

Self-reported academic performance in relation to health behaviours among Bahria University students

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Abstract

Objective: To find an association between self-reported academic performance with different socio-demographic factors, health behaviours and mental health amongst university students.

Methods: This cross-sectional study was conducted at Bahria University, Karachi, from January 2012 to December 2013, and comprised university students of different disciplines. An anonymous, self-reported questionnaire was distributed among the subjects. Convenient sampling technique was used. Demographic information, including age, gender and field of study, were obtained. Depression was evaluated via Centre for Epidemiological Studies Depression Scale. SPSS 22 was used to analyse data.

Results: Of the 813 respondents, 334(41.1%) were males and 479(58.9%) females. The mean age was 19.9±1.8 years. Overall, 126(15.5%) subjects reported excellent, 242(29.8%) very good, 310(38.1%) good, 100(12.3%) satisfactory and 35(4.3%) not satisfactory academic performance. Residential status of students played a significant role on their academic performance ($p=0.011$). Breakfast eating behaviour depicted a significant association with the academic performance ($p=0.04$). The proportion of unsatisfactory academic performances among students having severe sleep disorder was the highest, followed by mild/moderate ($p=0.01$). The depression scale's item 'troubling in mind' was highly associated with academic performance ($p<0.05$).

Conclusion: A constructive association existed among healthy behaviours and academic performance.

Keywords: Academic performance (AP), Health behaviour, Mental health, University students. (JPMA 68: 195; 2018)

Introduction

Academic performance (AP) of university students has been found to have an effect on career success.¹ Furthermore, AP has an effect on attaining further education and thereby income which indirectly improves health and the quality of life.² Health has long been a factor influencing AP in adolescents. Literature exploring the association between health behaviours and AP proposes that students in good health have better academic performance.³

Different types of health behaviours and socio-demographic factors have been linked to AP.⁴ Gender differences have been attributed to affect AP and several studies have accepted that female gender tends to achieve better academics scores than their male counterparts.⁵ Consumption of breakfast, which is arguably the most important meal of the day, on a regular basis is linked to better classroom conduct and AP in children and adolescents.⁶ It has been shown in literature that both quality and pattern of sleep have a profound effect on AP⁷ and students faced with sleeping disorders,

such as insomnia, tend to underperform in college.⁸ Several authors found diet control and certain healthy dietary behaviours, such as eating high-fibre diet, avoiding fat and cholesterol, as factors affecting AP.⁹ It was also shown that an increase in body weight and body mass index (BMI) had a negative influence on AP of students.¹⁰

Although it is assumed that students living in a boarding house experience minimal parental supervision which might affect their AP negatively, Lopez Turley in his study found no significant relationship between AP and the place of students' residence.¹¹ Depression is a fairly prevalent mental disorder in the age group of university students.¹² A study indicated a decrease in grade point average (GPA) and self-reported AP of university students suffering from depression,¹³ similar to several other studies which have also shown a significant relationship of depression with AP.¹⁴ Karl Peltzer in his study found a significant link between family background and academic performance,⁹ in agreement with multiple other studies.¹⁵

Globally, several studies have been conducted comparing AP with health behaviours, socio-demographic factors and mental health,³ but due to socio-cultural discrepancies, findings from these studies cannot be extrapolated to the Pakistani population. Furthermore, no study has been previously conducted in Pakistan

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comparing AP with health behaviours, socio-demographic factors and mental health. The current study was planned to find an association between self-reported AP with different socio-demographic factors, health behaviours and mental health amongst university students.

Subjects and Methods

This cross-sectional study was carried out at Bahria University (BU), Karachi, from January 2012 to December 2013, and comprised students of different disciplines. Approval was obtained from the institutional ethics committee. The sample size was calculated using OpenEpi software with 95% confidence interval (CI), 5% margin of error, and a prevalence of 33% depression in university students.¹⁶

An anonymous, self-reported questionnaire was distributed to the students of BU's medical and dental college, and institutes of engineering, business management, social sciences and environmental sciences. Data was collected using the questionnaire in a classroom situation after obtaining informed consent from the participants. Students were informed that the survey's responses related to health and well-being.

Responses were acquired by convenient sampling technique.

