Predicting the educational performance of Isfahan University students of medical sciences based on their behaviour profile, mental health and demographic characteristic

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ABSTRACT

Background: The issue of students' academic failure is one of the most important educational, economic, and social issues. Cognizance of the factors related to academic downfall is so efficient in its prevention and control and leads to protecting governmental assets and labor force. In order to achieve this goal, this study intends to determine the predictive factors of the students' academic performance in Isfahan University of Medical Sciences in terms of their personality profile, mental health, and their demographic characteristics. **Materials and Methods:** This study was a descriptive-correlation study on 771 students who entered Isfahan University of Medical Sciences between 2005 and 2007. The information was gathered through using the students' educational and clinical files (for measuring personality characteristics and mental health) and SAMA Software (To get the mean scores). Minnesota Multiphasic Personality Inventory short form and General Health Questionnaire were used for collecting clinical data. The data were analyzed using SPSS 15 (stepwise regression coefficient, variance analysis, Student's *t*-test, and Spearman correlation coefficient). **Result:** The results showed that the aforementioned students obtained a normal average for their personality profile and mental health indicators. Of all the reviewed variables, education, age, gender, depression, and hypochondria were the predictive factors of the students' educational performance. **Conclusion:** It could be concluded that some of the personality features, mental health indicators, and personality profile play such a significant role in the students' educational life that the disorder in any of them affects the students' educational performance and academic failure.

Key words: Educational performance, mental health, personality profile

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INTRODUCTION

Academic failure is a serious problem of the students, educational system, and society.[1] Usually the students who have experienced academic downfall during their education don't demonstrate desired theoretical or practical capability of their lessons.[2] Academic downfall can also result in numerous emotional, social, behavioral, and psychological problems; a study in the United States showed that the main reason for the suicide in students is downfall in education or profession.[3]

Considering the above-mentioned points, it can be said that academic downfall is one of the major problems of educational

systems; hence that every year it causes the dissipation of a large number of the labor force and economic sources and has serious consequences for students, their families, and society in general. Thus, taking the suitable steps to solve this problem is fundamental.[1,4,5]

In this study, the role of personality traits and mental health were considered as determinant factors in academic failure. Having good mental health and healthy personality, are necessary for each person in order to concentrate, learn, and study. Personal characteristics such as gender, age, degree of education and field of education are also important factors in this respect.

In doing so, some pieces of research that have been conducted to determine the role of psychological factors in academic downfall are introduced.

Momennasab and Farhadi, Rafati *et al*. Karamimatin, in a research found a relationship between psychological health and educational downfall.[6-8] Kahrzaei *et al*. Elhampour, Haddadi Kouhsar *et al*., their study pointed out that the student with lower levels of achievement has a higher risk of psychological disorder.[9-11]

Benítez *et al*. in a study concluded that increased period of education comes along with the lack of health.[12] MC Ilroy and Bunting, King and Bailly, they said that personal characters have a relationship with educational achievement of student.[13,14] Chamorro-Premuzic and Furnham, Gray and Watson, Duff and Boyle, O'Connor and Paunonen, they said that loyalty and prepending are among the strongest and the most resistant's characters related to educational achievement.[15-18] Walt and Pickworth reported that those students had higher achievement who had the following characteristic loyalty, emotional stability, social skills, self-disciplined, practical and were calm or anxious to an imagination.[19] Leeson, *et al*., come to the conclusion that hopefulness and positive attribution style were the higher predictive factors in educational achievement.[20]

Several scientific investigations have emphasized the role of demographic characteristics in academic performance.

Malefo and Alikhani *et al*., in separate conducted studies, revealed that there is a significant relationship between age and academic performance. Hazavehei *et al*., Safdari-Dehcheshmeh *et al*., and Zare *et al*. in separate studies, concluded that academic performance of female students was better comparing to the males.[21-25]

Since mental health is regarded as a basic requirement for satisfactory performance in any field, including educational therefore investigation is so important that the national institute of mental health believes that those with mental health can satisfy their needs[26] and have more compatibility with others.[27] Mental health can also affect personality traits, the ability of social interaction,

and adaptability to new situations.[28] It's worth mentioning that educational status is one of the many needs that can be influenced by mental and individual features.[26] Thus, considering the importance of medical sciences, the significant role of students' personal and psychological state in their educational performance, and the consequences of academic downfall, this study aim to determine the role of personal and psychological factors in academic downfall among the students of medical sciences.

