J. Appl. Environ. Biol. Sci., 7(6)1-6, 2017

ISSN: 2090-4274
Journal of Applied Environmental and Biological Sciences
www.textroad.com

Demographic and Psychological Determinants of Academic Achievement of Medical Students

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Received: January 28, 2017
Accepted: April 6, 2017

ABSTRACT

The present cross sectional analytical study explored the demographic and psychological determinants of academic achievement among the students of medical colleges in Lahore, Pakistan. Multistage Stratified random sampling technique was used to recruit 540 students. Urdu version of Educational Stress Scale for Adolescents and Psychological Well-Being Scale were used to measure psychological determinants of academic achievement. The results of hierarchical regression revealed gender, level of study and institution as positive and significant demographic determinants whereas perceived academic stress (PAS) negatively and psychological well-being (PWB) emerged as positive psychological determinants of academic achievement of the participants. Moreover, the girls were found to attain higher scores on PAS, PWB and academic achievement. On the other hand students of second year showed lower level of PWB and academic achievement but scored higher on PAS whereas significant differences in academic achievement had been observed on the basis of institution. Interestingly PAS was found to be partially positive determinant of the academic achievement. Further positive effects of PWB on the academic achievement of medical students even in the presence of PAS leads to the conclusion that the interventions to enhance the psychological well-being may increase the academic achievement. The findings can be used by the stakeholders to understand the roles of demographic characteristics, PWB and PAS in improving the learning of medical students.

KEYWORDS: Demographic determinants; Perceived Academic stress; Psychological Wellbeing; Academic Achievement.

INTRODUCTION

Educational activities, schedule and curriculum impose a substantial amount of burden on the medical students which may be the cause of anxiety, depression and stress that affect their academic achievement badly [1]. They may experience stress due to numerous reasons like hectic academic routine, examinations, demanding curriculum, assignments and projects [2]. Thus among all new experiences, learning and growing opportunities available in college setting, many may lead to unhealthy levels of stress which delay students' abilities to socialize and to achieve their academic goals [3].

Academic achievement can be defined "as the outcome of education or the extent to which a student, teacher or institution has achieved their educational goals" [4]. Mental wellbeing is imperative for the better academic functioning of the students.

A large amount of perceived stress not only effect the academic achievement negatively [5-7] but it also lowers the psychological wellbeing of the individuals which further adversely affect the mental health and educational performance of the students [8]. Since stress is unavoidable and every person may experience it in his life. It is also true that a mild level of stress may enhance the cognitive and physical performance of the person but its high level leads to poor performance and to other psycho-social problems [9].

The results of previous studies revealed negative relationship between stress and educational outcomes among medical students [10-12]. In other words severe level of study pressure was found to be associated with reduced educational outputs. Previous study consistently indicated a significant higher level of stress among medical students as compared to the students of other degree programs [13]. They do not have enough time for themselves, family and friends. Thus their interpersonal relationships may be impaired. Moreover due to demanding studies they cannot spare time for entertainment which leads to other psycho-social complications [1]. It is well known that leisure activities are the source of happiness and perceived happiness found to be positively associated with higher educational out puts [14].

Literature indicates that not only the hectic educational routine in medical colleges may lead to the stress but the role of demographic correlates cannot be ignored in the academic achievement as well as in the mental health of the

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individuals [15-18]. Therefore, the present study aimed to find the role of demographics, perceived academic stress and psychological well-being among the medical students of Lahore.

Objectives

The main objectives of the current research are to:

1 Find gender, study level, monthly income, parental education and institution as demographic determinants of the academic achievement of the participants.

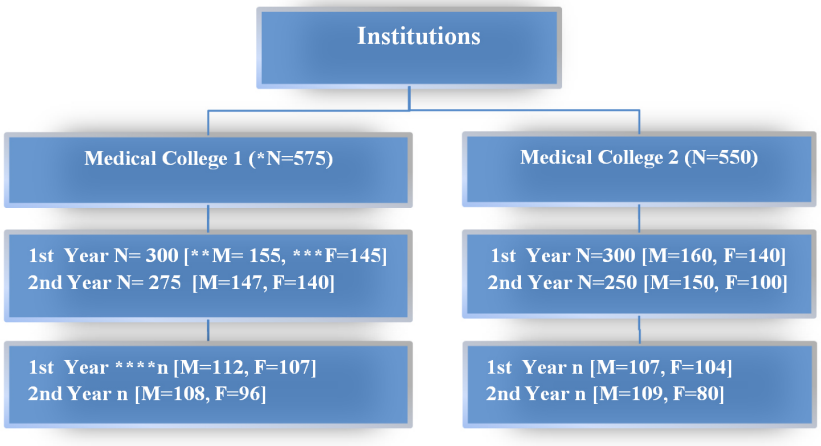
2 Find psychological well-being (PWB) and perceived academic stress (PAS) as psychological determinants of academic achievement.