The questionnaire was adopted from Health and Behaviour Survey.¹⁷ The demographic evidence like age,

gender, year of study, residence and marital status was obtained. Depression was evaluated by Centre for Epidemiological Studies Depression (CES-D) scale, which contains 10 questions and was used to identify the people at risk for clinical depression or in need of treatment.¹⁸ AP was self-reported by the students in the following categories: excellent, very good, good, satisfactory and not satisfactory.

The data was analysed using SPSS 22. Chi-square test revealed association of AP with students' characteristics and CES-D items. $P < 0.05$ was considered statistically significant.

Results

Of the 1,000 questionnaires distributed, 813 (81.3%) were returned duly filled. Of them, 334 (41.1%) were from male subjects and 479 (58.9%) from female subjects. The overall mean age was 19.9 ± 1.8 years. Moreover, 599 (73.7%) students were of medical discipline, 61 (7.5%) engineering and 153 (18.8%) were in other fields. Overall, 126 (15.5%) subjects reported excellent, 242 (29.8%) very good, 310 (38.1%) good, 100 (12.3%) satisfactory and 35 (4.3%) not satisfactory AP. The mean time spent on the internet by the students was 2.78 ± 1.9 hours.

Gender and family background did not have any significant effect on AP. However, residential status of students played a significant role in this regard ($p=0.011$). The proportions of excellent to very good AP were found least in those who were living on their own. Highest

Table-1: Comparison of self-reported AP with different parameters.

		How would you rate your academic performance?					P Value
		Excellent n(%)	Very Good n(%)	Good n(%)	Satisfactory n(%)	Not Satisfactory n(%)	
Gender	Male	45(13.5%)	91(27.2%)	140(41.9%)	39(11.7%)	19(5.7%)	0.11
	Female	81(16.9%)	151(31.5%)	170(35.5%)	61(12.7%)	16(3.3%)	
Current residence	On campus	28(16.2%)	61(35.3%)	67(38.7%)	15(8.7%)	2(1.2%)	0.011
	Off campus (on your own)	15(14.0%)	19(17.8%)	50(46.7%)	19(17.8%)	4(3.7%)	
	Off campus (with parents/ guardians)	83(15.6%)	162(30.4%)	193(36.2%)	66(12.4%)	29(5.4%)	
Family background	Well off	113(16.2%)	211(30.3%)	261(37.5%)	83(11.9%)	28(4.0%)	0.388
	Not well off	13(11.1%)	31(26.5%)	49(41.9%)	17(14.5%)	7(6.0%)	
How often do you eat breakfast?	Rarely or never	25(17.6%)	35(24.6%)	55(38.7%)	15(10.6%)	12(8.5%)	0.04
	Sometime	21(10.3%)	64(31.4%)	81(39.7%)	32(15.7%)	6(2.9%)	
	Almost every day	80(17.1%)	143(30.6%)	174(37.3%)	53(11.3%)	17(3.6%)	
Losing weight?	No	80(15.9%)	158(31.3%)	179(35.5%)	67(13.3%)	20(4.0%)	0.285
	Yes	46(14.9%)	84(27.2%)	131(42.4%)	33(10.7%)	15(4.9%)	
Dieting to lose weight?	No	108(15.3%)	215(30.5%)	257(36.5%)	92(13.0%)	33(4.7%)	0.058
	Yes	18(16.7%)	27(25.0%)	53(49.1%)	8(7.4%)	2(1.9%)	
Sleep disorder	Nil	37(12.3%)	110(36.5%)	98(32.6%)	43(14.3%)	13(4.3%)	0.01
	Mild/moderate	64(16.5%)	100(25.7%)	168(43.2%)	43(11.1%)	14(3.6%)	
	Severe	25(20.3%)	32(26.0%)	44(35.8%)	14(11.4%)	8(6.5%)	

AP: Academic performance.

Table-2: Percentage responses to statements on the perceived Centre for Epidemiologic Studies Short Depression Scale (CES?D-R 10) and their comparison with the self-reported academic performance.

