

## Quality of Life of Medical Students in Different Stages – A Multi Center Study

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### Abstract

**Background and Prupose:** The goal of medical education is to train competent, knowledgeable and professional physicians to promote public health care for the nations, sick and advanced the science of medicine.

**Method:** In this study quality of life in medical students of different educational stages of Shiraz medical university and two nearby medical schools in south of IRAN were measured by translated version of the SF-36 questionnaire. All medical students were invited to complete the questionnaire, participation is voluntary and anonymous.

**Results:** Except for the general health scale, the male group had higher mean than female group in all scales. The difference in physical functioning and body pain between the genders were significant ( $p < 0.001$ ) and among all scales physical functioning ( $P = 0.029$ ) and vitality ( $P = 0.026$ ) are higher in the students in physiopathology stage and the lowest means especially in MH and PF were presented in last year medical students. There was a negative linear correlation between MH scale and the age. There was a negative linear correlation between mental health and the age.

**Conclusion:** The potential for enhanced well-being to enhance student and physician professionalism is largely unexplored. Additional research to improve our understanding of the causes and consequences of medical student distress, and to investigate potential solutions, is likely to benefit not only the affected individuals, but also the patients for whom they provide care.

**Key words:** GENERAL HEALTH, IRAN, MEDICAL EDUCATION, MEDICAL STUDENTS, QUALITY OF LIFE, SF-36

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### Introduction

The goal of medical education is to train knowledgeable, competent, and professional

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physicians universities select the students through the equipped to care for the nation's health, advance the science of medicine, and promote public health. Medical schools undertake an extensive selection process to identify intelligent and altruistic individuals with a strong commitment to these goals and then spend seven years trying to prepare those individuals to achieve them. The Iranian medical universities

select the students through the national university entrance exam named "Konkour". The top high school students ranked up to 1000 in the entrance exam allowed to start general medical courses.

Once enrolled, students and schools make a mutual commitment intended to prepare students for a socially useful and personally fulfilling career (1). Based on these characteristics, one may anticipate medical school would be a time of personal growth, fulfillment, and well-being despite its challenges. Unfortunately, studies suggest the current educational process may have an inadvertent negative effect on students' mental health, with a high frequency of depression, anxiety, and stress among medical students (2,3) which is higher than normal population (4,7). The higher prevalence of suicidal idea in the last year medical students than the first year students indicates the worsening environmental effect during the educating period in medical school (8). Some have suggested that psychological distress among students may adversely influence their academic performance,(9-12)contribute to academic dishonesty, (13-15) and play a role in alcohol and substance abuse (16-21).

The SF-36 is a brief general health status measure developed by the Medical Outcomes Study in the United States and has been translated in more than 40 countries.

In this study we tried to measure and compare the quality of life (QOL) of medical students in different stages in Shiraz University of Medicine and two nearby medical schools in south of IRAN.

## Materials and methods

### *The SF-36 Measurement Model:*

The SF-36 is a generic health status measurement instrument designed for use in clinical practice, research, health policy evaluation, and general population surveys (22,23).

The instrument is a self-administered health status questionnaire which includes 35 items on eight aspects of physical and mental health : (a)

limitations in physical activities due to health problems, (b) limitations in routine occupational activities due to physical health problems, (c) bodily pain, (d) general health perceptions, (e) vitality, (f) limitations in social activities due to physical or emotional problems, (g) limitations in routine occupational activities due to emotional problems, and (h) general mental health. The final item asks participants to rate the amount of general health change they have experienced in the past year. The eight scales are hypothesized to form two distinct higher order clusters based on the physical and mental health variables that they have in common. Three scales (Physical Functioning (PF), Role-Physical (RP), and Bodily Pain (BP)) have highest correlation with the physical component and contribute most to the scoring of the Physical Component Summary (PCS) measure. The mental component had higher correlation with the Mental Health, Role-Emotional (RE), and Social Functioning (SF) scales, which also contribute most to the scoring of the Mental Component Summary (MCS) measure. Three of the scales (Vitality (VT), General Health (GH), and Social Functioning (SF)) have noteworthy correlations with both components.

