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Potential risk factors related to academic failure in a medical college, a comparative approach

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Abstract

Objective: To compare risk factors related to medical students' failure based on gender, year of study and living away from home.

Methods: The cross-sectional, non-interventional, comparative study was conducted at a private medical college of Islamabad, Pakistan from 2015 to 2017, and comprised students who had even once scored <50% marks in their professional examinations. Data was collected using a questionnaire that was scored on a five-point Likert scale. Data was analyzed using SPSS 23.

Results: Of the 115 students, 62(52%) were day scholars compared to 55(48%) hostellers; 64(56%) were females compared to 51(44%) males; and 50(43%) belonged to the second year. Overall, differences in terms of gender, year of study and living away from home were not significant (p>0.05).

Conclusions: Risk factors for poor academic performance were found to be common among all students.

Key Words: Risk factors, Academic failure, College, Medical students, Medical sciences student, Living conditions, Gender differences, Perceptions.

Introduction

Building a career in medicine is a long and tiresome process, and, therefore, emotional, physical and social wellbeing of students is imperative for their academic progress. If, due to any determinant, a medical student fails, their parents, educators and society together pay a high price.

Various studies have identified factors affecting academic performance of undergraduate medical students. In the developed countries, it starts from academic achievements prior to entry in medical school, such as entrance examination results, cognitive ability, personality, learning style and stress. In contrast, there is scarce scientific evidence on the determinants of academic performance in the developing countries [(1)].

A study in this regard, reported stress as having an inverse relationship with academic performance, and depression, anxiety and stress affecting two-thirds of the students, with females and those in early years of medical school being the major affectees[2]. This is in accordance with other studies as well [(3-5)]. One study[(6)] said sleep disorders were more common in females due to anxiety. A study[(7)] declared curriculum, factors related to educators, learning environment, family problems and socioeconomic factors as having influence on educational performance. Another study[(8)] established a significant relationship between student's scores and their prior schooling, marital status, gender and residential status.

Other studies[(9,10)] concluded that poor English language comprehension was the most important factor for poor academic performance.

Knowledge overload, poor time management, lack of revision time due to co-curricular activities, poor output in written assignments/assessments, poor motivation to make serious efforts to understand have also been cited as predominant reasons of failure for medical students[11].

Literature suggests that improvement of existing courses and changes in curriculum play a positive role for medical students[(12)]. The cost of programmes

for the academic rehabilitation of these students showed it is quite economical in terms of time and money to redesign curriculum, train teachers and improve the learning environment [13].

The current study was planned to compare factors related to academic failure in male and female medical students, day scholars and hostellers, and to find out if the risk factors differ in early basic science years from the clinical years of medical school.

The hypotheses expected a significant difference in all three parameters.

Subjects and Methods

The cross-sectional, non-interventional, comparative study was conducted at a private medical college of Islamabad, Pakistan from 2015 to 2017, and comprised students who had scored <50% marks in their professional examinations. Sample size was calculated using online OpenEpi software. The mean score of 4.23 ± 0.63 and 3.88 ± 0.55 was taken from the previous literature[7]. The calculated sample size was 90 whereas we took data from 115 students. Approval was taken from ethics committee of Shifa college of Medicine. Initially, five students were asked about main reasons for their failing. Their responses were noted. Based on this information and literature search, a preliminary questionnaire was developed and pilot-tested on the same students. This was done to endorse validity of the questionnaire. This tool was modified based on their feedback. The final questionnaire, on a 5-point scale, had twenty-two statements. The replies were scored on a 5-point Likert scale, from 1= 'very weak reason' to 5 = 'very strong reason'. Responses scored 4 and 5 were considered 'Yes' and those scored 1 and 2 were considered 'No'. Frequencies and percentages were calculated for the statements. When descriptive statistics of this data were plotted, it was not found to be normally distributed. Therefore, non-parametric tests were used with significance value of $p \leq 0.05$. Best measure of central tendency in a 5-point Likert scale is median rather than mean, so hypothesis was tested by using

non-parametric tests; Man Whitney U test for comparing differences in two independent gender and residence groups, and Kruskal Wallis test was used for comparing differences in five academic years.

Results

Of the 115 students, 62(52%) were day scholars compared to 55(48%) hostellers; 64(56%) were females compared to 51(44%) males; and 50(43%) belonged to the second year. In the initial two years, 50(43%) male students failed compared to 31(27%) females. From third year onwards, frequency of failing amongst female students became higher 14(12%) (Table 1).