		How would you rate your academic performance?					P Value
		Excellent n(%)	Very Good n(%)	Good n(%)	Satisfactory n(%)	Not Satisfactory n(%)	
I was bothered by things that usually don't bother me	Rarely	28(11.3%)	54(21.9%)	113(45.7%)	40(16.2%)	12(4.9%)	0.013
	Some	16(11.4%)	42(30.0%)	58(41.4%)	16(11.4%)	8(5.7%)	
	Much	8(26.7%)	9(30.0%)	8(26.7%)	4(13.3%)	1(3.3%)	
	Most	11(35.5%)	7(22.6%)	7(22.6%)	4(12.9%)	2(6.5%)	
I had trouble keeping my mind on what I was doing	Rarely	21(12.8%)	34(20.7%)	75(45.7%)	26(15.9%)	8(4.9%)	<0.0001
	Some	16(10.2%)	51(32.5%)	62(39.5%)	23(14.6%)	5(3.2%)	
	Much	5(6.7%)	22(29.3%)	32(42.7%)	8(10.7%)	8(10.7%)	
	Most	20(39.2%)	10(19.6%)	11(21.6%)	7(13.7%)	3(5.9%)	
I felt that everything I did was an effort	Rarely	26(16.4%)	46(28.9%)	48(30.2%)	29(18.2%)	10(6.3%)	0.005
	Some	6(5.4%)	26(23.2%)	61(54.5%)	12(10.7%)	7(6.3%)	
	Much	13(12.7%)	25(24.5%)	46(45.1%)	15(14.7%)	3(2.9%)	
	Most	17(23.3%)	20(27.4%)	26(35.6%)	8(11.0%)	2(2.7%)	
I felt depressed	Rarely	22(11.5%)	42(21.9%)	84(43.8%)	36(18.8%)	8(4.2%)	0.001
	Some	19(13.9%)	39(28.5%)	59(43.1%)	12(8.8%)	8(5.8%)	
	Much	1(1.8%)	19(33.9%)	24(42.9%)	9(16.1%)	3(5.4%)	
	Most	20(29.0%)	19(27.5%)	18(26.1%)	7(10.1%)	5(7.2%)	
I felt hopeful about the future	Rarely	20(22.0%)	21(23.1%)	33(36.3%)	14(15.4%)	3(3.3%)	0.26
	Some	10(12.2%)	16(19.5%)	40(48.8%)	10(12.2%)	6(7.3%)	
	Much	11(9.4%)	39(33.3%)	43(36.8%)	18(15.4%)	6(5.1%)	
	Most	21(13.5%)	39(25.0%)	67(42.9%)	20(12.8%)	9(5.8%)	
I felt fearful	Rarely	36(13.6%)	66(24.9%)	112(42.3%)	36(13.6%)	15(5.7%)	0.51
	Some	14(15.1%)	24(25.8%)	37(39.8%)	12(12.9%)	6(6.5%)	
	Much	2(4.3%)	15(32.6%)	20(43.5%)	7(15.2%)	2(4.3%)	
	Most	9(25.0%)	12(33.3%)	9(25.0%)	5(13.9%)	1(2.8%)	
My sleep was restless	Rarely	32(13.7%)	60(25.8%)	90(38.6%)	40(17.2%)	11(4.7%)	0.174
	Some	9(9.8%)	21(22.8%)	47(51.1%)	12(13.0%)	3(3.3%)	
	Much	6(10.0%)	17(28.3%)	26(43.3%)	6(10.0%)	5(8.3%)	
	Most	14(25.5%)	15(27.3%)	18(32.7%)	5(9.1%)	3(5.5%)	
I was happy	Rarely	15(17.0%)	28(31.8%)	28(31.8%)	9(10.2%)	8(9.1%)	0.28
	Some	13(14.9%)	21(24.1%)	35(40.2%)	14(16.1%)	4(4.6%)	
	Much	10(7.8%)	30(23.4%)	60(46.9%)	21(16.4%)	7(5.5%)	
	Most	24(16.1%)	38(25.5%)	61(40.9%)	21(14.1%)	5(3.4%)	
I felt lonely	Rarely	24(11.7%)	54(26.3%)	92(44.9%)	30(14.6%)	5(2.4%)	0.001
	Some	14(12.1%)	31(26.7%)	41(35.3%)	21(18.1%)	9(7.8%)	
	Much	3(5.6%)	18(33.3%)	23(42.6%)	8(14.8%)	2(3.7%)	
	Most	22(28.9%)	16(21.1%)	26(34.2%)	5(6.6%)	7(9.2%)	
I could not get going	Rarely	28(11.7%)	60(25.1%)	98(41.0%)	43(18.0%)	10(4.2%)	0.037
	Some	12(10.6%)	33(29.2%)	50(44.2%)	10(8.8%)	8(7.1%)	
	Much	9(21.4%)	11(26.2%)	16(38.1%)	3(7.1%)	3(7.1%)	
	Most	12(31.6%)	8(21.1%)	11(28.9%)	5(13.2%)	2(5.3%)	

proportions of such performance were observed in students living with guardians followed by hostel (on-campus) students (Table-1).

