The effective factors on the academic progress of the students of Tehran University of Medical Science

Pages with reference to book, From 45 To 48
Masoud Roudbari, Azadeh Ahmadi (Department of Mathematics and Statistics, Tehran University of Medical Sciences, Tehran, Iran.)
Soudeh Roudbari (School of Medicine, Tehran University of Medical Sciences, Tehran, Iran.)
Shahram Sedghi (Department of Librarianship and Medical Information, School of Health Management and Information Sciences, Tehran, Iran.)

Abstract

Objective: To examine factors influencing the academic performance of students at Tehran University of Medical Sciences.
Methods: The retrospective cross-sectional study was conducted between 2008 and 2009 at the Tehran University of Medical Sciences, Iran. Data was obtained from the education office of the university and SPSS version 15 was used for data analysis.
Results: Of the 670 students in the study, 230 (34.3%) were boys and 440 (65.6%) were girls. The highest mean score of courses belonged to the Psychiatry Institute (18.68) and the lowest was in the School of Medicine (15.20). Twenty nine per cent of students had failed course and 8.4% had failed semester.
Conclusion: The variables gender, level of education, and school are the most important factors affecting the educational progress of students. Overall, students' failure ratios varied significantly between schools and educational levels.
Keywords: Higher education, Student failure, Medical universities, Iran. (JPMA 64: 42; 2014).

Introduction

Students' failure is a common problem in academia. Students' failure in all forms, including giving up study, failure etc, is wasting time and resources and has a negative impact on the performance of academia.[1]
Students' failure is a common problem in countries around the world including Iran and this is expected to get worse in the future. The number of universities in Iran has nearly tripled in the last three decades therefore students failure has become a routine problem in Iranian universities.
The study of students' performance and finding factors that influence their performance is essential to improve the overall success of students' and to decrease their failure. According to the results of a recent study, twelve per-cent of Iranian medical students experienced failure at least one semester.[2] Another study reports that 43.9% of male and 20% of female undergraduate medical students of Jondi Shahpour University of Medical Sciences, failed once during their study.[3]
A Study in the United States of America shows that 12.6% medical students had failed.[4] The students'failure in Scotland Universities is significantly more than other universities in the UK.[5] In the University of Lancaster in Australia 11.5% of students failed to finish their education within six years, which causes a decrease in the efficiency of the University.[6]
In a research on the Architecture School (SCH) of New south Wales University in Australia, of 264 students who enrolled in 2000, only 76 students were graduated and 55 students had not graduated in 2006, therefore, the graduation rate was 35%.[7]
We conducted this study due to the importance of the students' performance in Tehran University of

Medical Sciences (TUMS) and we tried to investigate related factors.

Method

This cross-sectional study performed at TUMS in 2009 and 2010. The research population includes students of TUMS in 2009-2010 academic years. We selected the research sample using stratified sampling, where the strata were the university schools. Of 6000 students, we selected six-hundred and seventy students randomly (using MIMITAB software) for the sample regarding to students' level of education (undergraduate, Master etc.) at each school.
We collected a computer file, containing sample demographics and students' full records,from the education department in Tehran University of Medical Sciences. We extracted following factors from the students records: subject of study, level of education, school, gender, year of entrance, marital status, accommodation status, residential status, quotas, high school diploma average, interval between completion of high school and entering university, students mean, number of failed course, and number of failed semester.
Using SPSS software, we conducted independent samples t-test for comparison of two means in two populations or its non-parametric form Mann Whitney U test. This test is applied when the data are not normal,analysis of variance for comparison of three or more means in three or more populations or its nonparametric form Kruscal Wallis which is used when the condition of parametric method are not hold, and regression modelling. We kept Students' data confidential and we analysed all data using anonymous codes.

Results

The research population included 670 students (230 male and 440 female). The majority of students (249 students) were from school of Medicine, 97 (14.5%) students from Rehabilitation School, 92 (13.7%) students from Nursing and Midwifery school, 69 (10.3%) students from each public health and Health Management and information Sciences schools, 49 (7.3%) students from School of Paramedicine, 40 (6%) students from Karaj School of Medicine, and 5 (0.7%) from Psychiatry Institute.
In addition, 32 (4.8%) students at the level of PhD, 221 (33.0%) students with the level of MD, 91 (13.6%) students at master level, 10 (1.5%) student with the level of MPH, 288 (34%) student in bachelor level (undergraduate) and 28 (4.2%) students in associate degree were in the sample.
The highest average score among the students' level of education belonged to the PhD students (17.97±0.79 out of 20) and the lowest belonged to students of medicine (14.93±1.44 out of 20). The highest average score belonged to the Psychiatry Institute (18.68±0.53) and the lowest belonged to the School of Medicine (15.20±1.61). The university's mean score was 15.92, with the SD of 1.69. Additionally, the median, interquartile range, and mode of the mean score were 15.99, 2.34 and 15 respectively.
In total, 478 (71.4%) students had not failed during their studywhereas, 92 (13.7%) students, mostly from School of Public Health, had course failure experience once. Additionally, 37 (5.5%) students, mostly from School of Medicine, had failed two courses, and 63(9.4%) students failed three or four courses. The mean score and SD of the number of failed course were 0.83 and 2.18 respectively.
Findings show that 615 (91.8%) students had not failed semester at all. However, 24(3.6%) students had 1 failed semester and 15 (2.2%) students had two failed semesters. Sixteen students (2.4%) had three or four failed semesters (Table-1).