Concerning the variables of mental health and personality traits, studies carried out within the country and outside of the country have investigated the roles of different variables in educational performance. Probably, the reason for this variety is using different tests and questionnaires. For example, in order to determine personality traits, the following tests and questionnaires were used for different majors and semesters: Cattell 16 personality factor (16 PF), Izeng personality test, personality A and 5, Minnesota Multiphasic Personality Inventory (MMPI) long and short form and in order to evaluate the mental health GHO, Symptom Checklist-90 (SCL-90),…. were used questionnaire,[19] NEO-personality inventory – revised (NEO-FF-R),[15-18] Minnesota long and short personality test forms MMPI[8,14] and for testing students' mental health, SCL-90,[9] General Health Questionnaire (GHQ),[6,7,10-12,25,29] and etc., were used. Therefore, different results were obtained all of which indicate that some of the personality traits and mental health indicators influence students' academic performance. Therefore, in this study, the effect of interaction between personal factors, personality characteristics and mental health indicators of students, in statistical model analyzes.

The present study attempts to answer the following hypothesis:

If personality factors, the status of metal health and demographic features have any role in predicting the educational performance of the students in the Isfahan University of Medical sciences.

MATERIALS AND METHODS

The present descriptive-correlation study was conducted among 771 students who entered Isfahan University of Medical Sciences between the years 2005 and 2007. Sampling method was census. In order to collect data, the students' educational and clinical files were used, and psychological interviews were performed by a clinical psychologist (for communication and psychological support). The psychological data were completed using GHQ test (known tool for the screening[30]): Somatic symptoms, anxiety-insomnia, social dysfunction, severe depression, and personality test Minnesota short form (MMPI) (this questionnaire forms, can be used in psychological and clinical research[31]): Hypochondriasis, depression, hysteria, psychopathic deviate, paranoia, psych asthenia, obsessive-compulsive disorder, schizophrenia,

hypomania. The validity of both tests has been proved in different references.[32,33] Demographic characteristics included gender, age and education.

In order to access the students' grade point average Students (GPA) and their scores in different subjects, an agreement was reached by the Department of Education, to use SAMA Software (2003, Iran), which included all the students' educational information. It's worth mentioning that the students' information was confidentially analyzed in a group. Using (version 15, SPSS Inc., Chicago, IL), the data were analyzed using stepwise regression coefficients.

RESULTS

Most of the participants in the present study were females (81.2%), 97% were single and 46.04% were bachelor students (27.62% undergraduate and 26.32% Ph.D. students). The average age was 19 and the average GPA was 15.71. The average students' standardized score in all the scales of personality tests was normal and in the range of 47–52. In addition, the average students' score in all the general health indices was normal. The score of social performance had a higher average compared with others.

In response to the following hypothesis analysis, [Tables 1-3].

If personality factors, the status of metal health and demographic features have any role in predicting the educational performance of the students in the Isfahan University of Medical sciences.

According to the above results, the variables that are mentioned in the model could predict 11% of students'

educational performance (students' average scores have been considered) as follows: Education 4%, age 4%, gender 2%, depression (as one of the aspects of MMPI test) 1%, and hypochondria (as one of the aspects of MMPI test) 1%.

As it has shown in table, the predictor coefficients of education, age, gender, depression, and hypochondria for educational performance is significant ($P < 0/0001$).

According to the results shown in Table 3, five variables that could predict educational performance, in priority, are education, age, gender, depression, and hypochondria.

DISCUSSION AND CONCLUSION

The analysis of the results showed that education, age, gender, depression, and hypochondria are the predictive variables of educational performance (students' average scores have been considered).