Breakfast eating behaviour depicted significant association with the AP ($p=0.04$). Besides, 142(17.5%) students did not eat breakfast. Of them, only 35(24.6%) could produce very good academic performance. This proportion was significantly higher among students who

always had breakfast. Moreover, 309(38%) students were trying to lose weight and 108(13.3%) were on diet. However, these two attributes did not show significant effects on AP ($p>0.005$). Also, 389(47.8%) students suffered from mild to moderate sleep disorder while 123(15.1%) reported severe sleep disorder. The proportion of unsatisfactory AP among students having severe sleep disorder was the highest followed by mild/moderate ($p=0.01$).

The findings also showed that all the items on the CES-D scale, except two positive and two negative items, were significantly related to AP of the students ($p < 0.05$). The item 'troubling in mind' was highly related to AP followed by feelings of 'loneliness' and 'depression', 'everything was an effort' and 'get bothered by the things' (Table-2).

Discussion

Many studies have been conducted in different countries to evaluate the factors influencing academic performance, but no study has been conducted in Pakistan comparing AP with the socio-demographic factors, health behaviours and mental health. However, a study conducted at various schools of Karachi found that inadequate sleep, depression and smoking were the prominent unhealthy behaviours observed in adolescents.¹⁹

In the current study, we found insignificant difference in the self-reported AP among male and female students. The findings of this study coincided with a recent study conducted in Peshawar among medical students which reported that there is no significant difference between AP of male and female students.²⁰ This is contrary to a previous study which has concluded that females outperform their male counterparts in academic excellence.⁵ Another study conducted at a school on 140 eighth-graders also reported girls scoring higher grades in all courses but doing worse than the boys on an intelligence quotient (IQ) test,²¹ which strengthens our proposal of insignificant variation of AP in both genders.

Our study found a positive relationship between AP and the ease with which each student can go to sleep at night. The majority of students reported problem in sleeping and the condition was even adverse in 10% students. Similarly, among Sudanese medical students, good sleep quality was found to be associated with better academic performance.⁷ The opposite is also true, i.e. poor AP and stress related to it leads to trouble sleeping at night.⁸

Breakfast is the first meal of the day and it is known to have a positive influence on the students' performance, but it is commonly skipped mostly due to lack of time.²² More than half of the students in our study self-reported to have breakfast every day regularly; this established direct relationship with better AP. A 2013 study regarding the positive impact of breakfast consumption on AP supports our findings.⁶

Our study found significant difference in AP of the students based on their residence, with students living on campus doing the best as compared to their batchmates living off campus, whether alone or with family. A study

concluded that the residence did not have a significant impact on the performance of first-year students; however Black students living on campus outshined their fellows living off campus with family.¹¹

Family background played no role on AP of the students in our study. However, a study involving 388 Latino young adolescents found that the students coming from low socio-economic status performed poorly in studies as compared to their counterparts.¹⁵ In contrast, a study conducted in Brazil in 2006 concluded that students coming from deprived social and economic conditions performed better than students from higher socio-economic class.²³ This calls for larger national surveys to confidently portray the impact of social and economic status on AP in our part of the world.

Being on a diet control or trying to lose weight did not seem to have any significant effect on the academic achievements. Results of our study matched with a study conducted at an elementary school in Nova Scotia, Canada.⁴ It concluded that instead of focusing on preventing and reducing obesity, the promotion of healthy lifestyle is effective in achieving optimal academic excellence. This leads to the fact that it is the quality of lifestyle and not body weight that is strongly associated with students' grades. However, a study conducted in 2005 reviewed multiple studies and it concluded that heavy and obese students had worse levels of academic achievement.²⁴ A recent study in Saudi Arabia concluded that there was no association between the BMI and school performance, except for physics where overweight and obese students' scores were worse than those of normal-weight students.²⁵