3 Compare the students on perceived academic stress, academic achievement and psychological well-being on the basis of gender, educational level and organization.

MATERIALS AND METHOD

Multistage stratified sampling technique was used to recruit the participants. The sample was stratified on the basis of levels of study and gender. At the first stage two medical colleges (institutions) on the basis of their large enrolment size were selected. The population and sampling procedure is given in fig. 1. Sample size was calculated with the help of a formulae [18].

FIG.1 Population and Sampling Flow Chart



* Population** Male, ***Female ****sample

Thus 430 participants were accessed from first year and 393 students were approached from the second year of both colleges. At the end only 285 respondents from first year and 255 from second year making total sample of 540 completed the questionnaires. Demographic description of the participants is given in Table 1.

Table 1 Demographic description of the participants (N=540)

Demographics		*f* (%)	
Gender	Male	301 (56%)	540
	Female	239 (44%)	
Father's Education	Up to 10 years	194 (36%)	540
	Above 10 years	346 (64%)	
Mother's Education	Up to 10 years	320 (60%)	540
	Above 10 years	220 (40%)	
Family System	Nuclear	200 (37%)	540
	Joint	340 (63%)	
Institution	Medical college 1	276 (51%)	540
	Medical college 2	264 (49%)	
Monthly Income in Pakistani Rupees	Below 50 thousand	417 (77%)	540
	Above 50 thousand	123 (23%)	

Tools

Demographic information was obtained on a separate form. Academic achievement was measured by the attained marks of the students in previous examinations. PAS was measured by the Urdu form [19] of Education Scale for Adolescents (ESSA) developed in 2011[20]. ESSA was consisted of 16 items and 5 dimensions.

Dimensions were pressure from study, study workload, worry about grades, self- expectation stress and study despondency. The specific items for ESSA included; pressure from study 4, 5, 6 11; study workload 2, 3, 7; worry about grades 8, 9, 10; self-expectation stress 14, 15, 16; and study despondency 1, 12, 13. Each item is to be rated on 5-point rating scale giving the score of 5 to 'strongly agree' 4 to 'agree' 3 to 'neither agree nor disagree' 2 to 'disagree' 1 to 'strongly disagree'. Scores have been calculated as a sum of scores on all items of a scale. Possible score range from 1 to 5 with high score meaning greater stress. The Alpha reliability of English version of Educational Stress Scale in different samples was α = .81 and α = .78 (Dunne et al. 2011) and of the Urdu version for the present study is α = .74. The reliability of five factors including pressure from study, study workload, worry about grades, self-expectation stress and study despondency was α =.75, α =.61, α =.70, α =.59, and α =.62 (Dunne et al. 2011) and for the present study is α = .55, α = .41, α = .38, α = .49, and α = .33.

Moreover the Urdu version [21] of Psychological well-being scale (PWBS) was administered. This tool was originally developed in 1989 [22]. PWBS was consisted of 84 items and 6 dimensions. Dimensions were autonomy, environmental mastery, personal growth, positive relations with others, purpose in life and self-acceptance. Each item is to be rated on 6-point rating scale giving the score 6 to 'strongly agree' 5 to 'agree somewhat' 4 to 'agree slightly' 3 to 'disagree slightly' 2 to 'disagree somewhat' 1 to 'strongly disagree'. The Alpha reliability of the English version Psychological Well-being scale for autonomy, environmental mastery, personal growth, positive relations with others, purpose in life and self- acceptance was α = .83, α = .86, α = .85, α =.88, α =.88, and α = .91 (Ryff, 1989) and of the Urdu version for the present study is α = .26, α =.45, α = .49, α =.62, α =.59, and α =.44. Likewise, the Alpha reliability of the Urdu version for the total items of the Psychological Well-being scale for the present study is α = .82.

Ethical consideration

The study was approved by the departmental doctoral review board and was conducted from February 2016 to October 2016. Permission was obtained from the head of the organization prior to data collection. The informed consent was also taken from the students and researcher ensured confidentiality of the data provided by them. They were briefed about the purpose of the study and they were told that they can quit from the study any time.

RESULTS

In order to find the demographic and psychological determinants of the academic achievement of the students hierarchical regression analysis was run.

