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ORIGINAL PAPER

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Mental health in three generations of Iranian medical students and doctors

A cross-sectional study

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Abstract *Objective* Despite research in Western countries finding high levels of psychological morbidity in medical students and doctors, little is known about difficulties faced by medical staff in the Middle East. The aim of the present study was to assess emotional disturbance and interpersonal attitudes in a representative sample of Iranian medical students and practitioners. *Method* A total of 82 medical students, 92 interns and 89 general practitioners (GPs) participated in the study. Participants rated the 28-item version of the General Health Questionnaire (GHQ-28) and a measure of interpersonal attitudes. *Results* A total of 44% of participants scored above the threshold of the GHQ-28, indicating probable psychiatric disorder. The GHQ-28 scores were higher in students than interns or GPs and in women compared with men. Medical students and doctors had high levels of indifference and cynicism. *Conclusions* This study suggests that psychological morbidity was common in Iranian medical students and practitioners, particularly women. Women were at particular risk. A high prevalence of emotional disturbance among health care practitioners is likely to compound existing problems of health care provision.

Key words occupational health – medical students – psychiatry – mental disorders – neurotic disorders

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Introduction

Challenges confronting medical practitioners in the Middle East include underfunding of the health sector, disparities in health care distribution, endemics of infectious diseases, rapid population growth and high child mortality rates [27]. Among the difficulties that have not received much attention are psychological and emotional problems confronting medical students and doctors in these countries. Research in a number of Western countries has found high levels of psychiatric problems in medical students and doctors compared with the general population [4, 8, 10, 11, 14, 17, 24–26]. High levels of indifference to patients and cynicism have also been reported in US medical students [16, 18]. However, it remains uncertain what the pattern of psychological morbidity is in Middle East and Asian countries [1, 13, 15] and what characterizes interpersonal attitudes in medical students and doctors. To address this in one such country, a sample of medical students, interns and general practitioners (GPs) in Iran was assessed for emotional disturbance and interpersonal attitudes. We selected these three groups as they represented different generations and consequently, we hypothesized that they would suffer different psychosocial stresses and psychiatric morbidity.

Table 1 Demographic characteristics of consented sample. Data are mean Values (SD) or number of participants (percent)

	Students (n = 82)	Interns (n = 92)	GPs (n = 89)	χ^2	df	P
Age	18.1 (.4)	25.9 (2.0)	34.1 (8.1)	110.85[a]	1	0.000
Sex						
Male	32 (39%)	46 (48.4%)	65 (70.7%)			
Female	50 (61%)	49 (51.6%)	27 (29.3%)	18.74[b]	2	0.000
Socioeconomic status[c]						
≤middle	22 (26.8%)	43 (45.3%)	55 (61.1%)			
>middle	60 (73.2%)	52 (54.7%)	35 (38.9%)	20.38[b]	2	0.000

[a] Kruskal Wallis test
[b] χ^2 test
[c] Socioeconomic status of participant's original family

Method

Participants

We recruited all first year students entering Tehran University of Medical Sciences (TUMS) during a semester in 2003, all final year interns training at Roozbeh Psychiatric Hospital (the major psychiatric hospital affiliated with TUMS) during five consecutive months in 2003 and all fully trained GPs attending a Continuous Medical Education (CME) programme in Tehran. Medical education in Iran begins at undergraduate level and lasts about 7 years, including a one and a half year internship at the end. Graduated doctors mostly practice as GPs both in community settings and in hospitals. All participants were informed that the study was confidential and anonymous, and that participation was voluntary. All participants gave informed written consent prior to completion of questionnaires. The study was approved by the Research Ethics Committee at TUMS.