The CES-D scale was used to assess the correlation between mental health and the self-reported academic achievements. Several studies have concluded that depression is linked with poorer AP.¹³ A United Kingdom-based study predicted a decrease in exam performance from first to second year among students experiencing depression.¹⁴ A study among Latino adolescents concluded that lonely youth was faced with academic difficulty which was in line with our study.²⁶ A study found that depression has an impact on the allocation of attention and all elements of working memory, hence on AP as well.²⁷ This too supported our finding that trouble concentrating on the task in hand was directly related to poorer AP. In our study, students who were disturbed by factors that generally don't bother them, and who said everything they did was an effort and who said they could not get going in life had poorer AP. Not many studies are available which compare individual factors of the CES-D scale with the AP.

The current study had its limitations as well. It was a cross-sectional survey in which self-assessment approach was adopted. The sample included university students from a single university and therefore the study's findings cannot be generalised. The responses obtained from different departments were not comparable. It is quite possible that in self-reporting of AP the answers were under or over reported as per the different set standards of different students. Replication of the study with a well-distributed sample and using of grades to evaluate AP may produce better results.

Conclusion

There was a positive correlation between healthy behaviours and AP. Smoking was found to be related to poor AP while having breakfast regularly, sleeping with ease, on-campus residence and higher socio-economic status were all associated with higher AP. Being on diet control or attempting to lose weight had no impact on academic achievements. Only six out of ten items on the CES-D scale were significantly related to AP.

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References

1. Tan DL. Grades as predictors of college and career success: The case of a health-related institution. *JCA* 1991; 132: 12-5.
2. Ross CE, Wu CL. The links between education and health. *Am Sociol Rev* 1995; 60: 719-45.
3. Suhrcke M, de Paz Nieves C. The impact of health and health behaviors on educational outcomes in high-income countries: a review of the evidence. Copenhagen, Denmark: World Health Organization, Regional Office for Europe; 2011.
4. Faught EL, Ekwaru JP, Gledlie D, Storey KE, Asbridge M, Veugelers PJ. The combined impact of diet, physical activity, sleep and screen time on academic achievement: a prospective study of elementary school students in Nova Scotia, Canada. *Int J Behav Nutr Phys Act* 2017; 14: 29.
5. Sheard M. Hardiness commitment, gender, and age differentiate university academic performance. *Br J Educ Psychol* 2009; 79: 189-204.
6. Adolphus K, Lawton CL, Dye L. The effects of breakfast on behavior and academic performance in children and adolescents. *Front Hum Neurosci* 2013; 7: 425.
7. Mirghani HO, Mohammed OS, Almurtadha YM, Ahmed MS. Good sleep quality is associated with better academic performance among Sudanese medical students. *BMC Res Notes* 2015; 8: 706.
8. Alsaggaf MA, Wali SO, Merdad RA, Merdad LA. Sleep quantity, quality, and insomnia symptoms of medical students during clinical years: Relationship with stress and academic performance. *Saudi Med J* 2016; 37: 173.
9. Peltzer K, Pengpid S. Health behaviour and self-reported academic performance among university students: an international study. *Mediterr J Soc Sci* 2014; 5: 998.
10. Deliens T, Clarys P, De Bourdeaudhuij I, Deforche B. Weight, socio-demographics, and health behaviour related correlates of academic performance in first year university students. *Nutr J* 2013; 12: 162.
11. López Turley RN, Wodtke G. College residence and academic performance: who benefits from living on campus? *Urban Educ* 2010; 45: 506-32.
12. Ibrahim AK, Kelly SJ, Adams CE, Glazebrook C. A systematic review of studies of depression prevalence in university students. *J Psychiatr Res* 2013; 47: 391-400.
13. Hysenbegasi A, Hass SL, Rowland CR. The impact of depression on the academic productivity of university students. *J Ment Health Policy Econ* 2005; 8: 145.
14. Andrews B, Wilding JM. The relation of depression and anxiety to life?stress and achievement in students. *Br J Psychol* 2004; 95: 509-21.
15. Eamon MK. Social-demographic, school, neighborhood, and parenting influences on the academic achievement of Latino young adolescents. *J Youth Adolesc* 2005; 34: 163-74.
16. Sarokhani D, Delpisheh A, Veisani Y, Sarokhani MT, Manesh RE, Sayehmiri K. