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Study of Factors Affecting Academic Achievement in Medical Students

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Abstract
Introduction: *The goal of medical education is to train students to become knowledgeable, skillful and professional physicians. Academic performance is contributed by many factors. Understanding and addressing these factors would help the medical students improve their performance.*
Aims: *To determine the factors influencing academic achievement of medical students in a medical college.*
Settings and Design: *Cross sectional study conducted in a medical college.*
Methods and Material: *224 medical students were administered a pre tested self administered questionnaire. Those, who achieved less than 30% marks in sendup exams were grouped as "low achievers" (LA). The factors associated with low academic achievement were identified.*
Statistical Analysis Used: *Data entry and analysis was performed using Epidata Entry, Epidata Analysis and Epi Info softwares. Univariate analysis and Logistic regression analysis was performed.*
Results: *It was found that 59 (26.3%) medical students had low academic achievement. The male to female ratio was 2:1. The average plus 2 marks of low and high achievers, were 82.58 and 86.66 percents respectively. The difference was found to be highly significant. Mean duration of Internet surfing (minutes) for other than the study purpose was 194.14 ± 201.58 among LA as compared to 125.89 ± 113.26 in high achievers. The difference was statistically highly significant.*
Conclusions: *Male gender, low premedical PLUS 2 marks percentage, prolonged internet surfing for other than study purposes were important risk factors for low achievement as shown by univariate and multivariate analysis*
Keywords: *Indian Medical students, low achievers, life style factors, plus 2 marks.*

Introduction

Medical profession is a much sought after profession in the society. Students get into this course after intensive coaching and hard work. The top academic achievers in pre-medical studies, filtered through an extensive screening process, make it to medical schools. However, once the students are enrolled to the medical colleges, their performance varies widely, whereby some students manage to perform good academically, while the others barely manage to pass. Finding out why some students can't perform well academically is important, as this understanding can then be used to promote the factors that contribute to high academic achievement. Extent of the occurrence of low achievement among the medical students as well as the contributory factors may vary among different institutions. What exactly are the causes of low achievement in this institution? Do the life

style factors play a role? The "Collins English Dictionary" defines "lifestyle" as a set of attitudes, habits or possessions associated with a particular person or group. Life style factors influence one's health and academic achievement. These factors can cause distraction of attention for different durations in life. Healthy life style can be supportive in academic achievement. This study was planned to study the association of individual, learning, interpersonal relationships and lifestyle factors with *low achievement*.

Subjects and Methods

Two hundred and twenty four medical students were administered a pre tested self administered questionnaire after obtaining their informed consent. The aim of the study was to find out the (protective and risk) factors influencing their acedmic performance. One department was selected from each professional year subject. Questionnaire was administered to first, second and final professional students before they appeared in the examination of biochemistry, pathology and community medicine subjects respectively. Students who obtained less than 30 percent marks in sendup examination were considered as students with Low academic achievement. Data was entered and analyzed using Epidata Entry and Analysis. Logistic regression analysis was performed using Epi Info software. Logistic regression model was constructed by selecting all explanatory variables whose probability (p) value was less than and equal to 0.25 by univariate analysis. (1) Sendup marks were correlated with plus 2 marks of students. The causes associated with low achievement were analyzed by univariate and multivariate analysis.

Results

Out of 224 students, 85 were male and 139 were female. The age range of students was 17 to 21 years. The prevalence of low achievers was found to be 26.3% with (95 percent CI, 21.0-32.5). Various possible factors were analyzed to study the association with low achievement.

Table 1 summarizes the association of individual and lifestyle factors with low achievement by univariate and multivariate analysis. Low achievement (LA) was almost twice more common among males (40 vs 18 percent) as compared to female students. The difference was highly significant statistically. LA was more common among students, who completed their pre medical studies from rural schools (35.0 %) as compared to those from urban schools (25.5%). The difference was not significant. Those, who joined medical profession by choice, had higher prevalence of LA (26.5) as compared to those who did not (20.0). The difference was not significant. The average plus 2 marks of low and high achievers, were 82.58 and 86.66 percents respectively. The difference was found to be highly significant.

Life style factors

The proportion of students going for morning or evening walks was similar (26.4 vs 25 percent) among low and high achievers. The difference between mean duration of daily physical activity (minutes) was not significant in low and high achievers. Mean sleep duration was same (6.79 hours) among both the groups. No student reported smoking. Alcohol intake was higher among low achievers; however the difference was not significant. Total duration of watching TV daily was almost same among both groups. Mean duration of Internet surfing (minutes) for other than the study purpose was 194.14 ± 201.58 among LA as compared to 125.89 ± 113.26 in high achievers. The difference was statistically highly significant. The students having any hobby had lower prevalence (25.0%) of low achievement in comparison to those not having any hobby (43.8%), but the difference was not significant. The difference of prevalence of low achievement among students, having a self reported chronic health problem (31.8%) and other students (25.7%) was not significant. There was

statistically significant difference prevalence of low achievement among students who reported meditating daily and others (19.1 vs 33.9%).

Table 2 summarizes the association of learning difficulties and relationship factors with low achievement by univariate and multivariate analysis.The prevalence of low achievement was lower in those getting along well with senior students (25.8 vs 33.3%) or having a family problem (20.8 vs 27%), though the difference was not significant. The prevalence of low achievement was higher in those getting along well with class mates (27.2 vs 9.1%) or having a relationship problem (37.5 vs 25%) or among students not having a close friend (45.0 vs 24.5%), though the difference was not significant.

Table 1. Univariate and multivariate association of individual and lifestyle factors with low achievement

Factors		Low achievers (n=59)	High achievers (n=165)	Crude ODDs Ratio (95% CI)	P Value	Adjusted ODDs Ratio (95% CI)**	p Value
Gender	Male	34 (40.0)	51 (60.0)	0.33 (0.18-0.61)	0.0003	*0.35 (0.17-0.72)*	*0.0044*
	Female	25 (18.0)	114 (82.0)				
Per medical study school	Rural	7 (35.0)	13 (65.0)	1.57 (0.60-4.16)	0.36		
	Urban	52 (25.5)	152 (74.5)				
Choice of profession	Yes	58 (26.5)	161 (73.5)	0.74 (0.08-6.34)	1.0 (Fishers exact)		
	No	1 (20.0)	4 (80.0)				
PLUS 2 marks %	Mean ± SD	82.58 ± 8.21	86.66 ± 6.91		0.0003	*0.95 (0.91-0.99)*	*0.0225*
Lifestyle factors							
Daily physical activity duration (minutes)	Mean ± SD	39.92 ± 58.41	35.15 ± 59.29		0.59		
Duration of sleep	Mean ± SD	6.79 ± 1.24	6.80 ± 1.31		0.96		
Alcohol Intake	Yes	8 (42.1)	11 (57.9)	2.20 (0.84-5.76)	0.10	0.99 (0.33-3.01)	0.99
	No	51 (24.9)	154 (75.1)				
TV watching	Mean ± SD	40.08 ± 60.65	40.92 ± 71.66		0.94		
Daily Internet surfing duration (Minutes)	Mean ± SD	194.1 ± 201.6	125.9 ± 113.3		0.0056* (K W test)	*1.0033 (1.0008-1.0057)*	*0.0083*
Chronic health problem	Yes	7 (31.8)	15 (68.2)	1.35 (0.52-3.48)	0.54		
	No	52 (25.7)	150 (74.3)				
Meditation daily	Yes	22 (19.1)	93 (80.9)	2.17 (1.18-4.00)	0.0119	1.39 (0.69 – 2.80)	0.36
	No	37 (33.9)	72 (66.1)				

Kruskal wallis test was applied for this comparison as variances differed significantly.