### *Translation and Adaptation :*

Two initial forward translations were made independently by two physicians who were experienced in health status questionnaires but not familiar with the SF-36 then backward translation was performed and cultural adaptation applied (e.g. 100 meters walking instead of walking one block). After an equivalent rendering of the original, to achieve good acceptability (face validity) critical appraisal of the questionnaire was checked by 30 students (face validity test).

### *Sampling method:*

Participants were recruited from the Shiraz University of Medical Sciences and two nearby deprivation, (26), exposure to patients' suffering and deaths, (27,28) and student abuse (29,30) have been hypothesized to contribute to this Medical Schools; Jahrom and Fasa.

Medical curriculum in Iran is divided to four periods; first five semesters of “basic science” two semesters of “physiopathology”, four semesters of “clinical clerkship” and three semesters of “internship”. The aim of study is to include all medical students that were studying in different stages between January 2005 and August 2006; from each phase 55 randomly selected students were invited to complete the questionnaire; the participation was voluntary and anonymous.

#### *Norm-Based Scoring and Interpretation:*

The data has been interpreted with norm-based scoring method as documented elsewhere (24). Linear transformations were performed to transform scores to a mean of 50 and standard deviations of 10. This transformation achieves the same mean and standard deviation for all eight scales and for the PCS and MCS measures. Means and standard deviations for each of the eight scales in the general US adult population are used to determine whether a group or individual in question scores above or below the US average.

#### **Results**

The translated version of the SF-36 was given to 217 students who participated; 213 of these students completed and returned the questionnaire (93 males, 120 females) with mean

age of  $22 \pm 3$  years (ranged from 17 to 35 years). One hundred eighty six of students (87.7%) were single, 26 (12.3%) were married and one of them did not indicate his marital state.

Except for the GH scale, the male group had higher mean than female group in all scales. The difference in PF and BP between the genders were significant (respectively  $P < 0.001$  and  $P = 0.002$ ).

Among all scales PF ( $P = 0.029$ ), and VT ( $P = 0.026$ ) are higher in the students of Physiopathology stage and the lower means especially in MH and PF were in last year medical students. There was a negative linear correlation between MH scale and the age ( $P = 0.045$  and confidence interval =  $\pm 0.137$ ).

There were no significant correlation between the scales and living place, fathers and mothers education. In concordance with other publications PF and GH scales had higher correlation with physical health (Table1). With regard to internal consistency, the mean Cronbach's alpha was 0.85, for male and 0.72 for female (Table 2).

#### **Discussion**

The last year medical students (interns) have the lower mean in different component of SF-36 quality of life measuring scales. A number of factors-including academic pressure (9), workload (25,26), financial concerns, (26), sleep decline in students' mental health. The internship

**Table 1.** Comparison of correlation coefficient in different scales of current study

	FRANCE		IRAN		IRAN		USA	
	MCS	PCS	MCS	PCS	MCS	PCS	MCS	PCS
<b>PF</b>	0.12	0.85	0.06	0.74	0.09	0.021	0.313	0.769
<b>RP</b>	0.27	0.81	0.33	0.63	0.22	0.67	0.43	0.746
<b>BP</b>	0.28	0.76	0.27	0.72	0.28	0.82	0.271	0.669
<b>GH</b>	0.37	0.69	0.40	0.63	0.41	0.60	0.512	0.762
<b>VT</b>	0.47	0.65	0.41	0.75	0.42	0.65	0.773	0.461
<b>SF</b>	0.42	0.67	0.36	0.73	0.29	0.72	0.381	0.044
<b>RE</b>	0.16	0.78	0.01	0.82	0.27	0.58	0.727	0.515
<b>MH</b>	0.17	0.87	0.20	0.84	0.002	0.85	0.855	0.494

BP: Bodily Pain, GH: General Health, MCS: Mental Component Summary, MH: Mental Health, PCS: Physical Component Summary, PF: Physical Functioning, QOL: Quality Of Life, RE: Role-Emotional, RP: Role-Physical, SF: Social Functioning, VT: Vitality.

**Table 2.** Cronbach's alpha in different sex

	PCS	MCS	All 8 scales
<b>Female</b>	0.73	0.71	0.7
<b>Male</b>	0.66	0.67	0.7

period is a high stress period of time because not only the students experience patient care responsibility for the first time and have to make critical decision in "on-call" times, long shift period, and sleep deprivation but also they should prepare themselves for residency entrance exam. Interestingly it has also been postulated that a measure of distress common among residents and physicians in practice has originated in medical school (9,10).

