Measuring mental health following the 6-year American invasion of Iraq

A General Health Questionnaire analysis of Iraqi medical and dentistry students

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ABSTRACT

الأهداف : إظهار المشاكل النفسية الحالية بين طلبة الطب وطب الأسنان العراقيين باستعمال استبيان الصحة العامة عقب 6 سنوات من النزاعات المسلحة.

الطريقة : تم إجراء هذه الدراسة في فرع الأدوية – كلية الطب – الجامعة المستنصرية – بغداد – العراق خلال الفترة من يناير حتى مايو 2009م. طلب من 440 طالب طب وطب أسنان الإجابة على مواد استبيان الصحة العامة–الطبعة العربية المكون من 12 مادة (GHQ–12) و 30 مادة (GHQ–30) وذلك لقياس مستوى المضايقات النفسية. أستند تحليل هذه الدراسة العرضية على مسح الاستبيان المقدر بشكل تطوعي لتقييم المشاكل العقلية الشائعة.

النتائج : استنادا إلى استبيان الصحة العامة المتكون من 12 مادة باستعمال تقييم لاكريت للأمراض النفسية المحتملة (نقاط 12<) كانت متقاربة بالتساوي عند طلبة طب الأسنان (50.6%) 89 من 176 وطلبة الطب (51.1%) 135 من 264، وبلغت النسبة الشاذة 1.138. استنادا إلى استبيان الصحة العامة المتكون من 30 مادة باستعمال التقييم الثنائي، سجلت عدد الحالات المحتملة (نقاط 5 ≥) بدلالة نوعية متميزة ($p<0.001$) عند طلبة الطب وبلغت النسبة الشاذة 3.251. كانت معدلات مصنفات الأمراض النفسية المسجلة عند طلبة طب الأسنان الذكور أعلى من قرائنهم من طلبة الطب.

خاتمة : كان تأثير النزاعات المسلحة واضحا وعليه فأن طلبة الطب وطب الأسنان يحتاجون إلى أن تمد إليهم الصحة العقلية والعلاج وتعديل في نمط الحياة في كل مرحلة من الحياة الجامعية.

Objectives: To explore the current psychological problems among Iraqi medical and dentistry students using a General Health Questionnaire after 6 years of armed conflicts.

Methods: This study was carried out in the Department of Pharmacology, College of Medicine, Al-Mustansiriya University, Baghdad, Iraq from January to May 2009. A total of 440 medical and dentistry students were asked to complete the 12-item (GHQ-12) and 30-item (GHQ-30) General Health Questionnaire-Arabic version to measure the level of their psychological distress. The analysis of this cross-sectional study is based on a voluntary self-rating questionnaire survey of the assessment of common mental problems.

Results: Based on the GHQ-12, using simple Likert scoring, probable psychiatric illness (score >12) was approximately equal in dentistry (50.6%; 89 out of 176) and medical (51.1%; 135 out of 264) students, with an odds ratio of 1.138. Based on GHQ-30 using binary scoring, the probable cases (score ≥5) were reported significantly ($p<0.001$) higher in medical students than dentistry students, with an odds ratio of 3.251. The means of overall categorized psychiatric morbidity, other than social dysfunction, reported in male dentistry students were non-significantly higher than corresponding medical students.

Conclusion: The impact of armed conflicts is obvious, therefore, medical and dentistry students need to receive effective mental health outreach and treatment, including lifestyle modification, at each stage of college life.

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Tertiary education and advanced academic training are really stressful situations.[1] Therefore, reports of symptoms of depression, anxiety, and substance consumption among graduate and professional students

