table 2). Only parental status showed a significant difference: a total of 6 dormitory students (11.8%) had suffered the death of a parent compared with none of the students living at home ($P = 0.04$). None of the other potential risk factors investigated in the study (employment status of the parents, number of friends, past history of systemic and psychological illness, family history of psychological illness and important life events in the previous 6 months) showed a difference by residence (Table 2). The number of students experiencing negative life events was 21.6% among the dormitory residents compared with 11.2% in those residing at home, but adjusted analysis showed that this effect was independent of residential status (Table 2).

Overall 43.7% of the female medical students were anxious and 19.5% were depressed according to responses to the hospital anxiety and depression scale (Table 3). Depression was reported by significantly more students who had a history of major life-changing events in the previous 6 months than those who did not ($P = 0.05$) (Table 3). Those who had suffered any negative life events, such as failing an examination, death of a parent and other social burdens, were more depressed than who had had positive life events ($P = 0.03$, Fisher exact test).

The frequency of anxiety was highest among 4th and 5th year students (55.2% and 46.7% respectively). The 1st and 2nd year students also showed high levels of anxiety and depression at 35.0% and 30.0% respectively for the 1st year students and 46.2% and 30.8% for the 2nd year students (Table 3). The 3rd year students were less anxious overall (20.0%) and no 3rd year student was found to be depressed. Stratified analysis for anxiety and depression showed no significant difference between the various medical school years.

Significantly more dormitory residents were found to be depressed than the home residents (29.4% versus 5.6%, $P = 0.01$)

Table 1 Demographic characteristics of female medical students in the study

Class year	No. of respondents	Mean age (SD) (years)	Residence			
			Home		Dormitory	
			No.	%	No.	%
1	20	18.8 (0.5)	7	35	13	65
2	13	19.8 (0.9)	4	31	9	69
3	10	20.8 (0.9)	4	40	6	60
4	29	21.7 (0.6)	16	55	13	45
5	15	22.4 (0.5)	5	33	10	67
Total	87	20.7 (1.9)	36	41	51	59

SD = standard deviation.

Table 2 Comparison of social characteristics of female medical students by place of residence

Social characteristics	Residence				P-value
	Home (n = 36)		Dormitory (n = 51)		
	No.	%	No.	%	
<i>Parental status</i>					
Both alive and together	36	100.0	45	88.2	0.04
One or both died	0	0.0	6	11.8	
<i>Parents working</i>					
None	0	0	1	1.9	0.41
One	35	97.2	46	90.1	
Both	1	2.8	4	7.8	
<i>No. of friends</i>					
0	1	2.8	0	0.0	0.5
1–2	7	19.4	12	23.5	
3–5	22	61.1	27	53.0	
> 5	6	16.7	12	23.5	
<i>History of systemic illness</i>					
No	33	91.7	50	98.1	0.3
Yes	3	8.3	1	1.9	
<i>History of mental illness</i>					
No	34	94.4	47	92.2	1.0
Yes	2	5.6	4	7.8	
<i>Family history of mental illness</i>					
No	34	94.4	48	94.1	1.0
Yes	2	5.6	3	5.9	
<i>Life events in last 6 months</i>					
No	26	69.4	31	60.8	0.87
Yes, positive	7	19.4	9	17.6	
Yes, negative	4	11.2	11	21.6	

n = total number of respondents.

(Figure 1). The prevalence of anxiety was also found to be higher among the dormitory residents, of whom 51.0% were anxious as compared with 33.3% residing at home but the difference was not significant. After adjustment for the high prevalence of depression and anxiety among the dormitory residents, we found no association of the social factors investigated in our study. Of the 6 students who reported death of a parent, all were dormitory residents and 4 of them were anxious while 2 out of the 4

were also depressed. Adjusted analysis for parental death did not show any significant effect on anxiety or depression in home or dormitory residents.

Figure 2 shows that respondents having more than 5 friends were less anxious and depressed (27.8% and 5.6% respectively) than those having fewer than 5 friends. Of those who had 3 to 5 friends, 42.9% were anxious and 22.4% depressed, while for those having 1 to 2 friends, 63.2% were anxious and 21.1% depressed.