According to the obtained results, among all the personality, general health, and demographic variables,

Table 1: The prediction of educational performance of the students at Isfahan University of Medical Sciences based on personality indicators, mental health, and individual characteristics

Model	r^2 rectified	r^2	R
Education	0/04	0/04	0/21
Age	0/08	0/08	0/29
Gender	0/09	0/10	0/32
Depression	0/10	0/11	0/34
Hypochondria	0/11	0/12	0/35

Table 2: The investigation of the significance of the predictive coefficients in educational performance of the model

Predictive variables	Significance level	F-test	Mean square	Degrees of freedom	Sum of squared deviations
Education					
Regression	<0/0001	20/02	33/5	1	33/5
Remaining			1/67	433	724/58
Total				434	758/09
Age					
Regression	<0/0001	20/05	32/2	2	64/39
Remaining			1/6	432	693/69
Total				434	758/09
Gender					
Regression	<0/0001	16/75	26/39	3	79/19
Remaining			1/57	431	678/9
Total				434	758/09
Depression					
Regression	<0/0001	14/17	22/07	4	88/31
Remaining			1/55	430	669/78
Total				434	758/09
Hypochondria					
Regression	<0/0001	12/18	18/85	5	94/29
Remaining			1/54	429	663/79
Total				434	758/09

Table 3: The coefficients of variables of the predictors of educational performance					
Model	Nonstandardized coefficients		Standardized coefficients (β)	*t*	*P*
	Standard error	B			
Constant	0/15	16/43	−0/21	106/76	<0/0001
Education	0/05	−0/25		4/47	<0/0001
Constant	1/04	20/94		20/12	<0/0001
Education	0/05	−0/28	−0/242	5/18	<0/0001
Age	0/05	−0/23	−0/204	4/38	<0/0001
Constant	1/1	19/69		17/77	<0/0001
Education	0/05	−0/23	−0/194	3/99	<0/0001
Age	0/05	−0/22	−0/196	4/24	<0/0001
Gender	0/16	−0/51	+0/147	3/06	0/002
Constant	1/1	19/41		17/51	<0/0001
Education	0/05	−0/24	−0/204	4/2	<0/0001
Age	0/05	−0/2	−0/176	3/7	<0/0001
Gender	0/16	−0/5	−0/145	3/02	0/003
Depression	0/2	−0/05	−0/112	2/42	0/01
Constant	1/1	19/36		17/51	<0/0001
Education	0/05	−0/23	−0/19	4/09	<0/0001
Age	0/05	−0/2	−0/18	3/86	<0/0001
Gender	0/16	0/46	−0/13	2/8	0/005
Depression	0/2	−0/6	−0/14	2/98	0/003
Hypochondria	0/03	0/6	0/09	1/96	0/05

only the variables of education, age, gender, depression, and hypochondria are significant predictors of students' educational performance. Concerning the prediction of students' educational performance based on their age, it should be said that the results of this study verify the results of the studies of Duff and Boyle no contradictory result were found.[17]

Concerning prediction of educational performance based on the depression (as one of the aspects of MMPI test), it's worth mentioning that the results of this study are verifying those of the following studies; Raoofi *et al.*,[34] the results of predicting based on mental health are in agreement with the results of the following studies; Rafati *et al.* Kahrzaei *et al.*, Elhampour, Haddadi Kouhsar *et al.*[7,9-11] These results were in contradiction to just one study by Farahbakhsh *et al.* In 2007, based on prediction of educational performance, according to mental health.

Concerning the relationship and prediction of the educational performance based on hypochondria (as a part of the MMPI), only Kahrzaei *et al.*[9] confirmed the results of the present study; but if the relationship between some of the personality features and educational performance is taken into account, the following studies could be mentioned as those that verify and recognized some personality traits as related factors in educational performance. Chamorro-Premuzic and Furnham, Gray and Watson, Duff and Boyle, Walt and Pickworth, Leeson *et al.*[15-17,19,20] The results of the present study did not confirm the results of the study done by Karamimatin[8] according to which no significant relationship was observed between personality traits and educational performance.