Table-1: The frequency of the number of failed course and semester.

Number of failed course or semester	Frequency failed course (Per cent)	Frequency of failed semester (Per cent)
0	478 (71.4)	615(91.8)
1	92(13.7)	24(3.6)
2	37(5.5)	15(2.2)
3	22(3.3)	10(1.5)
4+	41(6.1)	6(0.9)

The mean score and SD of the number of failed semester were 0.16 and 0.63 respectively.
There was a significant relationship between the students' mean score and the variables of school, level of education, marital status, residential status and gender variables. We noted that there was a significant relationship between the number of failed courses and school, level of education, gender, and quota system. Moreover, we found a significant relationship between the number of failed semesters and school, level of education, gender and quota system variables (Table-2).

Table-2: The significant level of the variables relating to hypothesis of total mean, number of failed courses and semesters.

Variables	Total mean*	Number of failed course**	Number of failed semester**
School	0.000	0.000	0.000
Level of education	0.000	0.000	0.000
Marital statues	0.005	NS	NS
Residential status	0.004	NS	NS
Gender	0.000	0.001	0.000
Quota system	--	0.006	0.000

*We applied analysis of variance or independent t-test.
**We applied KruskaWallisor Mann Whitney U test.

The stepwise linear regression analysis with three response variables of the total mean, the number of

failed course and the number of failed semester, used to predict the earlier three response variables using the independent introduced variables. In order to include the variables of school and level of education in the model, we transformed the eight schools to seven binary variables (one for each school and zero for others). We transformed the level of education to five binary variables (one for each level and zero for the others). Additionally, we considered one for male or single students or non-quota system and zero for female or married students and quota system. The final model for predicting the total mean consisted of, number of failed course (b=-0.34, p=0.001), Undergraduate (b=1.13, p=0.001), Master (b=1.93, p=0.001), PhD (b=0.51, p=0.027), MPH (b=1.34, p=0.001), Karaj Medical School (b=0.63, p=0.001), Nursing school (b= -0.84, p=0.001), Public health School (b= -0.76, p=0.001) and gender (b= -0.71, p=0.001) with the intercept of 16.68.
The final model for predicting the failed course consisted of number of failed semester (b=2.38, p=0.001), total mean (b=-0.33, p=0.001), PhD (b=0.51, p=0.021), Gender (-0.25, p=0.018) with the intercept of 5.68.
Finally the final model for predicting the failed semester consist of number of failed course (b=0.36, p=0.001), quota system (b=-0.19, p=0.001), marital statues (b=0.15, p=0.022) with the intercept of -0.034.

Discussion

Findings of the current study show different levels of student failure in Tehran University of Medical Sciences, the first medical university in Iranian medical universities ranking in 2011.[8] For example, the PhD students have the highest and Medicine students have the lowest total mean in the University. In addition, the highest and lowest total mean belonged to Institute of Psychiatry and School of Medicine respectively. The most failed courses belonged to students from the School of Public health and School of Medicine, which could be due to difficulty of courses in Public health and the long period of education in School of Medicine. Moreover, the most failed semester belonged to School of Medicine, Rehabilitation School, and School of Management and there are no failed semesters in School of Paramedicine, Karaj School of Medicine and Institute of Psychiatry.
There was a relationship between the total mean of students and level of education, School, marital status, gender and residential status. Furthermore, there wasa relationship between failed course and failed semester with school, level of education, gender and quota system.
The results revealed a considerable difference between students, in particular PhD and medical students regarding score average. Additionally, average score of students of different schools varied; where, the highest mean score belonged to the students of Institute of Psychiatry and the lowest to the students of School of Medicine. Notwithstanding, this institute is one of the best academic centres in the region and Iran and approved by World Health Organization. The lower mean score of students in the School of Medicine could be due to difficulty of courses and length of the study period that decreases students' motivations.
Students who lived in Tehran have a lower total mean in comparison with students from other cities. Additionally, female students had better progress in the University than males. Thismight be due to the higher admission rate of female students in the Iranian universities.
The number of failed courses was higher in associate degree and MPH programme, though; further investigation is required to find the reasons.
The majority of students, with failed semester, were from the School of Medicine. This is because of difficult courses and the long period of studying in general medicine. The associate degree, PhD, and MPH students had no failed semester. We noticed that there was a direct relationship between failed coursesand gender, school, quota system, and level of education and this resembles finding of a recent study.[9]

We identified following factors influencing the students' total mean as follows: school, failed course, failed semester, the interval between high school and University admission, marital status, residential status, gender and level of education. The effect of school, level of education, genderand residential status on the total mean was proved in another study.[10] In addition, married, transient students, female and non-quota system students had a higher total mean than otherstudents do. The higher mean in married students could be because the university provides accommodation etc. for students.