Table 2 *Hierarchical Regression Analysis for Study variables predicting Academic Achievement (N = 540)*

Predictors	Model 1	Model 2	Model 3
	B	B	B
Gender	89.37***	82.62***	78.39***
Study Level	380.63***	380.41***	378.40***
Monthly Income	5.27	7.23	6.82
Institution	28.27**	25.42**	26.99*
Father Education	0.58	0.76	0.87
Mother Education	0.82	1.26	1.16
Family System	2.44	5.68	5.42
Pressure From Study		-2.99	-0.50
Study Workload	-	2.67	3.20
Worry About Grades	-	-15.45***	-10.33**
Study Despondency	-	-14.18**	-13.19**
Self-Expectation	-	6.9*	6.53*
Total PAS	-	-1.41*	-0.89
Autonomy	-	-	3.96
Environmental Mastery	-	-	5.95**
Personal Growth	-	-	6.98***
Positive Relations With Others	-	-	3.99*
Purpose In Life	-	-	5.07**
Self-Acceptance	-	-	4.82**
Total PSW	-	-	0.47**
ΔR2	0.58	0.61	0.62
F	152.55***	77.51***	51.69***

*$p < .05$, ** $p < .01$, ***p<.001

Table 2 reveals the results of hierarchical regression. The values of first model showed gender B (89.37, p<0.001) study level B(380.63, P<0.001) and institutions B(28.27**, P<0.01) as positive and significant determinants of academic achievement. In the second model gender B (82.62, p<0.001), study level B (380.41, p<0.001) and institutions B (25.42, p<0.01) emerged as positive determinants whereas PAS in terms of worry about grades, B (-15.45, p<0.001) study despondency B (-14.18, p<0.001) and total PAS B (-1.41, p<0.05) significantly but negatively predict the academic achievement. On the other hand study workload B (2.67,

p>0.05) and self-expectations B (6.9, p<0.05) positively predict the academic achievement. The first two models accounted (58%) and (61%) variance in academic achievement respectively. The third model explaining (62%) of the variance indicated gender B (78.39, p<0.001) study level B (378.40, P<0.001), institutions B(26.99**, P<0.01), study workload B (3.20, p>0.05), self-expectations B (6.53, p<0.05) autonomy B (3.96, p>0.05), environmental mastery B (5.95, p>0.05) personal growth B (6.98, p>0.001), positive relations with others B (3.99, p>0.05), purpose in life B (5.07, p<.001), self-acceptance B (4.82, p>0.01), total PWB B (0.47, p>0.05) significantly and positively predicted the academic achievement of the medical students. However PAS in terms of worry about grades, B (-10.33, p<0.001) study despondency B (-13.99, p<0.001) and total PAS B (-0.89, p<0.05) significantly but negatively predict the academic achievement.

To meet the third **objective** of the study independent T-test was administered. Table 3 will explain the results.

Table 3: Mean (M) Comparison on PWB, PAS and Academic Achievement (Ac. Ach) of participants on basis of their Demographics (N=540)

Demographics	***M***	***SD***	***M***	***SD***	***T***	***LL***	***UL***	**Cohen's d**
Gender	**Males (301)**		**Females (239)**					
PWB	239.48	36.28	320.01	33.38	-3.15**	-15.37	-3.56	0.27
PAS	48.85	9.65	50.53	9.33	-2.04*	-3.30	-0.66	0.17
Ac. Ach	462.23	199.64	546.77	211.73	-4.72**	-119.44	-49.39	0.41
PWB	327.17	34.39	320.87	35.39	2.09*	0.40	12.21	0.18
PAS	49.90	9.41	49.26	9.68	0.78	-6.17	-2.22	0.10
Ac. Ach	640.52	166.37	342.19	121.34	23.97**	273.88	322.78	2.04
Institution	College 1=(276)		College 2= (264)					
PWB	322.96	34.98	325.48	34.99	-.837	-8.43	3.39	0.05
PAS	50.25	9.02	48.91	10.02	-.104	-.27	-2.94	0.14
Ac. Ach	475.22	215.47	508.18	199.56	-2.79*	-85.05	-14.87	0.15
Fathers' Edu.	Up to 10 years (194)		Above 10 years (346)					
PWB	321.60	31.37	323.65	35.81	-1.35	-9.93	1.84	0.06
PAS	52.79	10.99	50.91	10.17	2.18*	0.18	3.53	0.17
Ac. Ach	493.29	205.47	511.19	212.89	0.94	-19.15	54.55	0.08
Mothers Edu.	Up to 10 years (320)		Above 10 years (220)					
PWB	322.99	32.35	325.95	38.49	-0.96	-8.97	3.06	0.08
PAS	50.32	9.02	48.54	9.95	2.13*	0.14	3.41	0.18
Ac. Ach	481.34	208.31	512.23	209.13	1.68	-5.03	66.81	0.14
Monthly Income	Below 50,000 (417)		Above 50,000 (123)					
PWB	323.30	33.80	327.24	38.71	0.340	-8.43	3.39	0.10
PAS	49.93	9.72	48.47	8.84	1.49	-.27	-2.94	0.15
Ac. Ach	475.22	215.47	508.18	199.56	-1.09	-85.05	-14.87	0.15
Family System	Joint (340)		Nuclear(200)					
PWB	324.79	35.31	323.18	34.48	0.340	-1.58	3.39	0.04
PAS	49.72	9.21	49.38	10.10	1.49	0.40	-2.94	0.03
Ac. Ach	488.74	204.97	518.19	215.33	-1.09	0.52	-14.87	0.14