Table 3 Rate of self-reported anxiety and depression among female medical students according to the hospital anxiety and depression scale

Variable	Total no. of respondents	Anxiety		Depression	
		No.	%	No.	%
<i>Life events in last 6 months</i>					
No	56	24	42.9	10	17.9
Yes, positive	16	6	37.5	1	6.3
Yes, negative	15	8	53.3	6	40.0
		NS		<i>P</i> = 0.05	
<i>School year</i>					
1	20	7	35.0	6	30.0
2	13	6	46.2	4	30.8
3	10	2	20.0	0	0.0
4	29	16	55.2	6	20.7
5	15	7	46.7	1	6.7
		NS		NS	
<i>Residential status</i>					
Home	36	12	33.3	20	5.6
Dormitory	51	26	51.0	15	29.4
		NS		<i>P</i> = 0.01	
<i>No. of friends</i>					
0	1	0	0.0	1	100.0
1–2	19	12	63.2	4	21.1
3–5	49	21	42.9	11	22.4
> 5	18	5	27.8	1	5.6
		NS		NS	
<i>Total</i>	87	38	43.7	17	19.5

NS = not significant.

Discussion

We found a high percentage of female medical students who reported feelings of anxiety and depression (43.7% and 19.5% respectively). The most important finding was the significantly higher rate of depression among the students living in college dormitories compared with those living at home, and the tendency for students residing in dormitories to report anxiety more than those living at home. All of the 6 par-

ticipants who had suffered the death of a parent were dormitory residents. However, further analysis did not suggest any significant impact of death of a parent on anxiety or depression. Therefore our study suggests that residing in the college dormitories was an independent factor contributing to self-reported depression and anxiety among the students. These findings are similar to those from universities in Sri Lanka where the students residing in rented rooms and dormitories were found to be depressed [9].

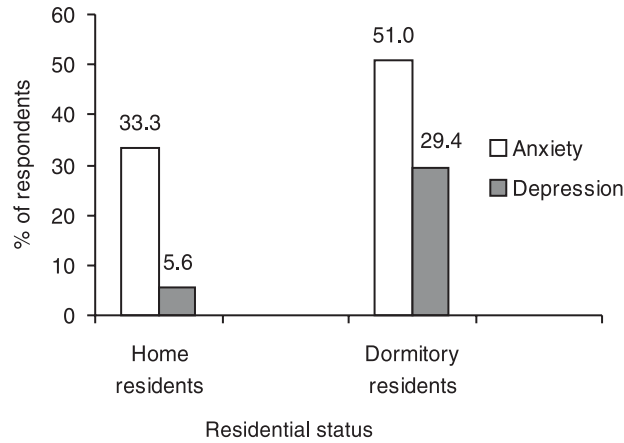


Figure 1 Rate of self-reported anxiety and depression in female medical students by residence status ($P = 0.01$ for depression only)

We asked each participant in the study about the occurrence of events in the previous 6 months which they personally felt had some major impact on their life. Most students (65.5%) could not think of any major event having an impact on their life

in the last 6 months. There was a significant increase in depression among those who had experienced negative events (e.g. failing in examinations, losing a friend). Also depression was significantly more common among those having negative events than

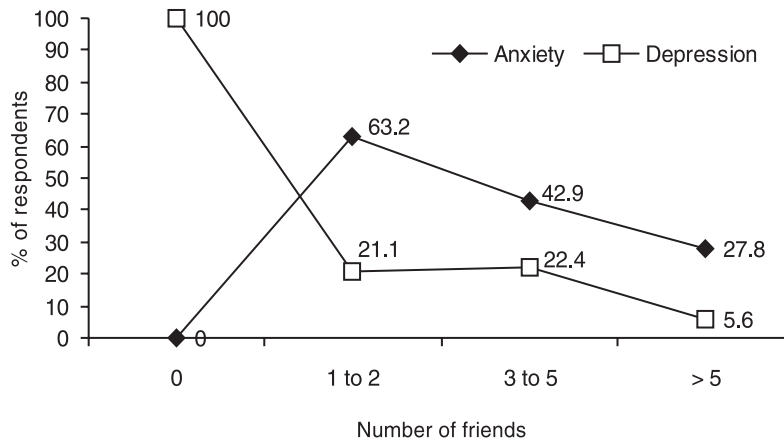


Figure 2 Rate of self-reported anxiety and depression in female medical students by number of friends

respondents who felt they had experienced positive life events (e.g. success in examinations). Regarding the types of events categorized as positive or negative, due to confidentiality, these events were judged by the participants themselves and there was no objective tool used to qualify these as being positive or negative. Other studies suggest that social circumstances can play a key role in the development of stress disorders and in particular can dispose people to depression [10].

