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Medical Students' Educational Adjustment and Motivation Power in Compare With Other Academic Majors: A Prospective Study

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Abstract: The aim of this comparative-descriptive study was evaluation of the effect of academic majors on educational adjustment and motivation power between four academic majors: Engineering, Human Sciences, Medical Sciences and Paramedical Sciences. It is hypothesized that educational adjustment and motivation power varies amongst different academic majors' students. One hundred students from 4 majors, Engineering, Human Sciences, Medical Sciences and Paramedical Sciences, were selected through random sampling. Data were collected using the Bell's Questionnaire of Adjustment and Academic Motivation Power Scale. Chi square, independent samples t-test (Mann-Whitney test if necessary) and analysis of variance were used to analyze data. Results showed that only in terms of educational adjustment there was a meaningful difference between medical students and other academic majors. Based on this result, medical school is a stressful period of physician training. Many medical students experience substantial distress which contributes to poor academic performance, academic dishonesty, cynicism and substance abuse. Medical educators need to be aware of the manifestations, causes and consequences of student distress.

Key words: Educational, adjustment, motivation, medical students

INTRODUCTION

There are several reports that show students select their academic major based on some factors such personality type, self-esteem and expectation (Pike, 2006a; Pullmann and Allik, 2008). The type of education as well as the purpose of education is different in different academic majors; and this discrepancy will culminate in behavioral and social changes between these groups. The relationship between the major and the society it serves is a sophisticated and ever-evolving one. Society and academic majors have influence on each other and these effects largely depend on the nature of the society itself.

On the other hand, the demand for a higher skilled workforce, changing employment opportunities, a fluctuating economy which is more visible among developing country like Islamic Republic of Iran and the desire for promotion and self-satisfaction are among the factors that have motivated adults to return to the classroom and pursue their education, Some relevant studies indicate that despite the increases in educational participation socio-economic inequalities in education have not declined (Marks, 2003).

The selection of a college major is an important decision that must be made by all college students. This selection has a major impact on the individual, his/her family and the country at large. There are many influencing factors that affect the selection of majors by students. These factors include interest in the major, peer pressure, family pressure, academic ability, the major's reputation, job availability, job salary, the major's prestige, employment in public or private sector and others.

It has been shown that personality type affects selection of college majors as a personality expression (Pike, 2006b). Using their own scale for introversion/extraversion, the researchers surveyed 108 Colgate University undergraduates. Students of the Chemistry-Biology discipline were found to have higher extraversion levels than the other majors. The emergence of the Social/Behavioral Sciences and Humanities in subsequent decades could cause the findings of this study to be different if replicated today.

A protocol was created incorporating three major curricula within the Loyola University New Orleans College of Arts and Sciences. The curricula included the natural sciences (chemistry and mathematics), behavioral/social sciences (political science and psychology) and humanities (Drama and English). It was hypothesized that if students were attracted to one type of major then there would be higher levels of extraversion in the humanities. When considering different options for college majors, it's a good idea to spend some time

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learning what is really involved in different fields of study. Sometimes it is hard to tell what is really involved in a particular major based simply on the title for the program of study. College course catalogs are a good resource for finding college major descriptions, along with lists of required courses. Many schools publish their catalogs online, which can make it easy for you to compare college major descriptions at different schools you are considering. While catalog descriptions are an excellent starting point, they don't always paint a clear picture of the differences between programs of study that sound similar and share many courses in common. Few studies have investigated personality and psychopathological profiles associated to the choice of university education. Evaluating Medical students and doctors have as a part of academic population needs a special attention. Many doctors in the UK and probably elsewhere, are unhappy with their careers in medicine (Moss *et al*., 2004). A related study which have measured the prevalence of psychological morbidity in first year medical students and compare it to the prevalence in a randomly selected control group of other first year students at Edinburgh University, the result showed that if medical students or doctors, later in their careers, fare badly in terms of mental health then this may well be related to aspects of their lives and is not an intrinsic characteristic (Carson *et al*., 2000).

Understanding the causes and consequences of student distress is important, but medical schools need to go beyond identifying distress and strive to promote wellbeing for all students. Well-being is distinct from the mere absence of distress and includes achieving a high quality in multiple domains (physical health, mental health, emotional health, spiritual health, etc.) (Leplege and Hunt, 1997) . Promoting and nurturing well-being during medical school and equipping graduates with the skills necessary to recognize personal distress, to determine when they need to seek assistance and to develop strategies to promote their own well-being is essential to promoting professionalism and laying the foundation for resilience through the course of a career.