T-values in table 3 revealed that girls seem to have significantly higher mean scores on PAS *t*(-2.04, p<0.05) , PWB *t*(-3.15, p<0.001) and academic achievement *t*(-4.72, p<0.001) as compared to their male counterparts. The participants of first year showed higher PWB *t* (2.09, p<0.05) and academic achievement *t*(23.97,p<0.001) as compared to their counter parts studying in second year. The students reported the education of their fathers *t* (2.18, p<0.05) and mothers above 10 years showed less stress *t*(-2.13, p<0.05). No significant differences in the scores of PWB, PAS and academic achievement of the participants on the basis of monthly income and family system have been observed. Interestingly there is not any significant difference in PAS has been observed on the basis of level of study and institution.

DISCUSSION AND CONCLUSIONS

The findings of the present study are in line with the results of previous researches [14, 17, 22] that indicated positive association between good mental health and better academic performance. In other words we can say that the students who have higher psychological wellbeing showed better academic performance [7, 9, 10, 11,12, 13]. Moreover the results of present study indicated that respondents with the lower level of perceived

academic stress report higher academic achievement. It means that academic achievement increases with the decrease of academic stress [8, 9].

Another interesting findings of the present study indicate PAS in terms of study workload and self-expectations as positive predictors of academic achievement of medical students. One of previous study showed that students studying less credit hours reported more stress [2]. It may be because medical students are more busy in their practical work or projects therefore they consider their study workload helpful in increasing their academic achievement. Further self-expectations are the standards of achievements that a student set for himself. This appears to be related with intrinsic motivation which plays important and positive role in one's achievement. Thus the results also supports the statements given in literature that a certain amount of stress motivates the students to gain information and thus improves the learning process just like sometimes anxiety serves to increase the knowledge of a person [23].

On the other hand gender, study level (first year/second year) and institution as demographics significantly predicted the academic achievement [8, 24]. However monthly income, family system, mother and father education are positive but non-significant predictors of the academic performance which are not in line of previous studies [17]. One possible explanation of these findings are the cultural differences because above mentioned studies were conducted in western cultures where the monthly income, parental education and other living standards are different as compared to Pakistan which is a developing country.

Moreover the findings indicate that junior and senior students studying in two different organizations are having educational stress at the same level. The reasons may be the same curriculum and almost the same educational facilities in the both of the colleges.

However it is revealed that even in the presence of academic stress the higher scores on psychological well-being leads towards the higher academic achievement which is evident form the results of regression analysis as well as of mean comparison of the participants on the basis of level of study, gender and colleges. In other words the findings support the fact that individuals with good mental health can show better academic performance by managing their stress. Moreover females showed better academic performance as compared to their male counterparts and these findings are consistent with the previous studies [11, 17]. The reason may be the differences of personality traits on the basis of the gender [25]. Personality traits have been found to be associated with mental health and overall functioning of the individuals. On the other hand the participants whose parents are more educated showed low level of academic stress. Literature shows that educated parents can raise their children in a healthy environment by focusing and understanding the needs of their children in a better way. However there are no significant differences in the levels of psychological wellbeing and academic stress with respect of institution and monthly income of the family. A plausible explanation may be small sample size with less variation according to demographic characteristics.

In short, findings of the current study revealed a few interesting results that two types of PAS are playing positive role in academic performance of the medical students. However the other types of academic stress emerged as negative determinants of academic achievement. In addition significant positive relationship was found between academic achievement and psychological well-being. Interestingly it was observed that even in the presence of the PAS the higher PWB leads towards higher academic achievement. It can be concluded that demographics correlates such as gender, study level and parental education play important role in decreasing stress and increasing PWB that further improves the academic achievement of the medical students.

SUGGESTIONS

The present study has been conducted on small sample size extracted from two medical colleges only from the urban area which could be the main reason of insignificant results on the basis of demographic variables in terms of monthly income, family system and institution. Further quantitative and qualitative studies at larger scales are recommended to confirm the results of the present study as well as to identify the role of demographics, PAS and mental health in the academic achievement of medical students.

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