As stated earlier, medical school training is intended to prepare graduates for a personally rewarding and socially meaningful career promoting health and caring for the sick. Unfortunately, as the reports we have described there is a great personal distress for physicians-in-training. Whether distress in medical students are comparable to distress among other professional students cannot be conclusively ascertained from the available studies.

Studies of medical students in other parts of the world under a wide range of systems of medical training have also identified a high frequency of distress (2,3,31,32). In a longitudinal study from the United Kingdom, 63 (37%) of students had poor mental health (GHQ-12 score greater than 3) by the middle of the first year, and 48 (31%) and 34 (22%) had poor mental health in the fourth year and fifth year, respectively (2, 31). Another U.K. study of first year students found the incidence of poor mental health doubled over the course of the first year, increasing from 48 (25%) to 108 (52%) (106). In 2001, Aktekin et al. (33) reported a similar worsening in global mental health, depression, and anxiety between the first-year orientation and the beginning of the second year among Turkish medical students. Dahlin et al. (32) recently reported 40 (13%) Swedish medical students were depressed in comparison to 48 persons (7.8%) in an age and gender-

matched population sample ( $p < 0.05$ ), with approximately one third of the students reporting thoughts of suicide during the course of training. Tyssen et al. (34) also reported a high prevalence of suicidal thoughts among senior Norwegian medical students, with 33 (6%) having made a plan to commit suicide during medical school.

Generally, the studies suggest that psychological distress may be higher among female students than their male colleagues. Although some may attribute this difference to similar trends in the general population, a number of studies found no difference in anxiety and depression among male and female medical students at the beginning of medical school with greater increases in distress among female students through the course of training (35,38). This finding suggests that the differences observed by gender in several studies may have other origins and warrant further investigation. Few pieces of information is available regarding unique challenges faced by other student populations such as minority students and students who have children, and additional research in this area would also be useful. Studies of recent medical school graduates suggest burnout may adversely impact professionalism (39,40) and patient care; (39,40) exploration of burnout among medical students would lead to useful insights into this problem. Student distress may influence professional development (9,26,41,42) and appears to adversely impact academic performance, (9,43,44) contribute to academic dishonesty (13,15) and substance abuse, (16-21) and play a role in attrition from medical school. The decline of humanitarian attitudes (46,47), and decline in empathy, (48) documented during the four years of medical school parallel the incidence of student distress, suggesting a possible relationship between these variables. Studies of recent medical school graduates also suggest that distress may negatively affect quality of patient care, (39) patient safety, (39) and professionalism. On a personal level, distress can be devastating to the individual student by contributing to substance abuse, (18,21) broken relationships, decline in physical health, poor self-care (e.g., lack of exercise, poor diet) (16)

and even suicide. Widespread distress among medical students has now been recognized for several decades. Future studies are needed to explore causes, consequences, and solutions for this problem rather than simply describing the problem. A great deal of research and work is still needed to determine how academic training programs can structure their curricula, systems of evaluation, and support systems to reduce student distress and identify and support students. Whether opportunities for shared reflection, (49,50) training in stress management, (51) or promotion of self-care/coping strategies (31,52) can reduce student distress is not established and is worthy of investigation. The potential for enhanced well-being to enhance student and physician professionalism is largely unexplored. Hypothesis-driven, prospective, multicenter studies are desperately needed to provide valid, generalizable information on this issue. Additional research to improve our understanding of the causes and consequences of medical student distress, and to investigate potential solutions, is likely to benefit not only the affected individuals, but also the patients for whom they provide care.