are expected. The environment of medical education and practice has long been considered a stressful one.[2] This stressful environment may lead to various emotional disorders, which will eventually result in poor academic performance, psychological or physiological impairment during professional life, and therefore affect the quality of patient care.[3-5] Medical students reported a high rate of emotional distress, such as depression, compared to their non medical peers.[1,6,7] It seems that the emotional distress experienced during medical school is chronic and persistent rather than episodic.[5] The causes of emotional disorders among medical students were fear of failure, uncertainty regarding expectations and performance, and studying for examinations.[8] The impact of the American invasion of Iraq (2003) and its consequences added a further stressful environment to veterans as well as to the Iraqi people including medical and dentistry students.[9] According to the World Health Organization (WHO), the fourth leading cause of morbidity among Iraqis older than 5 years is mental illness, which ranked higher than infectious disease (WHO 2005).[10] Armed combat has profound direct and indirect impacts on the long-term as well as short-term physical and mental health of noncombatant civilians.[11] Dworkin et al[12] reported poor social function of the population of Halabja, a town in Iraqi Kurdistan, 18 years after a chemical attack on civilians in that town. The General Health Questionnaire (GHQ) method developed by Goldberg is a widely used instrument for screening the current psychological wellbeing of a person. It has a high validity, sensitivity, and specificity.[13,14] This self-scoring questionnaire screens social dysfunction and distressing psychological phenomena. This cross-sectional study is aimed to explore the current psychological problems among medical and dentistry students at Al-Mustansiriya University in Iraq using the GHQ-12 and GHQ-30 after 6 years of armed conflicts.

Methods. The analysis of this cross-sectional study is based on a voluntary self-rating questionnaire survey of the assessment of common mental problems in the College of Medicine, and College of Dentistry, Al-Mustansiriya University, Baghdad, Iraq during January-May 2009. Four hundred and forty students (154 males and 286 females) aged 17-24 years represented all studying levels (6 years for the College of Medicine and 5 years for the College of Dentistry) were allocated randomly to enrol in this study. The local scientific committee for medical ethics approved this study. Each student was informed of the study, and a verbal consent to participate was obtained. Six years after the American invasion of Iraq, medical and dentistry students were asked to complete the 12-item (GHQ-12) and 30-item (GHQ-30) General Health Questionnaire-Arabic version to measure the level of their psychological distress, and to identify potential cases of mental ill health. The GHQ-12 consists of 12 items, each one assessing the severity of mental problems over the past few weeks using binary scoring (GHQ scoring 0 0 1 1), and a 4-point Likert scale (simple Likert scoring 0 1 2 3). The items generated a total score ranging from 0-12 (GHQ scoring) and 0-36 (simple Likert scoring). Binary GHQ scoring considered only the number of symptoms, and is therefore, an "area" measure, while the Likert scoring is a composite measure encompassing both "area and intensity." A GHQ-12 binary scoring of ≥4 was used as the cutoff point to define common mental disorders,[15] with a maximum score of 12 indicating the likelihood of psychiatric illness. High GHQ-12 scores were classified into 2 severity groups (4-7 and 8-12 score). Moreover, the average of negative items-GHQ-12 was calculated. Negative items of GHQ-12 include; lost much sleep over worry, felt constantly under strain, felt you could not overcome your difficulties, feeling unhappy and depressed, losing confidence in yourself, thinking of yourself as a worthless person. The GHQ-30 covers areas of psychiatric distress including depression, anxiety, and social dysfunction. Items of anxiety and dysphoria (getting scared or panicky for no good reason, found everything getting on top of you, feeling unhappy and depressed, losing confidence in yourself, feeling nervous and strung-out all the time), items of anxiety and insomnia (lost much sleep over worry, felt constantly under strain, found everything getting on top of you, feeling nervous and strung-out all the time), items of severe depression (thinking of yourself as a worthless person, felt that life is entirely hopeless), items of suicidal depression (felt that life is entirely hopeless, felt that life isn't worth living), and items of social dysfunction (managing to keep yourself busy and occupied, feeling on the whole you were doing things well, satisfied with the way you've carried out your tasks, felt that you are playing a useful part in things, felt capable of making decisions about things, able to enjoy your normal day-to-day activities). The GHQ-30 is scored using binary and simple Likert scoring as with GHQ-12. Scores ≥ 5 were considered probable cases and were defined as probable cases in this study.[16,17] Furthermore, the average GHQ scores were used as cutoff points to estimate the proportions of students who were considered to be suffering psychological distress.[16,18]

Statistical analysis. The results were analyzed using Excel 2003. The results are presented as number, percent, mean ± SD, and odds ratio. Univariable differences between groups were tested using the difference between proportions, two-tailed unpaired student t-test taking $p \leq 0.05$ as the level of significance.