The higher mean of female students' reported by other studies[10-12] is similar to results of this study. Moreover,[11,13] reported that single students were more successful in their studies, which is in contrast with this study. Another study[14] showed that quota system, gender and marital statues were effective factors in students' mean.

The better progress and educational success of students with non-quota system is similar to findings of Yousefi Mashoof et al.[11] In addition, Aghajani et al showed that quota system has effect on educational progress of the students.[13]

These are the factors influencing the number of failed course and failed semester: total mean, gender, level of education and quota system. We found that female, master and non-quota system students had failed fewer courses compared to others. Similarly, a study by Yousefi Mashoof et al showed that non-quota medical students had a better progress in the overall basic science examination.[11]

Additionally, the effect of gender on the number of failed semester was reported by Shams et al that female students have a better performance.[9] The regression analysis shows that there was a stronger relationship with total mean for PhD and master students. Moreover, there was a stronger negative correlation with total mean for the students of School of Nursing and School of Public Health. This might be due to the difficult courses.

In regression analysis, with the response variables of the number of failed course and the number of failed semester had the highest effect. In other words, the majority of students with failed course had some failed semester as well. In addition, the coefficient of -0.25 for gender shows that the number of failed semester for males is more than females.

In the regression of the number of failed semester, the variables of number of failed course, marital status, and quota system were included in the model. The number of failed semester of single students were less than married students which resembles the findings of past studies.[11,15]

We suggest establishment of a student advisory department for monitoring the educational progress and failure of students. Additionally, forming work groups for the evaluation of educational programmes could be helpful for identifying the barriers and difficulties hindering the educational progress of students.

Acknowledgement

This study has been funded and supported by Tehran University of Medical Science with the reference number of 370 in 2009.

References

1. Khadivezadeh T, Seyf AA, Velaei N. The students' method of Study and learning at Mashhad University of medical Sciences and its relationship with personal characteristics and educational background. Iran J Med Educ 2004; 4: 53-61.

2. Hazavehei S' Fathi Y, Shamshiri M. The study of the causes of student's academic probation in Hamadan University of Medical Sciences; 2001-2002. . Strides in Development of Medical Education 2006; 3: 33-42.

3. Edalatkhah H, Jahangiri S, Khanbabazadeh M, Amani F, Hashimilir M. The educational situation of the graduates of Ardebil University of Medical Sciences. Iran J Med Educ 2005; 5: 193-5.
4. Lazin R, Neumann L. Student characteristics as predictors of drop-out from medical school: admissions to Beer-Sheva over a decade. Med Educ 1991; 25: 396-404.
5. McPherson A, Paterson L. Undergraduate non-completion rates: a comment. Higher Education 1990; 19: 377-83.
6. Johnes J. Determinants of student wastage in higher education. Studies in Higher Education 1990; 15: 87-99.
7. Moniri R, Ghalebtarash G, Mousavi G. The cause of educational fail at Para-medicine students of Kashan University of medical science. Iran J Med Educ 2006; 6: 135-40.
8. Iranian Medical Universities Rankig in 2011. (Online) 2011 (Cited 2012 March 13). Available from URL: http://www.hbi.ir/info/news/unie2012.pdf.
9. Shams B, Farshidfard M, Hassanzadeh A. The comparison of demographic and personality characteristics in fail and succeed students of Isfahan University of medical sciences. Research Med Sci 1997; 4: 222-6.
10. Roudbari M, Aslemarz B. The educational progress of the Zahedan University of Medical Sciences students and its associated factors. Strides in Development of Medical Education 2010; 7: 47-52.
11. Mashoof Y, Jam MS. Study in quality of education status of medical students in basic sciences courses in Hamadan university of medical sciences 1989-94. Sci J Hamadan Uni Med Sci 2001; 7: 25-9.
12. Haghdoost A, Esmaeili A. Educational Achievement in Medical Students Entered University between 1995 and 2003, Kerman University of Medical Sciences. Strides in Development of Medical Education 2009; 5: 80-7.
13. Delavar A, Omidvar S. Quality of education in midwifery graduates of admitted students of Babol Medical University from 1992 to 1997. Sci J Babol Uni Med Sci 2003; 5: 62-6.
14. Fakharian E, Ameli H. Academic performance of medical alumni of Kashan University of medical sciences and its related factors. Education strategies 2009; 2: 51-7.
15. Roudbari M, Shariati R. The role of educational and demographic causes in medical students basic sciences overall examination at Zahedan University of medical sciences. Iran J Med Educ 2001; 2: 27-35.