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### Reference

1. Liaison Committee on Medical Education. Functions and structure of a medical school. Standards for accreditation of medical education programs leading to the MD degree <http://www.lcme.org/pubs.htm#fands>. Accessed 29 December 2005. Washington, DC, AAMC, October 2004 edition with updates as of October 2005.88.
2. Guthrie EA, Black D, Shaw CM, Hamilton J, Creed FH, Tomenson B. Embarking upon a medical career: psychological morbidity in first year medical students. *Med Educ.* 1995; 29: 337-41.
3. Carson AJ, Dias S, Johnston A, et al. Mental health in medical students: a case control study using the 60 item General Health Questionnaire. *Scott Med J.* 2000; 45:115-16.
4. Vitaliano PP, Mariuro RD, Russo J, Mitchel ES, Medical students deistress. A longitudinal study. *J Nerv Ment Dis.* 1989 Feb; 177(2):70-6.
5. Helmers KF, Danoff D, Steinert Y, Leyton M. Stress and deressed mood in medical students, law students, and graduate students at McGill. 1996 Apr; 116(2):97-100.
6. Bellini LM, Baime M, Shea JA. Variation of mood and empathy during Internship. *JAMA.* 2002 Jun 19; 287(23):3143-6.
7. Bonne O, Segman R, Katz M, Kaplan-DeNour A. Emotional distress in Israeli medical student Harefuah. 2003 Sep; 142(8-9):588-91,647
8. Eron L. Effect of medical education on medical students' attitudes. *J Med Educ.* 1955; 30:559-66.
9. Stewart SM, Lam TH, Betson CL, Wong CM, Wong AM. A prospective analysis of stress and academic performance in the first two years of medical school. *Med Educ.* 1999; 33:243-50.
10. Spiegel DA, Smolen RC, Hopfensperger KA. Medical student stress and clerkship performance. *J Med Educ.* 1986; 61:929-31.
11. Spiegel DA, Smolen RC, Jonas CK. An examination of the relationships among interpersonal stress, morale and academic performance in male and female medical students. *Soc Sci Med.* 1986; 23:1157-61.
12. Hojat M, Robeson M, Damjanov I, Veloski JJ, Glaser K, Gonnella JS. Students' psychosocial characteristics as predictors of academic performance in medical school. *Acad Med.* 1993; 68:635-37.
13. Dans PE. Self-reported cheating by students at one medical school. *Acad Med.* 1996; 71(1 suppl):S70-S72.
14. DeWitt C, Baldwin DC, Daugherty SR, Beverley D, Rowley BD, Schwarz M. Cheating in Medical School: a survey of second year students at 31 schools. *Acad Med.* 1996; 71:267-73.
15. Anderson RE, Obenshain SS. Cheating by students: findings, reflections, and remedies.

77:911-917.