Instruments

We used the 28-item version of the General Health Questionnaire (GHQ-28) as a measure of psychological distress [9]. The questionnaire can be scored 0–28 and a score of six or more has been validated in another Iranian study as identifying a probable case of psychiatric disorder such as anxiety or depression [19]. Each item can also be rated on a four point Likert scale giving a potential score of 0–84, with higher scores representing greater distress. To assess attitude in social interactions, the Mach IV scale was used. The scale is a 20-item self-report inventory that measures Machiavellianism—a manipulative, indifferent attitude towards others combined with a cynical view of other's motives and characters [2, 3, 6, 21]. The items were scored on a 7-point scale and scores range from 40 to 160, with higher scores indicating more Machiavellian attitudes [6]. The validity and reliability of the Persian version was assessed by a pilot study. The scale showed good criterion validity; there was a significant correlation between the Mach IV and the psychopathic deviate scale of the Minnesota Multiphasic Personality Inventory (MMPI) (r = 0.29, P < 0.01). The scale also demonstrated good internal reliability; Cronbach's alpha was 0.73.

Results

The response rate was 85% (263/315) for all questionnaires. Eighty-two medical students, 92 interns and 89 GPs participated; the response rates were 82%, 87.6% and 80.9%, respectively. Table 1 shows the demographic characteristics of the study sample.

Using the recommended GHQ-28 cutoff point, 107 (43.9%; 95% CI 37.6%, 50.1%) participants scored as cases of psychiatric disorder. Table 2 shows the case identification data. Psychiatric morbidity did not differ significantly between the three study groups and between demographic categories. The total GHQ-28 scores, however, were significantly different among the three groups (F(2, 243) = 5.68, P = 0.004). Post hoc Tukey's comparisons showed that the scores were higher in students (mean 26.0, SD 14.7), compared with interns (mean 20.6, SD 8.7, P = 0.007) and GPs (mean 20.9, SD 9.9, P = 0.012). In addition, the scores were significantly higher in females than in males (mean 24.6, SD 12.1 vs. mean 20.4, SD 10.4, t(244) = 2.93, P = 0.004).

Table 2 Psychiatric morbidity with the recommended GHQ-28 cutoff score

	GHQ-28 ≥ 6	χ^2	df	P
Study groups				
Students (n = 72)	36 (50.0%)			
Interns (n = 87)	36 (41.4%)			
GPs (n = 85)	35 (41.2%)	1.57	2	0.46
Age cohorts				
15–24 years (n = 84)	42 (50.0%)			
25–44 years (n = 154)	62 (40.3%)	2.10	1	0.15
Sex				
Male (n = 130)	50 (38.5%)			
Female (n = 114)	57 (50.0%)	3.28	1	0.07
Socioeconomic status[a]				
≤middle	49 (46.7%)			
>middle	57 (41.3%)	0.70	1	0.40

[a] Socioeconomic status of participant's original family

Table 3 shows data on the Mach IV scores. The mean Mach score was 74.0 (mean with SD 13.6). No significant difference was found among the study groups or genders. There was a significant correlation between scores on the Mach IV and the GHQ-28 (r = 0.29, P < 0.001).

Discussion

In a sample of 263 Iranian medical students and doctors, we found that 44% had a probable psychiatric disorder. This prevalence of psychological distress exceeds that of general population. A recent Iranian epidemiological survey [19] estimated the

Table 3 Means and standard deviations of the Mach IV scores

	Mach IV			
Study groups		*F*	df	*P*
Students (n = 82)	74.9 (13.6)			
Interns (n = 92)	75.5 (12.1)			
GPs (n = 89)	71.6 (14.9)	2.13	2,260	0.12
Age cohorts		*t*	df	*P*
15–24 years (n = 95)	75.1 (13.8)			
25–44 years (n = 162)	73.4 (13.7)	0.96	255	0.33
Sex				
Male (n = 140)	73.7 (13.2)			
Female (n = 123)	74.4 (14.1)	0.39	261	0.70
Socioeconomic status[a]				
≤middle (n = 117)	73.7 (13.9)			
>middle (n = 144)	74.0 (13.3)	0.19	259	0.85