Table 2. Univariate and multivariate correlation of learning problems and relationship factors with low achievement

Factors		Low achievers (n=59)	High achievers (n=165)	ODDs Ratio (95% CI)	P Value	Adjusted ODDs Ratio (95% CI)	P Value
Life style factors (cont..d)							
Hobbies	Yes	52 (25.0)	156 (75.0)	2.33 (0.83-6.58)	0.10	1.15 (0.31- 4.20)	0.83
	No	7 (43.8)	9 (56.3)				
Learning issues							
Facing problem in subject	Yes	27 (27.8)	70 (72.2)	1.15 (0.63-2.08)	0.66		
	No	32 (25.2)	95 (74.8)				
Asking questions in class	Yes	24 (22.2)	84 (77.8)	1.51 (0.83-2.76)	0.18	1.46 (0.74-2.86)	0.27
	No	35 (30.2)	81 (69.8)				
Relationship issues							
Getting along well with Senior Students	Yes	54 (25.8)	155 (74.2)	1.44 (0.47-4.39)	0.52		
	No	5 (33.3)	10 (66.7)				
Getting along well with Class mates	Yes	58 (27.2)	155 (72.8)	0.27 (0.03-2.13)	0.18	0.20 (0.02-1.98)	0.17
	No	1 (9.1)	10 (90.9)				
Family problem	Yes	5 (20.8)	19 (79.2)	0.52 (0.25-2.00)	0.52		
	No	54 (27.0)	146 (73.0)				
Relationship problem	Yes	9 (37.5)	15 (62.5)	1.80 (0.74-4.37)	0.19	0.84 (0.27-2.58	0.76
	No	50 (25.0)	150 (75.0)				
Close Friend	Yes	9 (45.0)	11 (55.0)	2.52 (0.99-6.43)	0.04	2.93 (0.97-8.83)	0.06
	No	50 (24.5)	154 (75.5)				

** All the variables with univariate p value of ≤ 0.25 were included in the multivariable model.

Discussion

Low achievement is multifactorial. In the present study, most of the life style factors were not found to be influencing LA. Life style factors are within the control of the individual hence modifiable. There are studies on role of physical activity and low achievement. [2] Prolonged Internet surfing other than study purpose (more than 3 hours daily) was a significant risk factor for LA. Similarly it was seen by Osama S Mohammed et al that there were statistically significant differences between excellent and average students (p-value = 0.000) spending fewer hours on social media. 43.9% of the excellent students paid less than two hours per day on social media. [3] It is also in accordance with Walsh JL.et al (2013), who explored the adverse effect of media use on academic outcomes. Most probably it may be due to the distracting effects of social media. [4] This is relatively a recent addiction among the adolescents and adults. It not only distracts the attention from the studies but also wastes precious study time.

In a study done by Vinutha et al the exact cause of student performance in the academic career is based on multiple factors such as understand-ding the language, interest in doing higher studies and adjustability with peer groups and understanding of the subject taught in the class. In the present study, interpersonal factors were not seen to be influencing LA.

Ba Hammam AS, et al (2012), concluded that academic performance is adversely affected by the short duration of nocturnal sleep, late bedtimes, and increased daytime somnolence. This can be explained by the beneficial effect of sleep on memory and the robust effect of total sleep deprivation on long-term memory. [6] However in

the present study sleep duration was not associated with low achievement. Students who were meditating daily helped them to cope with their stress induced by the studies, better than others. The psychological and spiritual benefits of meditation are well known. This study did not focus on meditation in depth but still self reported daily meditation (according to student's own faith) was found to have beneficial effect on students. The role of meditation in reducing stress is well known. [(7)] It was found that daily meditation was associated with better achievement, by univariate analysis but not by multi variate analysis. Male gender, lower premedical PLUS 2 marks percentage, prolonged internet surfing for other than study purposes were important risk factors for low achievement as shown by univariate and multivariate analysis. Further larger studies are needed to analyze closely these associations.

Limitations

First, reliance on the self reported questionnaire so under reporting of risk factors, like low physical activity, smoking, alcohol intake, TV watching, internet surfing for other than study purposes, is quite likely since medical students were aware of the standard lifestyle recommendations. Second, the small sample, both had adverse effect on the reliability of the study.

Implications

Factors responsible for low achievement should be recognized early in the medical course and corrective actions should be taken.

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