17. Sheehan H, Sheehan D, White K, Leibowitz A, Baldwin DC Jr. A pilot study of medical student 'abuse': student perceptions of mistreatment and misconduct in medical school. *JAMA*. 1990; 263:533-37.
18. Newbury-Birch D, Walshaw D, Kamali F. Drink and drugs: from medical students to doctors. *Drug Alcohol Depend*. 2001; 64: 265-70.
19. Clark D, Eckenfels EJ, Daugherty SR, Fawcett J. Alcohol-use patterns through medical school. A longitudinal study of one class. *JAMA*. 1987;257:2921-26.
20. Croen LG, Woesner M, Herman M, Reichgott M. A longitudinal study of substance use and abuse in a single class of medical students. *Acad Med*. 1997;72:376- 81.
21. Baldwin DC, Hughes PH, Conard SE, Storr CL, Sheehan DV. Substance use among senior medical students. A survey of 23 medical schools. *JAMA*. 1991;265:2074-78.
22. Ware JE, Donald Sherbourne C. The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Med Care* 1992; 30: 473-483.
23. Hays, R. D., Sherbourne, C. D., & Mazel, R. M. (1993). The RAND 36-item health survey 1.0. *Health Economics*, 2, 217-227.
24. Ware JE, Kosinski M, Keller SK. SF-36 Physical and Mental Health Summary Scales: A User's Manual. Boston, MA: The Health Institute, 1994.
25. Guthrie EA, Black D, Shaw CM, Hamilton J, Creed FH, Tomenson B. Embarking upon a medical career: psychological morbidity in first year medical students. *Med Educ*. 1995; 29:337-41.
26. Wolf TM, Faucett JM, Randall HM, Balson PM. Graduating medical students' ratings of stresses, pleasures, and coping strategies. *J Med Educ*. 1988; 63:636-42.
27. MacLeod R, Parkin C, Pullon S, Robertson G. Early clinical exposure to people who are dying: learning to care at the end of life. *Med Educ*. 2003;37:51-58.
28. Wear DP. "Face-to-face with It": medical students' narratives about their end-of-life education. *Acad Med*. 2002;77:271-77. *Acad Med*. 1993;68:635-37.
29. Silver HK, Glick AD. Medical student abuse: incidence, severity, and significance. *JAMA*. 1990; 263:527-32.
30. Association of American Medical Colleges. Graduation Questionnaire. <http://www.aamc.org/data/gq/allschoolsreports/2004.pdf>. Accessed 29 December 2005. AAMC, 2004.
31. Guthrie E, Black D, Bagalkote H, Shaw C, Campbell M, Creed F. Psychological stress and burnout in medical students: a five-year prospective longitudinal study. *J R Soc Med*. 1998;91:237-43.
32. Okasha A, Lotaif F, Sadek A. Prevalence of suicidal feelings in a sample of nonconsulting medical students. *Acta Psychiatr Scand*. 1981;63:409-15.
33. Aktekin M, Karaman T, Senol YY, Erdem S, Erengin H, Akaydin M. Anxiety, depression and stressful life events among medical students: a prospective study in Antalya, Turkey. *Med Educ*. 2001;35:12-17.
34. Tyssen R, Vaglum P, Gronvold NT, Ekeberg O. Suicidal ideation among medical students and young physicians: a nationwide and prospective study of prevalence and predictors. *J Affect Disord*. 2001;64:69-79.
35. Vitaliano PP, Maiuro RD, Russo J, Mitchell ES. Medical student distress: a longitudinal study. *J Nerv Ment Dis*. 1989;177:70-76.
36. Richman JA, Flaherty JA. Gender differences in medical student distress: contributions of prior socialization and current role-related stress. *Soc Sci Med*. 1990;30:777-87.
37. Lloyd C, Gartrell NK. Sex differences in medical student mental health. *Am J Psychiatry*. 1981;138:1346-51.
38. Camp DL, Hollingsworth MA, Zaccaro DJ, Cariaga-Lo LD, Richards BF. Does a problem-based learning curriculum affect depression in medical students? *Acad Med*. 1994;69(10 suppl):S25-S27.
39. Bellini LM, Baime M, Shea JA. Variation of mood and empathy during internship. *JAMA*. 2002;287:3143-46.
40. Shanafelt TD, Bradley KA, Wipf JE, Back

- AL. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med.* March 5.2002;136:358-67.
41. Rosal MC, Ockene IS, Ockene JK, Barrett SV, Ma Y, Hebert JR. A longitudinal study of students' depression at one medical school. *Acad Med.* 1997;72:542-46.
42. American Board of Internal Medicine. Project Professionalism <http://www.abim.org/resources/publications/professionalism.pdf>. Accessed 29 December 2005. ABIM, 1994: 1-41.
43. Van Der Ploeg H. Relationship of state-trait anxiety to academic performance in Dutch medical students. *Psychol Rep.* 1979;45: 223-27.
44. Clark DC, Zeldow PB. Vicissitudes of depressed mood during four years of medical school. *JAMA.* 1988;260:2521-28.
45. Fogleman BY, Vander Zwagg R. Demographic, situational, and scholastic factors in medical school attrition. *South Med J.* 1981; 74:602-6.
46. Griffith CH, Wilson JF. The loss of idealism throughout internship. *Eval Health Prof.* 2003;26:415-26.
47. Davis BE, Nelson DB, Sahler OJ, McCurdy FA, Goldberg R, Greenberg LW. Do clerkship experiences affect medical students' attitudes toward chronically ill patients? *Acad Med.* 2001;76:815-20.
48. Hojat M, Mangione S, Nasca T, et al. An empirical study of decline in empathy in medical school. *Med Educ.* 2004;38:934-41.
49. Branch W, Pels RJ, Lawrence RS, R. A.. Becoming a doctor: critical-incident reports from third-year medical students. *N Engl J Med.* 1993;329:1130-32.
50. Pololi L, Frankel RM. Small-group teaching emphasizing reflection can positively influence medical students' values. *Acad Med.* 2001;76:1172-73.
51. Kelly JA, Bradlyn AS, Dubbert PM, St Lawrence JS. Stress management training in medical school. *J Med Educ.* 1982;57:91-99.
52. Wolf TM. Stress, coping and health: enhancing well-being during medical school. *Med Educ.* 1994;28:8-17.