Academic and Socio-demographic Causes of Medical Student's underachievement in Iranian Medical Schools: A Systematic Review

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ABSTRACT

The academic performance of medical students seems to influence and be influenced by various factors. Identification of the factors that would influence the academic performance may help to modify some of these factors which may be reflecting positively on student's GPA. Therefore, the objective of present study was to examine the effects of factors such as the student's demographic data, educational and socio-cultural factors on the academic underachievement of Iranian medical students. In this systematic review study, all the papers related to the investigation of the causes of academic underachievement in case of the Iranian medical students, that were published during the period between 1996 and 2015, were recorded and reviewed. To carry out this purpose, all the Iranian journals and some of the scientific databases such as IranMedex, SID, Magiran, and MedLib, and foreign databases such as PubMed, Web of Science, Google Scholar, ERIC, and Science Direct, were used to search the keywords academic underachievement, medical students, educational status, and education progress. After searching mentioned databases, 218 papers were recorded, 97 of which were unrelated and were omitted during the initial review. After omitting the unrelated papers, 121 papers were reviewed by authors independently, and after the omission of the papers not possessing the criteria to enter the study, 65 papers remained, and finally, after complete reviewing procedure, 10 studies entered the analysis. In conclusion, being married, having second jobs, residing in a dormitory, admission to university by the privilege, low educational level of the parents, long interval between receiving diploma and entering university, male sex, age, not having educational planning and motivation skills, and absence from the classes are the main educational barriers among medical students resulted in underachievement.

Keywords: Medical students, underachievement, Iran, systematic review

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INTRODUCTION

Medicine is a basic science to maintain and promote the general health of populations. Thus, medical student population is one of the populations that appear to be at increased risk for sleep deprivation because they need to be awake to do their duty in the hospital or are under constant stress because of their examinations[1]. In addition, Since the procedure of teaching medical professionalism is a determinant factor in the levels of knowledge and skills of future physicans, intensive curriculum is common in medical schools which can lead to the several side effects in the students lifestyles and also exposed them to a significant levels of mental pressure[2]. Therefore, the importance of high quality education in medical students and its negative effects has been highlighted in many studies. These negative consequences are mainly responsible for the high incidence of mental disorders and also other related

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problems in medical students[3].Many studies have demonstrated a high level of psychological distress, anxiety, and depression in medical students in different countries[4].

In the preclinical years, students not only face the academic pressure but also face pressure because of being alone, fearing failure and extended dependence on their parents. In the clinical years, the problems are mainly due to conflicts with their peers or the teaching faculty and loss of an acquaintance with their friends in other rotations[5]. Determinants of students' performance have been the subject of ongoing debate among medical educators. However, grade point average (GPA) scores are considered to be an important indicator of academic performance in medical schools[6]. Identifying the effect of various factors on students' academic performance is of great importance to educators and psychologists[7].

Different studies investigated factors that may affect academic performance during students' progress in medical schools. These studies have shown that the factors influencing students' GPA may include students' proficiency in English, student's self motivation, applying time managing skills, learning style, type of study references, study skills and socioeconomic status of students[8].

In accordance to literature, the academic performance of medical students seems to influence and be influenced by various factors. For example, in a qualitative study that addressed factors that determine the academic achievement of medical students, students identified the management of sleep deprivation as crucial for academic success. The effect of poor sleep on cognitive and psychomotor performance may underlie these associations[9].

On the other hand, many surveys have focused on gender differences in various areas of intellectual achievement. In fact, reliance on these evidences often guide policy decisions such as funding for sex-segregated education[10].

Identification of the factors that would influence the academic performance may help to modify some of these factors which may be reflecting positively on students' GPA[11]. Since there are only few systematic reviews that have been performed among Iranian studies, concerning factors affecting medical school performances, there is need for a complete, new study. Thus, present systematic review was performed with the aim of determining the main educational barriers of medical students.

MATERIALS AND METHODS

The present research was a systematic review study. Therefore, in order to identify the conducted investigations and reviewing the reported findings, the information accessible through the internet and the information source of the Ministry of Health and Medical Education (Iran) were reviewed and all the papers related to the investigation of the causes of academic underachievement in case of the Iranian medical students, that were published during the period between 1996 and 2015, were recorded and reviewed. To carry out this purpose, all the Iranian journals and some of the scientific databases such as IranMedex, SID, Magiran, and MedLib, and foreign databases such as PubMed, Web of Science, Google Scholar, ERIC, and ScienceDirect, were used to search the keywords academic underachievement, medical students, educational status, and education progress. The initial criterion for entering into the study was the relation between the paper and the investigation of the causes of academic underachievement. Other criteria for entering into the study included the originality of the study, and its publication in an authentic journal. The criterion for excluding a paper from the study was the investigation of the causes of academic underachievement in non-medical students. The titles and the summaries of the papers collected, were reviewed separately by two reviewers, and the cases that were unrelated to the study and did not have the entering criteria were omitted in the first stage. The complete text of the other papers were obtained from the sources of the Central Library of the Tehran University of Medical Sciences and Athens system, and reviewed separately by two reviewers. Concerning their methodological quality, all the collected papers were independently reviewed by two scholars, and the papers presenting sharp differences with the minimum criteria of the critical appraisal of the papers were excluded from the study. In case of disagreement between the two scholars, the matter was assigned to the judgment of a third scholar. The appraisal of the papers was carried out using the STROBE appraisal tool. The scholars, independently, extracted the following data from the studies, and separately entered them into the Code Sheet available on RevMan 5. The disagreements were assigned to a third scholar.