Results. Four hundred and forty students including 264 medical (96 male and 168 female) and 176 dentistry (58 male and 118 female), aged 17-24 years were enrolled in this study. Based on GHQ-12 using binary scoring, the means of total scores of dentistry students were non-significantly higher than corresponding medical students of both genders (**Table 1**). The probable cases (score ≥4) comprised 42% in medical students, and 44.3% in dentistry students (**Table 1**), and the difference was non-significant. There was also no significant difference between medical and dentistry students in the scoring means of negative items (**Table 1**). Based on GHQ-12 using simple Likert scoring, the pattern, not the value, of the total means score did not differ from GHQ binary scoring (**Table 2**). Probable psychiatric illness cases (score >12) were approximately equal in dentistry and medical students (**Table 2**). The odds ratio of medical students with score >12 was 1.138 of corresponding dentistry students. Again, the average of negative item scoring followed the average of that observed with GHQ scoring (**Table 2**). There were no significant differences in the severity, namely, scores 4-7 and 8-12 between medical and dentistry students as well as between males and females of dentistry and medical colleges (**Tables 1 & 2**). Based on GHQ-30 using GHQ binary scoring, the mean total score of dentistry students was non-significantly higher than corresponding medical students (**Table 3**). Dentistry male students scored significantly ($p<0.05$) higher than male medical students. The probable cases (score ≥5) were reported significantly ($p<0.001$) higher in medical students than dentistry students, with an odds ratio of 3.251 (**Table 3**). Moreover, the percentage of male or female probable cases in medical students were significantly ($p<0.001$) higher than corresponding dentistry students. The means of overall categorized psychiatric morbidity, other than social dysfunction, reported in male dentistry students were non-significantly higher than corresponding medical students (**Table 3**). Female medical students reported a non-significant higher social dysfunction score compared with female dentistry students, and a significantly higher social dysfunction score was observed in male dentistry students (**Table 3**). Scoring for suicidal depression items was non-significantly higher in dentistry students compared with medical students. Likert scoring of GHQ-30 revealed all students of both colleges were probable cases (**Table 4**). The picture of categorized psychiatric morbidity was similar to GHQ-12 using Likert scoring (**Table 4**). Taking the mean of total score as a cutoff for probable cases, **Figure 1a** showed that 38.6% of medical students were probable cases compared with 42% of dentistry students using GHQ-12 binary scoring. These percents were reversed with Likert scoring with 47.7% of medical students versus 40.3% of dentistry students (**Figure 1b**). **Figure 2a** showed that the probable cases in medical students were 42.4%, and 46.4% for dentistry using binary scoring, compared with 40.9% for medical, and 36.9% for dentistry using GHQ-30 Likert scoring (**Figure 2b**).

Discussion. The results of this study demonstrate mental distress in medical and dentistry students and the estimation of probable psychiatric illness is related to the applied instrument and the method of scoring, and influenced by gender. There is no doubt that medical school is a stressful and challenging time in the academic career of physicians, this stressful lifestyle often continues through residency and life as a physician.[19] Dental education is regarded as a complex, demanding, and often stressful pedagogical procedure. There is evidence that the highest incidence of stress occurred in medical students followed by dental, and then nursing students.[20] This study shows that the average total score of GHQ-12 is non-significantly higher among dentistry students of both genders than medical students. The average total of GHQ-30 binary scores is significantly higher in male dentistry students compared with medical students. Therefore, 3 methodological dimensions influenced the estimation of the average total scores: the applied instrument, the method of scoring, and the gender factor.