Stress levels increase as students advance in their medical school years [5]. According to our study, there was a higher rate of anxiety among 4th and final year female medical students compared with 1st to 3rd year students. In addition, almost one-third of both 1st and 2nd year students were depressed, which was higher than all other years. Higher levels of stress have also been reported in 1st year medical students in the United Kingdom [11], Turkey [12] and in Karachi, Pakistan [13]. The high rate of depression and anxiety in the first 2 years can be because the transition from college to the more challenging and competitive environment of medical school can be difficult for students who are used to being lifelong achievers [5]. However, there is some suggestion that the prevalence of stress increases as the students advance in their medical years, and separation from classmates and friends during clinical rotations and the demands of training can contribute to a sense of isolation and lead to stress [5].

We found levels of both anxiety and depression decreased with having more friends. More than 50% of the students had 3 to 5 friends but the percentages of those students who had 1 to 2 friends and more than 5 friends was almost the same in the study group. Those who had more friends

reported less stress, although no statistical analysis was made of stress factors. Stress factors have been reported to decrease when students have more friends and social activities [14]. We were not able to conduct a comparative study between the male and female students, because of shortage of time and limited resources. Also no diagnostic evaluation was done by a psychiatrist.

Further studies are required into other factors such as loss of parents, past history of systemic and mental illness and family history of mental illness. These and several other factors could not be evaluated because of the limitations of the questionnaire. Further studies are required to evaluate the potential risk factors, especially those affecting the students living in college dormitories. Since residing in dormitories was found to be an independent risk factor contributing to higher levels of stress, living conditions in dormitories should be reviewed. A student welfare system should be available to the new students entering the medical college and especially those leaving home for the first time.

Acknowledgements

The authors would like to thank: Dr Masood Qureshi, Professor of Surgery, Allama Iqbal Medical College, Lahore, Pakistan, for helping and encouraging us to start this research; Dr Altaf Qadir, Associate Professor of Psychiatry, Allama Iqbal Medical College, Lahore, Pakistan, for guiding us in development of the research instruments; and to Dr Srinivasa Murthy, Mental Health and Substance Abuse Division, Eastern Mediterranean Regional Office of the World Health Organization, for his support and guidance in developing the manuscript.

References

- 1 Lopez AD, Murray CC. The global burden of disease. *Nature medicine*, 1998, 4(11):1241–3.
- 2 *Macroeconomics and health: investing in health for economic development. Report of the Commission on Macroeconomics and Health*. Geneva, World Health Organization, 2001.
- 3 Husain N, Creed F, Tomenson B. Depression and social stress in Pakistan. *Psychological medicine*, 2000, 30(2):395–402.
- 4 Dodani S, Zuberi RW. Center-based prevalence of anxiety and depression in women of the northern areas of Pakistan. *Journal of the Pakistan Medical Association*, 2000, 50(5):138–40.
- 5 Rosenthal JM, Okie S. White coat, mood indigo—depression in medical school. *New England journal of medicine*, 2005, 353(11):1085–8.
- 6 Ahmadi J, Benrazavi L, Ghanizadeh A. Substance abuse among contemporary Iranian medical students and medical patients. *Journal of nervous and mental disease*, 2001, 189(12):860–1.
- 7 Niaz U, Hassan S, Ali S. Stress in women physicians in Pakistan. *Pakistan journal of medical sciences*, 2003, 19(2):89–94.
- 8 Wilkinson MJ, Barczak P. Psychiatric screening in general practice: comparison of the general health questionnaire and the hospital anxiety depression scale. *Journal of the Royal College of General Practitioners*, 1988, 38(312):311–3.
- 9 Kuruppuarachchi KA et al. Psychological distress among students from five universities in Sri Lanka. *Ceylon medical journal*, 2002, 47(1):13–5.
- 10 Brown GW et al. Life stress, chronic sub-clinical symptoms and vulnerability to clinical depression. *Journal of affective disorders*, 1986, 11(1):1–19.
- 11 Guthrie EA et al. Embarking upon a medical career: psychological morbidity in first year medical students. *Medical education*, 1995, 29(5):337–41.
- 12 Aktekin M et al. Anxiety, depression and stressful life events among medical students: a prospective study in Antalya, Turkey. *Medical education*, 2001, 35(1):12–7.
- 13 Inam SN, Saqib A, Alam E. Prevalence of anxiety and depression among medical students of private university. *Journal of the Pakistan Medical Association*, 2003, 53(2):44–7.
- 14 Larsson B et al. Short-term stability of depressive symptoms and suicide attempts in Swedish adolescents. *Acta psychiatrica Scandinavica*, 1991, 83(5):385–90.