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Findings

Searching through the indexed papers on MEDLINE and other mentioned databases, which was conducted in accordance to the strategy of the method section of present study and through the use of OVID, yielded 218 papers, 97 of which were unrelated and were omitted during the initial review. After omitting the unrelated papers, 121 papers were reviewed by authors independently, and after the omission of the papers not possessing the criteria to enter the study, 65 papers remained, and finally, 10 studies entered the analysis. The stages of the review and the number of the cases are presented in Figure 1.
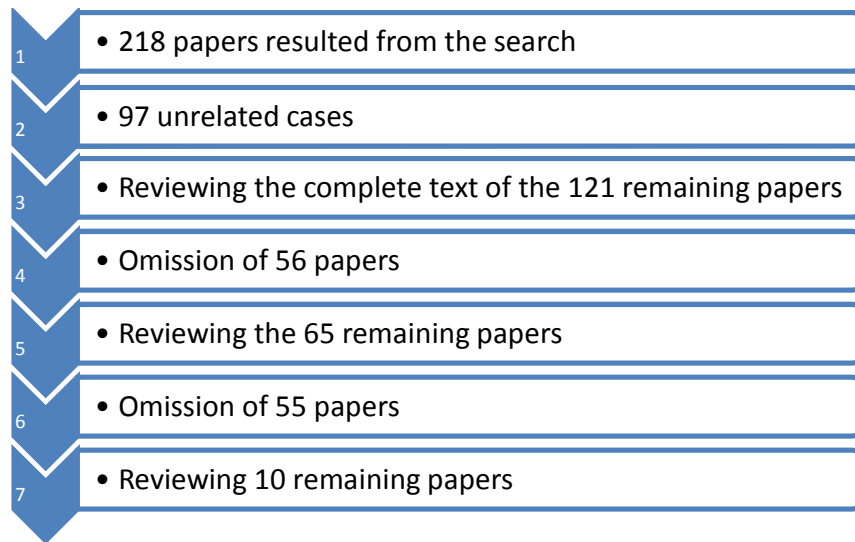

1 • 218 papers resulted from the search

2 • 97 unrelated cases

3 • Reviewing the complete text of the 121 remaining papers

4 • Omission of 56 papers

5 • Reviewing the 65 remaining papers

6 • Omission of 55 papers

7 • Reviewing 10 remaining papers

Fig. 1: Reviewing process of the papers

Eventually, the 10 studies entered into this systematic review, study 3264 university students, and the details of the papers are presented in table 1. Among these papers, 5 papers showed being married, 2 papers having second jobs, 2 papers residing in a dormitory, 5 papers the type of the privilege, 2 papers the educational level of the parents, 3 papers the long interval between receiving diploma and entering university, 2 papers diploma GPA, 3 papers male sex, 3 papers age, 2 papers having educational planning and motivation skills, and 1 paper absence from the class, to be the factors affecting academic underachievement.

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Table 1. The details of the analyzed papers