The results of the regression test showed that the depression could predict 1% of the variance of academic performance.

Depression occurs among students for many reasons, but the aim of this study is not saying about these reasons. When depression for whatever reason, was formed, academic performance of students most likely to be affected. It is not needed to mention that academic achievement requires concentration, high morale, planning, perseverance, and many other factors that can be negatively influenced by depression. Although depressed students understand the importance of academic success and feel penitent if they experience academic failure, they are unable to compensate them academic downfall.

In the present study, hypochondria have also been another predictive variable for academic performance. Sometimes pressures, lack of satisfaction, and the guilty conscience appear as physical illnesses. People are differently afflicted with different illnesses or disorders based on their potential, genetic background, and the skills that can be learned. Some of these disorders overlap the others, and some can cause the others. In general, fear of getting sick can reduce solace, concentration, and accomplishment. In fact, there is no disease, but it feels odor one may have wrong feelings about the severity of illness or pain. Considering psycho-physics and the connection between body and mind, the effects of body on mind and vice versa cannot be denied. It seems that any preoccupation can increase the likelihood of academic failure.

Considering the prediction of educational performance based on gender, it should be mentioned that the results of the

present study are in agreement with those of the following studies; Leeson *et al.*,[20] and in contradiction to the following studies which have not found any relation in this area with those; Raoofi *et al.*[34]

Gender has also been an important variable in academic performance. Perhaps, because the sample and method in Raoofi *et al.* research were different with us. In contrast to Raoofi's *et al.* research, in which each variable was analyzed separately, all variables were analyzed in a more advanced model in this study.

Most of the studies have confirmed that female students have more academic achievements than male students.[23-25,34,35] This difference has been probably caused by the following reasons.

- In terms of culture girls are expected to be less concerned with diversity, mainly concentrate on their lessons and academic achievement, and spend less time on recreational, social, and political activities
- In our society boys are disappointed in academic achievements. They feel that they should find a job as soon as possible due to the importance of financial issues and continue their education puts off their occupational success. Hence, they don't have enough motivation to make any attempts and usually their aim is just to get an academic degree.

The relationship between educational degree and educational performance shows that Ph.D. students experience academic downfall more than B.S. and A.A. students, thus Ph.D. courses have their own special characteristics to which the students should adapt, such as the obligation to study more, study more difficult lesson, spend more time studying (those who don't have enough time to study will be anxious about their lessons), length of the educational period, fatigue that causes limited recreational activities, and constant involvement with lessons that leads to low-spirit, lack of energy, or losing motivation. Being unsatisfied with the future career among students who are aware of the long period that they have to spend on education can affect academic performance, too.[36]

The present study also revealed that the older the students get, the lower their academic performance will be (as a result of research Dastranj *et al.*, 2012).[37] The influence of age on academic performance can be viewed from different perspectives: (1) As the students get older, they are faced with some problems like entering higher semesters, more difficult lessons, more assignments, and higher expectations of their supervisors. This can lead to fatigue, impatience, or lack of motivation because of the long period of academic educations. (2) As the students get older, they approach the age at which they should accept more personal and social responsibilities, and they have to make important choices in marriage or, continuing education, job and, etc. Therefore, they have to spend some of their energy and concentration to choose the right path. (3) Learned laziness can also play a role here. Learning, GPA, and studying well are more important to the students in the first semesters. First time failed in studies, and the first conditional state, or a low GPA can cause a lot of negative feelings in person, but as time passes, these conditions become something usual and are accepted more easily. Making friends with some people who are not committed to their education can worsen this situation.

CONCLUSION

We can say, if a student suffers from a physical or psychological problem, he/she has less opportunity in learning, education, and academic success. This can lead to academic failure.

Suggestions

- Performing check-up and consulting sessions for identifying students' problems, especially males, older, and higher level students who are more vulnerable, according to this study
- Continuous psychological intervention for the students who have a higher risk, following preventive measures in accordance to the compiled educational protocols and the target students' characteristics.

ACKNOWLEDGMENTS

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