Therefore, the aim of the study is to examine the effect of academic majors on educational adjustment and motivation power between four academic majors: Engineering, Human Sciences, Medical Sciences and Paramedical sciences.

MATERIALS AND METHODS

This study is a comparative-descriptive study which has been designed in order to compare between college students with different academic majors of Engineering, Human Sciences, Medical Sciences and Paramedical Sciences in terms of educational adjustment and motivation power and their related subscales. The subjects of this study were selected from four colleges in Tehran, the capital of Iran in 2008. One hundred students from each major were selected through random sampling utilizing table of randomization. Subsequently the total sample was 400 college students from four different majors. Target population was studied using cluster sampling and was dependent on the shares, each classroom was selected as a cluster and different majors were selected as subjects of samples. After talking to the colleges chief and having their permission, total active classes of each colleges were going through sampling in a week. The sample was selected from male and female college student's population.

In order to collect data the Bell's questionnaire of adjustment and the questionnaire of progress motivation power were used. This questionnaire had 5 subscales which were familial adjustment, hygienic adjustment, social adjustment, emotional adjustment and educational adjustment. This questionnaire which is useful for both gender worked successfully as a way to consult with adults in terms of evaluating personal problem. The validity of each five subscales of Bell's questionnaire helps us to compare between different cases and included 160 questions which could be answered using yes or no and I don't know and evaluate the ability of adjustment in all five subscales.

Evaluating of cultural adjustment in Iran, total reliability was `0.94 and the reliability for each subscale were 0.91 for familial adjustment, 0.81 for hygienic adjustment, 0.88 for cultural adjustment, 0.91 for emotional adjustment and educational adjustment was 0.85. Questionnaire of Progress Motivation Power: in order to evaluate the educational motivation power the Questionnaire of Progress motivation power including 20 uncompleted sentences, was used.

The Questionnaire of Progress motivation power consists of queries about the level of educational activity, desires, wishes, physical and emotional ability and also evaluates perseverance. The internal correlation of questionnaire which was calculated using Cronbach's α (alpha) was 0.76. The motivation power scale of Vorland et al. which is Acquisition Motivation Scale (AMS) had been designed to evaluate cases in three area, internal motive, external motive, without motive. It has to be mentioned that the research data was collected using statistical indices like frequency, percentage, mean and correlation. Quantitative data were analyzed using independent samples t-test (two groups of data with normal distribution), variance analysis (more than two

groups with normal distribution) and Mann-Whitney if necessary for analysis of data with abnormal distribution. Chi square test was used to analyze qualitative data.

RESULTS

Four hundred college students were equally selected from each of four majors (Engineering, Human Sciences, Medical Sciences and Paramedical Sciences) so that there were a hundred cases in each group of majors. In terms of marital status only 9% of all cases were married. In terms of living places 51.5% of all cases lived in college dormitories, 37% were in their parent's home and only 4% possessed a personal living place. Comparative assessment of demographic data among the students of four majors by using examinations Indicate that There is a meaningful difference in terms of student's average age in the four majors ($p<0.01$). According to this result, students of human science and paramedical major have higher age group than students of other majors. In that, students of human science enjoyed a higher age group than those of paramedical major. A meaningful difference ($p\leq0.01$) was observed in terms of birthday order and the father's age of the students in the four majors. Results should that students of human science had a higher rate of the two above mentioned variables. Students of human science were usually the third children of their families, whose fathers' age was older than those of engineering, medical and paramedical students. The average university grade among the students of four majors showed a meaningful difference of $p\leq0.01$. It was observed that this difference was more noticeable among the students of human science and paramedical science. In general, medical students had a higher rate in this case than engineering students. There was a meaningful different in terms of diploma average rate among the students of the four majors ($p\leq0.01$). According to this medical students were seen to have a higher average grade than students of other majors, engineering students were higher than students of Human Science and paramedical science. In the same way paramedical students showed a higher grade there students of human science. However, comparative evaluation in terms of mothers' average age among the students of the four majors showed no meaningful difference on the level of $p\leq0.05$ (Table 1).

In this part of the result the students' attitude in the four majors concerning different areas was brought to attention. This comparison, executed by using variance analytic statistical test, indicated that there was a meaningful difference ($p<0.01$).

In terms students' attitude toward the university as well as the field of study among the students of the four majors, On the other hand there was no meaningful difference ($p\leq0.05$). Among the students of the four majors In terms of religious belief and self imagination rate, students of Human Sciences showed more social and religious contribution than medical students.