Paper No.	Year of the Study	Place of the Study	Type of the Study	Sample Size	Statistical Population	Definition of Academic Underachievement	Results
1	2001	Isfahan	Analytic	206	Students taking the basic sciences total exam	Passing or failing the basic sciences exam	Marital status, age, privilege (quota), duration and the average of the basic science period and the marks of microbiology, parasitology, and Physiopathology II courses were among the factors affecting the exam marks.
2	2007	Kermanshah	Case-control	215	Students who failed a whole semester and those who did not	Students with at least one semester totally failed, as unsuccessful, and students with GPAs over 15, as successful	Between two groups of students with regards to age, sex, the interval between diploma and the university, diploma GPA, parents' level of education, marital status, having additional jobs, privilege of the university admission, and the average of all the courses.
3	2001	Shiraz	Descriptive	532	Students who started their studies in 1993	GPA over 16 and no whole semester failed, as successful, and GPA under 14 and more than one whole semester failed, as unsuccessful	Admission privilege, marital status, parents' level of education, the interval between receiving diploma and enrolling in the university, having an additional job, being a native,educational planning and academic motives with educational status.
4	2015	Hormozgan	Analytic	177	first-, second-, and third-year medical students	GPA was stratified as high (3.5 or higher), good (3 - 3.49), normal (2 - 2.99), and low (less than 2)	Analysis of the relationship between sleep disorder and academic performance indicates a significant relationship of PSQI scores with marital status, habitat, smoking, physical activity, and academic performance.
5	2005	Khuzestan	Case-control	200	All students studying general medicine at the university in 2004-2005	Students with at least one semester totally failed, as unsuccessful, and students without failure, as successful	Male and married students faced with such failures more than others. Dropped students worked more for affording life expenses. Most of them had their high school education in villages and small towns, had their high school graduation in summer (late graduation), had lower average score, with more gap between high school diploma and university admission, had older ages, with less literate parents and lower class occupations.
6	2009	Kashan	Descriptive	586	All the graduates of 1988-2003 and the transferred students	The GPA lower than the average	Father's privilege, marital status, sex, and delay in university admission were factors affecting academic underachievement.
7	2011	Yazd	Descriptive	179	Junior and senior medical and dental students	GPA over 15, as successful, and GPA under 15, as unsuccessful	Lack of skills of time management and procrastination, concentration and memory, study aids and note taking were the main reasons of underachievement.
8	2008	Urmia	Descriptive	176	Students who started their studies in 2000-2002	Failing (a mark lower than 10 in the basic sciences level, and lower than 12 in the clinical level), failing a whole semester (GPA lower than 12 in the basic sciences level, and lower than 14 in the clinical level)	Absence from the class and the long interval between receiving diploma and being admitted to university, showed a significant relation with academic underachievement.

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9	2008	Kerman	Retrospective	571	Students starting their studies in the years between 1995-2003	The ten criteria of academic progress defined in the paper	Except for the national total exam, girls have been more successful in all levels. As the age increases, the probability of being admitted to university decreases.
10	2008	Isfahan	Analytic	422	medical students, from 4th to final year during the academic year 2007-2008	The GPA lower than the average	Higher motivation scores in areas of competition, effort, social concern, and task were accompanied by higher average marks at pre-clinical as well as clinical levels.

DISCUSSION

The results of this systematic review demonstrated that sex, living in a dormitory, being employed, being married, age, university admission privilege, the long interval between receiving diploma and entering university, diploma GPA, parents' educational levels, amount of motivation, number and the scientific rankings of the professors, and absence from the class are considered the factors affecting academic underachievement of medical students in Iran. McEvoy and Welker demonstrated that personal characteristics and anti-social behaviors are connected to academic underachievement [12]. In the studies reviewed, there was no significant heterogeneity observed in the results and the factors affecting academic underachievement. However, some of these studies considered the abundance of academic underachievement in basic sciences, physiopathology, and medical levels, some others only considered academic underachievement in basic sciences level, and some others considered academic underachievement during the whole period of education. Moreover, the frequency of academic underachievement has not been reported separately for males and females, but in most studies, the male sex has been presented as a risk factor for academic underachievement. As it was mentioned earlier, all the factors affecting academic underachievement were similar in different papers, but the criteria for determining academic underachievement were different in these articles.

In other words, there was no specified cut-off point. In some surveys, passing or failing the fundamental sciences exam, in some others GPAs lower than 15 and failing one whole semester, and in some others GPAs lower than 14 and a history of failing a whole semester were considered the criteria for defining an unsuccessful student, and this indeterminate definition will definitely influence the change in the abundance of academic underachievement. In addition, absence from the class is defined in some papers as the factor affecting academic underachievement, but this change is not objective and we cannot provide a clear and specified definition for it. Some of the papers did not have clear and proper definitions for the statistical methods used.

Considering the role of psychological factors and the effect of mental health on the amount of educational motivation and planning and targeting, and the existence of various studies talking about the considerable prevalence of depression and anxiety in medical students, it is expected that the effect of these factors on the level of the students' success and academic underachievement should be taken into consideration. None of these documents has surveyed students from this point of view, and with regards to their histories of mental illness. Regarding the considerable prevalence of academic underachievement, its social effects and negative consequences, and the lack of a clear and practical definition for it, which have affected the results of the studies and have led to ambiguities in the studies' results, it should be mentioned that scholars must be provided with a clear definition of academic underachievement[9, 13-18].

CONCLUSION

Finally we can conclude that being married, having second jobs, residing in a dormitory, admission to university by the privilege, low educational level of the parents, long interval between receiving diploma and entering university, male sex, age, not having educational planning and motivation skills, and absence from the classes are the main educational barriers among medical students resulted in underachievement.

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Conflict of Interest

The authors declare that they have no conflict of interests.

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