Over-estimation was observed with the GHQ-30 and Likert scoring method, probably due to the validity of the GHQ-30 compared with the GHQ-12. A high percentage of mental distress (score >4) was detected with GHQ-12, and GHQ-30 detected a significantly higher percentage (score >5) in male dentistry students. Also, a high percentage of probable mental illness was observed in both colleges after taking the average of total score as a cutoff point. These percentages are higher than those reported by others, which were around 34%.[21] In one study, it was reported that almost one-fifth of the students scored above the strict threshold on the GHQ-12 indicating notable psychological distress.[6] Therefore, the impact of the American invasion of Iraq (2003) and its consequences may have contributed to this high percentage of probable mental distress. Seal et al[22] reported that the diagnosis of mental illness increased substantially among veterans after the Iraq war started. The averages of psychiatric morbidities referred to the presence of mental symptoms and are comparable with Saudi secondary school students,[23] and are higher than Goebert et al's study,[24] which included medical students and residents of different ethnicity. Ahmed et al[25] reported that the most common anxiety manifestation of Dubai medical students was "fear of the worst happening". Therefore, prevalence of anxiety may be related to the prevailing social echoes that followed the Iraq war.[26] The average score of severe depression is lower than those of

Table 1 - Comparison of GHQ-12 scores between medical (N=264) and dentistry (N=176) students using GHQ binary scoring.

Variable	College of Medicine			College of Dentistry		
	Male (n=96)	Female (n=168)	Total (n=264)	Male (n=58)	Female (n=118)	Total (n=176)
Total score (GHQ-12)	3.041 ± 2.710	3.464 ± 2.461	**3.310 ± 2.557**	3.315 ± 2.609	3.775 ± 2.597	**3.645 ± 2.603**
<4	64 (66.7)	89 (53.0)	**153 (58.0)**	31 (53.5)	67 (56.8)	**98 (55.7)**
4-7	24 (25.0)	70 (41.7)*	**94 (35.6)**	22 (37.9)	43 (36.4)	**65 (36.9)**
8-12	8 (8.3)	9 (5.3)	**17 (6.4)**	5 (8.6)	8 (6.8)	**13 (7.4)**
>12	0	0	**0**	0	0	**0**
Negative items	1.625 ± 1.530	1.815 ± 1.466	**1.746 ± 1.490**	1.827 ± 1.511	1.720 ± 1.507	**1.755 ± 1.502**

GHQ - General Health Questionnaire. The results are expressed as number (%) and mean ± SD,
*p<0.01 compared with corresponding male students, score ≥4 - probable psychiatric illness, score >12 - likelihood of psychiatric illness

Table 2 - Comparison of GHQ-12 scores between medical (N=264) and dentistry (N=176) students using simple Likert scoring.

Variable	College of Medicine			College of Dentistry		
	Male (n=96)	Female (n=168)	Total (n=264)	Male (n=58)	Female (n=118)	Total (n=176)
Total score (GHQ-12)	12.125 ± 5.744	12.982 ± 4.67	**12.681 ± 5.363**	13.758 ± 5.072	13.025 ± 5.381	**13.267 ± 5.278**
<4	2 (2.1)	1 (0.6)	**3 (1.1)**	0	0	**0**
4-7	19 (19.8)	27 (16.1)	**46 (17.5)**	3 (5.2)	21 (17.8)*	**24 (13.6)**
8-12	34 (35.4)	46 (27.3)	**80 (30.3)**	23 (39.6)	40 (33.9)	**63 (35.8)**
>12	41 (42.7)	94 (56.0)	**135 (51.1)**	32 (55.2)	57 (48.3)	**89 (50.6)**
Negative items	1.625 ± 1.530	1.815 ± 1.466	**1.746 ± 1.490**	1.827 ± 1.511	1.720 ± 1.507	**1.755 ± 1.502**

GHQ - General Health Questionnaire. The results are expressed as number (%) and mean ± SD,
*p<0.01 compared with corresponding male students, score >12 - probable psychiatric illness

Table 3 - Comparison of GHQ-30 scores between medical (N=264) and dentistry (N=176) students using GHQ binary scoring.