[a] Socioeconomic status of participant's original family

prevalence of psychiatric disorder at 18–20% for those aged 15–44 years using the same questionnaire, which suggests that psychiatric morbidity was over 2 times higher in this sample. The higher scores in female doctors are consistent with previous findings that women have higher levels of psychiatric morbidity than men in general population [19]. We found that students were more psychologically distressed than interns or GPs. This may be a consequence of sicker students dropping out of medical school, leaving a healthier group of interns and GPs by comparison. However, the rate of dropout is generally very low in Iranian medical schools. The high rates may result from psychosocial factors such as poor campus conditions, large number of exams and limited job opportunities.

Furthermore, the levels of psychological distress in this sample of medical students and doctors appear to be higher than in Western samples. Using the GHQ, 19–25% were identified as cases of psychiatric disorder in a sample of doctors at five UK teaching hospitals [14] and 31–36% in large samples of UK medical students [11, 26] compared with 44% in this study. Concern about the mental health of doctors in low-income countries has been reported [1, 13, 15]. For example, a recent study found high rates of depression and anxiety in Turkish medical students and physicians [1]. However, appropriate comparisons with Western samples have not previously been possible.

Finally, the result showed that high levels of indifference and cynicism towards others were present in medical students and doctors. The scores were higher than those found in other Iranian students [21]. The mean score was 68.6 in students from the latter investigation, compared to 74.0 found in this study. In addition, we found that psychological disturbance was associated with high levels of indifference and cynicism. The finding is in line with previous studies that have shown that depression is associated with the high Mach-IV scores [3]. The direction of causality, however, cannot be determined from the present study design and further research is needed to address this issue.

These findings have a number of possible important implications. First, medical schools and training programmes should incorporate systems to monitor and treat psychological morbidity. Successful interventions have been reported elsewhere, such as specialist confidential psychiatric support incorporated into training programmes [5, 20], group therapeutic learning methods for students [7] and addiction services for trainee doctors [24]. The effects of psychological distress on doctor burnout and dissatisfaction are well documented [10, 14] with consequences including medical errors [12] and suboptimal patient care [23]. High Mach scores have also been shown to be associated with job dissatisfaction [2] and indifference to patients and their problems [18], which may be addressed in medical school education [16]. In Middle East countries where health care systems are already stretched and the number of specialist doctors is low by international standards [27], any potential intervention to improve the mental health of doctors is likely to have far-reaching consequences. A second implication of the study arises from the finding that women had a higher prevalence of psychological distress. As increasing numbers of women enter medical schools in Middle East countries, any possible interventions could be targeted to women if resources are limited.

This study recruited all students, interns and GPs in a given time period and obtained high response rates. Although the study sampled one medical university, there is no evidence that the university was different from other Iranian medical universities. The study also sampled GPs who attended a CME programme in Tehran city. GPs require attending CME programmes to renew their medical license, making it less likely that the CME sample was biased or unrepresentative of practicing physicians in the Tehran region. However, caution should be exercised in generalizing the results to all GPs and doctors in Iran. The study is limited by being conducted in one country and independent replication in other Middle East countries would be important. The General Health Questionnaire is a well-validated screen of psychological morbidity but more comprehensive assessments are required to identify specific psychiatric diagnoses. Finally, further studies are needed to investigate the psychological determinants of health workers' performance and strategies for improving it [22].

In summary, this study found that psychological morbidity and attitudes of indifference and cynicism were common in Iranian medical students and doctors. Women had particularly high level of psychiatric problems. A high incidence of psychiatric morbidity among health service providers is likely to lead to poorer quality of health care, particularly in Middle East countries that have chronic shortages of health

professionals [27]. Middle East health systems should acknowledge this high level of risk and should consider establishing processes that recognize and treat those in whom signs of psychological distress are discernible.