There was a more positive attitude toward the university among the students of Human Sciences and engineering than medical and paramedical students. There was also a more positive attitude toward field of study among medical students than students of other majors. Paramedical students showed least positive attitude in this respect. Meanwhile students of all the four majors

Table 1: Comparison of baseline characteristics of students of four majors

Variables	Majors	Mean±SD	Sum of squares	Mean squares	F-value	Level of signification	Rank of difference
Age	Engineering	21.40±2.20	337	79.30	10.36	0.00001**	2>1,3,4 4>1,3
	Human Sciences	23.30±2.80	2007	7.60			
	Medical Sciences	21.70±2.50	3245				
	Paramedical Sciences	22.50±3.40					
Birthday order	Engineering	1.97±1.30	73	24.80	8.80	0.00001**	2>1,3,4
	Human Sciences	3.10±2.00	1074	2.80			
	Medical Sciences	2.30±1.40	1147				
	Paramedical Sciences	2.60±1.80					
Father's age	Engineering	51.20±6.70	780	260.00	4.30	0.005**	2>1,4,3
	Human Sciences	55.00±9.50	21099	55.90			
	Medical Sciences	52.40±6.70	21879				
	Paramedical Sciences	51.80±7.60					
Mother's age	Engineering	45.50±6.50	295	98.60	202.00	0.08	
	Human Sciences	47.70±6.70	16975	44.90			
	Medical Sciences	46.80±5.80	17271				
	Paramedical Sciences	45.70±7.60					
Average of academic examinations' score	Engineering	14.90±1.60	51.7	17.20	9.58	0.00001**	2,4>3>1
	Human Sciences	15.90±1.20	654	1.80			
	Medical Sciences	15.40±1.20	706				
	Paramedical Sciences	15.80±1.20					
Diploma score	Engineering	17.50±1.40	549	183.30	92.48	0.00001**	3>>4>2
	Human Sciences	15.21±1.50	745	1.98			
	Medical Sciences	18.30±0.98	1294				
	Paramedical Sciences	16.00±1.60					

Table 2: Comparison of religious beliefs, religious commitment, self imagination, attitude toward the location of study and attitude toward field of study in different academic majors amongst the participants

Variables	Majors	Mean±SD	Sum of squares	Mean squares	F-value	Level of signification	Rank of difference
Religious beliefs	Engineering	20.0±5.6	138	46.20	77.10	0.15	
	Human Sciences	19.6±5.5	10000	26.10			
	Medical Sciences	19.9±5.4	10138				
	Paramedical Sciences	21.2±3.4					
Religious commitment	Engineering	17.5±5.0	137	45.97	2.17	0.09	
	Human Sciences	18.3±4.8	7966	21.13			
	Medical Sciences	17.4±4.9	8104				
	Paramedical Sciences	18.9±3.4					
Self-imagination	Engineering	19.3±3.0	21	7.10	0.79	0.49	
	Human Sciences	19.8±3.2	3790	9.00			
	Medical Sciences	19.1±2.9	3512				
	Paramedical Sciences	19.5±2.8					
Attitude toward the location of study	Engineering	18.8±3.4	416	138.90	10.22	0.00001**	1,2>4,3
	Human Sciences	20.0±3.3	5262	13.60			
	Medical Sciences	17.5±4.2	5679				
	Paramedical Sciences	17.5±3.7					
Attitude toward field of study	Engineering	18.5±3.6	730	243.60	23.83	0.00001**	3>4,2,13,1,2>4
	Human Sciences	18.4±3.2	3874	10.20			
	Medical Sciences	20.5±2.8	4605				
	Paramedical Sciences	16.6±3.1					

Table 3: Comparison of student adjustments of different majors

Variables	Majors	Mean±SD	Sum of squares	Mean squares	F-value	Level of signification	Rank of difference
General adjustment	Engineering	53.1±10.4	623	207.7	1.48	0.22	
	Human Sciences	52.1±13.5	43844	140.1			
	Medical Sciences	51.7±11.7	44467				
	Paramedical Sciences	49.2±11.7					
Educational adjustment	Engineering	9.2±2.80	132	44.0	5.35	0.001**	3,1,2>4
	Human Sciences	8.6±3.40	2970	8.2			
	Medical Sciences	9.2±2.50	3102				
	Paramedical Sciences	7.7±2.60					
Familial adjustment	Engineering	10.4±2.90	9	3.3	0.32	0.81	
	Human Sciences	10.3±3.20	3808	10.5			
	Medical Sciences	10.0±3.60	3818				
	Paramedical Sciences	10.2±3.20					
Social adjustment	Engineering	9.7±3.90	35	11.9	0.77	0.51	
	Human Sciences	10.1±3.80	5389	15.3			
	Medical Sciences	10.0±4.10	5424				
	Paramedical Sciences	9.3±3.80					
Hygienic adjustment	Engineering	12.8±2.40	46	15.6	1.80	0.14	
	Human Sciences	12.4±3.10	3173	8.6			
	Medical Sciences	11.9±3.00	3220				
	Paramedical Sciences	12.1±3.10					
Emotional adjustment	Engineering	10.6±3.10	29	9.8	0.87	0.45	
	Human Sciences	10.0±3.50	4161	11.3			
	Medical Sciences	10.2±3.50	4191				
	Paramedical Sciences	9.9±3.30					