Variable	College of Medicine			College of Dentistry		
	Male (n=96)	Female (n=168)	Total (n=264)	Male (n=58)	Female (n=118)	Total (n=176)
Total score (GHQ-30)	8.031 ± 5.614	9.017 ± 5.425	**8.659 ± 5.504**	10.0 ± 5.797*	8.838 ± 5.800	**8.886 ± 5.835**
≥5	66 (68.8)	130 (77.4)	**196 (74.2)**	22 (37.9)†	56 (47.5)†	**78 (44.3)†**
Anxiety and dysphoria	1.333 ± 1.303	1.461 ± 1.334	**1.414 ± 1.321**	1.620 ± 1.460	1.525 ± 1.424	**1.556 ± 1.433**
Anxiety and insomnia	1.291 ± 1.132	1.273 ±1.135	**1.280 ± 1.132**	1.448 ± 1.110	1.347 ± 1.135	**1.380 ± 1.125**
Severe depression	0.645 ± 0.962	0.676 ± 0.829	**0.662 ± 0.878**	0.844 ± 1.022	0.830 ± 1.072	**0.835 ± 1.053**
Suicidal depression	0.208 ± 0.500	0.233 ± 0.525	**0.224 ± 0.516**	0.431 ± 0.728	0.381 ± 0.678	**0.397 ± 0.693**
Social dysfunction	1.458 ± 1.360	1.863 ± 1.516	**1.715 ± 1.471**	2.137 ± 1.680*	1.584 ± 1.481	**1.767 ± 1.566**

GHQ - General Health Questionnaire. The results are expressed as number (%) and mean ± SD.
†p<0.001, *p<0.05 compared with corresponding College of Medicine students, score ≥5 - probable psychiatric illness

Table 4 - Comparison of GHQ-30 scores between medical (N=264) and dentistry (N=176) students using simple Likert scoring.

Variable	College of Medicine			College of Dentistry		
	Male (n=96)	Female (n=168)	Total (n=264)	Male (n=58)	Female (n=118)	Total (n=176)
Total score (GHQ-30)	31.6 ± 12.2	34.2 ± 11.8	**33.3 ± 12.0**	34.9 ± 11.5	32.9 ± 12.9	**33.5 ± 12.0**
≥5	96 (100)	168 (100)	**264 (100)**	58 (100)	118 (100)	**176 (100)**
Anxiety and dysphoria	4.760 ± 2.759	5.291 ± 2.949	**5.098 ± 2.887**	5.706 ± 3.117	5.372 ± 3.212	**5.482 ± 3.176**
Anxiety and insomnia	4.260 ± 2.253	4.595 ± 2.395	**4.473 ± 2.346**	4.810 ± 2.297	4.664 ± 2.496	**4.698 ± 2.427**
Severe depression	2.437 ± 2.352	2.732 ± 2.004	**2.625 ± 2.137**	3.051 ± 2.342	2.991 ± 2.586	**3.011 ± 2.502**
Suicidal depression	0.968 ± 1.439	1.130 ± 1.395	**1.071 ± 1.411**	1.396 ± 1.623	1.372 ± 1.663	**1.380 ± 1.640**
Social dysfunction	6.312 ± 2.692	6.880 ± 2.976	**6.674 ± 2.884**	7.344 ± 2.929*	6.881 ± 2.647	**7.034 ± 2.744**

GHQ - General Health Questionnaire. The results are expressed as number (%) and mean ± SD.
*p<0.05 compared with corresponding College of Medicine students, score ≥5 - probable psychiatric illness