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References

1. Akvardar Y, Demiral Y, Ergor G, Ergor A (2004) Substance use among medical students and physicians in a medical school in Turkey. Soc Psychiatry Psychiatr Epidemiol 39:502–506
2. Bakir B, Ozer M, Ucar M, Gulec M, Demir C, Hasde M (2003) Relation between Machiavellianism and job satisfaction in a sample of Turkish physicians. Psychol Rep 92:1169–1175
3. Bakir B, Yilmaz UR, Yavas I (1996) Relating depressive symptoms to Machiavellianism in a Turkish sample. Psychol Rep 78:1011–1014
4. Bellini LM, Baime M, Shea JA (2002) Variation of mood and empathy during internship. JAMA 287:3143–3146
5. Borenstein D (1985) Should physician training centers offer formal psychiatric assistance to house officers? a report on the major findings of a prototype program. Am J Psychiatry 142:1053–1057
6. Christie R, Geis F (1970) Studies in Machiavellianism. Academic Press, New York
7. El-Islam F (1968) Mental health of students receiving clinical psychiatric training. Lancet 2:1184–1185
8. Firth J (1986) Levels and sources of stress in medical students. BMJ 292:1177–1178
9. Goldberg D, Hillier VF (1979) A scaled version of the General Health Questionnaire. Psychol Med 9:131–145
10. Grassi L, Magnani K (2000) Psychiatric morbidity and burnout in the medical profession: an Italian study of general practitioners and hospital physicians. Psychother Psychosom 69:329–334
11. Guthrie EA, Black D, Shaw CM, Hamilton J, Creed FH, Tomenson B (1995) Embarking upon a medical career: psychological morbidity in first year medical students. Med Educ 29:337–341
12. Houston DM, Allt SK (1997) Psychological distress and error making among junior house officers. Br J Health Psychol 2:141–151
13. Inam SN, Saqib A, Alam E (2003) Prevalence of anxiety and depression among medical students of private university. J Pak Med Assoc 53:44–47
14. Kapur N, Borrill C, Stride C (1998) Psychological morbidity and job satisfaction in hospital consultants and junior house officers: multicentre, cross sectional survey. BMJ 317:511–512
15. Khuwaja AK, Qureshi R, Azam SI (2004) Prevalence and factors associated with anxiety and depression among family practitioners in Karachi, Pakistan. J Pak Med Assoc 54:45–49
16. Kopelman L (1983) Cynicism among medical students. JAMA 250:2006–2010
17. Lloyd C, Gartrell NK (1984) Psychiatric symptoms in medical students. Compr Psychiatry 25:552–565
18. Merrill JM, Camacho Z, Laux LF, Thornby JI, Vallbona C (1993) Machiavellianism in medical students. Am J Med Sci 305:285–288
19. Noorbala AA, Bagheri Yazdi SA, Yasami MT, Mohammad K (2004) Mental health survey of the adult population in Iran. Br J Psychiatry 184:70–73
20. Pitt E, Rosenthal MM, Gay TL, Lewton E (2004) Mental health services for residents: more important than ever. Acad Med 79:840–844
21. Okanes MM, Murray LW (1982) Machiavellian and achievement orientation among foreign and American master's students in business administration. Psychol Rep 50:519–526
22. Rowe AK, de Savigny D, Lanata CF, Victora CG (2005) How can we achieve and maintain high-quality performance of health workers in low-resource settings? Lancet 366:1026–1035
23. Shanafelt T, Bradley K, Wipf J, Back A (2002) Burnout and self-reported patient care in an internal medicine residency program. Ann Intern Med 136:358–367
24. Verghese A (2002) Physicians and addiction. N Engl J Med 346:1510–1511
25. Willcock SM, Daly MG, Tennant CC, Allard BJ (2004) Burnout and psychiatric morbidity in new medical graduates. Med J Aust 181:357–360
26. Webb E, Ashton CH, Kelly P, Kamali F (1996) Alcohol and drug use in UK university students. Lancet 348:922–925
27. World Health Organization (2001) World Health Report 2001. WHO, Geneva