Based on gender, only 6(27.2%) variables were significantly different (Table 2). The difference between day scholar and hostellers was significant on 5(22.7%) counts (Table 3).

In terns of academic year, 7(31.8%) of the 22 items were significant ($p<0.05$) (Table 4).

Overall, reasons of failure were perceived regardless of gender, residence and year of study ($p>0.05$).

Discussion

Stress of medical studies is more tangible in integrated curriculum. It is difficult for the students to catch up with the increased pace of modules. The strain of studies is ominous, especially in the initial years of medical college[14-16]. This predicament can be explained by the fact that in the first two years, students familiarise themselves with strange environment, new terminologies, animosity of senior students and peers, and, if they lose their family atmosphere and live in accomodations away from home, it greatly adds to the burden. The results of the current study reinforce earlier findings[14,15].

Our findings are contradictory to a study[16] which stated that married students tended to get higher grades than single ones.

Srudies in Saudi Arabia[16], India[17] and Bangladesh[18] have emphasised the English language barrier as a distinct factor in students' underperformance. In contrast, a study[18] concluded that instead of poor English of Asian students, they fail because of large difference in their educational background. The results of the current study corresponded with an earlier study according to which the most important factors affecting educational failure from students' viewpoint were curriculum, factors related to educators, learning environment, family and socioeconomic factors[7]. That study also observed a significant relationship between attitudes of students in the two genders, educators and socioeconomic factors. However, in contrast to our study, no significant differences were found based on marital status[7]. A 2012 study explained that failed students had great fear of negative evaluation by teachers, they disliked giving tests and they lacked effective study skills[3]. Pakistani females were found to have more test anxiety and low grades compared to the males[3] which is in sheer contrast to our findings. Results of the current study also contradict the negative relationship of poor attendance with failingreported earlier[19]. Interestingly, in our study more hostellers (15%) than day scholars (7%) believed they failed due to absence from classes (p=0.03).

According to Weiner attribution theory[20], if students perceive their failure as insufficient efforts on their part and work on their weaknesses, its impact leads to their different future behaviours. Whereas those who blame others for their underperformance are difficult to succeed in future. In other words, students' causal bias towards their failure determines their future achievements. The types of attributions students hold determine their learning and performance in further classes. Therefore, it is vital to modify their thinking process, for example, by reward and punishment process.

The current study is mainly objective, easy to analyse, and provides an economical use of limited resources as it required data at one-point time.

Moreover, it used 3 independent variables against 22 items, which helped to analyse and interpret data in many ways with interesting conclusions.

In terms of limitations, the current study used a survey questionnaire, which was self-designed, as a tool to record students' responses in a closed, objective and limited manner. No focus group discussions (FGDs) were conducted to take open-ended detailed responses from the students. The study was focussed primarily on students' perceptions regarding potential causes of their failure in exams, while no attempt on teachers' perceptions about these students was made. Also, the study was conducted at a single medical college, and the results cannot be generalised to medical students of all colleges.

A single quantitative study cannot provide basis for rejecting or accepting the hypotheses, however, and future multi-centre studies should enlarge the scope with in-depth interviews, FGDs and by incorporating teachers' perceptions.

Conclusion

Risk factors and perception of reasons behind academic failure were found to be common among all students regardless of gender, living away from home and year of study.

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Table 1: Frequencies and percentages of male and female failed students according to academic year and living conditions

Year of study	1 n(%)	2 n(%)	3 n(%)	4 n(%)	5 n(%)	Total
Number of students	31 (27)	50 (43)	20 (17.3)	8 (6.9)	6 (5)	115 (100)
Male	21 (18)	29 (25)	01 (0.8)	0 (0)	0 (0)	51 (44)
Female	10 (8.6)	21 (18)	19 (16.5)	8 (7)	6 (5)	64 (56)
Hosteller	18 (15.6)	21 (18)	09 (08)	04 (3.4)	03 (2.6)	55 (48)
Day scholar	13 (11)	29 (25)	11 (9.5)	04 (3.4)	03 (2.6)	60 (52)

Table 2: Number of students who agreed to the respective factor as cause of their failure and p-values of factors in gender group ($p < 0.05$)