Table 4: The table shows comparison between educational motivation of students in different academic majors

Variables	Mean±SD	Sum of squares	Mean squares	F-value	Level of signification	Rank of difference
Engineering	60.1±6.6	274	91.2	1.9	0.12	
Human Sciences	62.0±6.4	16524	46.9			
Medical Sciences	60.0±7.9	16799				
Paramedical Sciences	59.0±6.3					

shared an equal rate in terms of religious belief and commitment as well as self- imagination (Table 2).

Comparative evaluations between the students of four majors in terms of adjustment levels showed that only in educational adjustment there was a meaningful difference ($p \leq 0.01$).

Based on these data the minimum educational adjustment level was detected among paramedical students. The level of adjustment was equal between four majors in terms of general adjustment, familial adjustment, social adjustment, hygienic adjustment and emotional adjustment (Table 3).

Using variance analytic statistical test, there was not a meaningful difference between students of four majors in terms of educational motivation ($p \leq 0.05$) (Table 4).

DISCUSSION

Comparing the results of this study with those of previous similar studies indicates the fact that there is a meaningful difference in terms of student's average age in the four majors ($p<0.01$). According to this result, students of human science and paramedical sciences have higher age group than students of other majors. Considering the fact that the minimum score for acceptance in engineering and medical colleges are higher than these scores in human science and paramedical science, thus the students who have higher abilities and scores usually choose this two majors and they usually will accepted in college in their first attempt in general exams after high school. On the other hand, the students in human science and paramedical science may be accepted after three or four attempt and also other participants in general exams who have higher age may choose these majors because they think they have the chance for being accepted in college these results make sense.

Medical schools are responsible for ensuring that graduates are knowledgeable, skillful and professional. To achieve these goals, medical schools typically use a curriculum of didactic lectures, modeling, supervised practice, mentoring and hands-on experience to augment individual study. Unfortunately, some aspects of the training process have unintended negative consequences on students' personal health. Studies suggest that medical students experience a high incidence of personal distress (Guthrie *et al*., 1995; Dyrbye *et al*., 2005) with potential adverse consequences on academic performance, (Dyrbye *et al*., 2005) competency, professionalism and health. It is critical for medical educators to understand the prevalence and causes of student distress, potential adverse personal and professional consequences and institutional factors that can positively and negatively influence student health. In this study, the manifestations were summarized, causes and consequences of student distress; propose how medical schools can address this problem and outline areas where additional research is needed. The evaluation system used to assess student performance also can have a powerful effect on the learning environment.

Association of motivation and adjustment also has been defined. In a recent study, Chirkov *et al*. (2007) argued that the motivation of international college students who go to a foreign country for studying is an important factor in predicting their adjustment (Chirkov *et al*., 2008).

Finally, autonomy is a central component of physician job satisfaction and is likely important to students (Linzer *et al*., 2001). Allowing students to contribute to curriculum development can benefit both students and administrators and give students a sense of ownership in their educational experience. Students bring unique perspectives to curriculum committees including insight regarding redundancies in the curriculum, feedback on effective and ineffective teaching methods and ideas about areas for new curriculum development (alternative medicine, end-of-life care, ethics, genomics, etc.). Because students rotate among various hospitals in the training system, they also can provide insight regarding variations in the care of patients, workload culture and teaching style among hospitals and identify the most effective experiences (Hafferty and Franks, 1994).

In conclusion, medical schools and academies are stressful period of physician training. Many medical students experience substantial distress which contributes to poor academic performance, academic dishonesty, cynicism and substance abuse. Medical educators need to be aware of the manifestations, causes and consequences of student distress and medical schools need to develop and evaluate programs to support struggling students and promote student well-being. Additional research is needed to identify personal and program factors that promote well-being and explore its potential to enhance competency. In the long run, efforts to promote students' well-being will benefit patients, the public and the profession, in addition to the individual. On the other hand since educational adjustment and motivation power are highly related to major satisfaction, conscientiousness, emotional stability and optimism are also positively related to major satisfaction (Logue *et al*., 2007), a counseling for students before choosing the major is necessary.

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