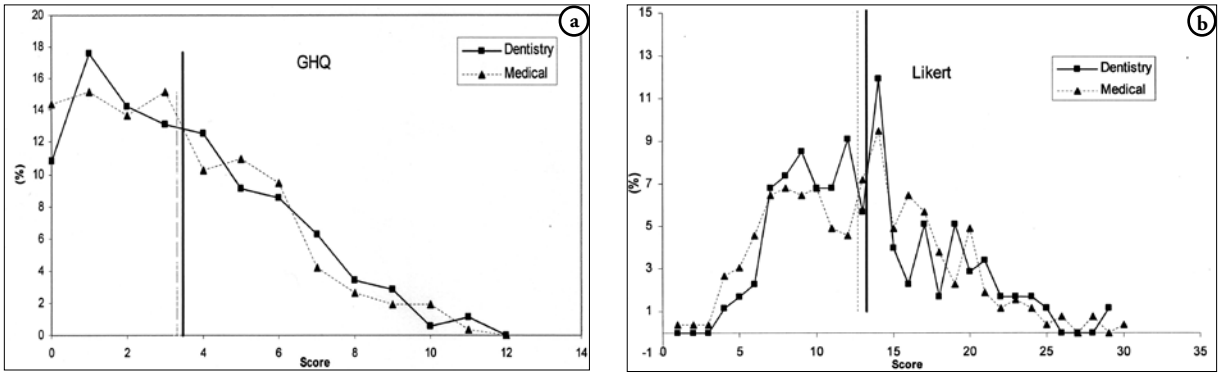

Figure 1 - Relative frequency polygons for GHQ-12. The GHQ-12 was scored by 2 different methods, **a**) GHQ, and **b**) Likert. In each method of scoring, the proportion of subjects with each score were plotted. Vertical lines indicated the cutoff points for each scoring method. GHQ - general health questionnaire.

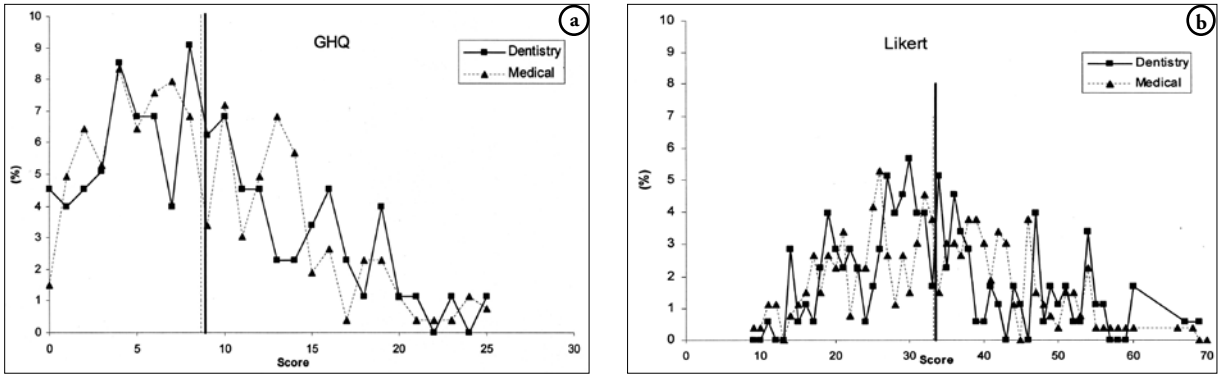

Figure 2 - Relative frequency polygons for GHQ-30. The GHQ-30 was scored by 2 different methods, **a**) GHQ, and **b**) Likert. In each method of scoring, the proportion of subjects with each score were plotted. Vertical lines indicated the cutoff points for each scoring method. GHQ - general health questionnaire.

anxiety and social dysfunction. There is evidence that there is a strong relationship between the severity of depressive symptoms and lifestyle in nursing college.[27] The average score of suicidal depression or ideation, in the Iraqi population, represented by medical and dentistry students, reported in this study is small compared with Iraq War veterans.[28] There is no doubt that the average score of social dysfunction is high compared with others of psychiatric co-morbidity, and relates to the type of college, as well as influenced by gender. One of the study limitations is that we did not carry out a psychiatric clinical examination of probable cases at the time of the study.

In brief, dentistry students reported higher scores than medical students regarding anxiety, depression, and social dysfunction related items. This finding does not support a report by Omigbodun et al[29] who found that medical students were stressed, because they cited academic pressures in terms of excess schoolwork and lack of holidays.

In conclusion, the impact of armed conflicts is obvious, therefore, medical and dentistry students need to receive effective mental health outreach and treatment, including lifestyle modification, at each stage in college life. Further study is recommended to study mental health in the general population

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Related topics

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