Questions	Gender	N	P value
Examinations are not fair	male	11	**0.004**
	female	24	
Examinations are too difficult	male	16	0.097
	female	30	
I depend on cheating a lot	male	03	**0.000**
	female	11	
I find studies boring	male	11	0.417
	female	14	
the system of education is too difficult	male	09	**0.004**
	female	21	
Most teachers are not very good in teaching	male	09	**0.000**
	female	22	
I don't know where I should study from	male	19	0.106
	female	27	
I don't know what I should do during the clinical years	male	16	0.565
	female	16	
some teachers don't like me and fail me	male	09	**0.046**
	female	16	
My GPA is low and that decreases my motivation to study	male	18	0.097
	female	14	
I am given too much information during short time	male	22	0.189

	female	33	
I don't attend classes	male	13	0.732
	female	11	
I feel lost about my future	male	09	0.579
	female	11	
I am married	male	0	**0.001**
	female	09	
I live without my family in Islamabad	male	23	0.103
	female	17	
I have too many family responsibilities	male	09	0.559
	female	17	
I have too many social activities	male	14	0.828
	female	23	
I spend a lot of my time watching TV	male	08	0.250
	female	10	
I spend a lot of my time on internet (e.g. Facebook, twitter etc.)	male	18	0.429
	female	22	
I spend a lot of my time watching movies	male	12	0.388
	female	17	
I have financial problems	male	05	0.195
	female	09	
My English is weak	male	08	0.836
	female	05	

Table 3: Number of students who agreed to the respective factor as cause of their failure and p-values of factors in Day Scholars (D) and Hostellers (H)group

Variables of study	Hostellers N	Day scholars N	p-value
Examinations are not fair	19	16	0.602
examinations are too difficult	29	17	0.803
I depend on cheating a lot	8	6	0.756
I find my studies boring	11	14	0.097
the system of education is too difficult	18	12	0.259

Most teachers are not very good in teaching	15	16	0.934
I don't know where I should study from	24	22	0.169
I don't know what i should do during the clinical years	16	16	0.364
some teachers don't like me and fail me	12	13	0.757
My GPA is low and that decreases my motivation to study	17	15	0.295
I am given too much information during short time	26	29	0.628
I don't attend classes	**17**	**07**	**0.033**
i feel lost about my future	**20**	**17**	**0.051**
I am married	06	03	0.187
I live without my family in Islamabad	**40**	**0**	**0.000**
I have too many family responsibilities	12	14	0.339
I have too many social activities	**24**	**13**	**0.005**
I spend a lot of my time watching TV	08	10	0.629
I spend a lot of my time on internet (e.g. Facebook, twitter etc.)	20	20	0.954
I spend a lot of my time watching movies	14	15	0.984
I have financial problems	8	06	0.100
My English is weak	**10**	**03**	**0.011**

Table 4: Number of students who agreed to the respective factor as cause of their failure and p-values of factors in years of study group ($p<0.05$)

Questions	**current academic year**	**N**	**P value**
Examinations are not fair	first year	03	**0.004**
	second year	15	
	third year	13	
	fourth year	03	
	fifth year	01	
examinations are too difficult	first year	08	0.155
	second year	22	
	third year	12	
	fourth year	3	
	fifth year	1	

I depend on cheating a lot	first year	1	**0.000**
	second year	2	
	third year	2	
	fourth year	2	
	fifth year	0	
I find studies boring	first year	5	0.860
	second year	13	
	third year	5	
	fourth year	1	
	fifth year	1	
the system of education is too difficult	first year	7	0.241
	second year	11	
	third year	9	
	fourth year	1	
	fifth year	2	
Most teachers are not very good in teaching	first year	4	**0.002**
	second year	12	
	third year	8	
	fourth year	4	
	fifth year	3	
I don’t know where I should study from	first year		0.609
	second year		
	third year		
	fourth year		
	fifth year		
I don’t know what a should do during the clinical years	first year	31	0.338
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
Some teachers don’t like me and fail me	first year	31	**0.004**
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
My GPA is low and that decreases my motivation to study	first year	31	0.238
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
I am given too much information during short time	first year	31	**0.058**
	second year	50	

	third year	20	
	fourth year	8	
	fifth year	6	
I don't attend classes	first year	31	0.400
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
I feel lost about my future	first year	31	0.482
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
I am married	first year	31	**0.000**
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
I live without my family in Islamabad	first year	31	0.384
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
I have too many family responsibilities	first year	31	**0.026**
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
I have too many social activities	first year	31	0.170
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
I spend a lot of my time watching TV	first year	31	0.189
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
I spend a lot of my time on internet (e.g. Facebook, twitter etc.)	first year	31	0.819
	second year	50	
	third year	20	
	fourth year	8	

	fifth year	6	
I spend a lot of my time watching movies	first year	31	0.513
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
I have financial problems	first year	31	0.195
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	
My English is weak	first year	31	0.078
	second year	50	
	third year	20	
	fourth year	8	
	fifth year	6	

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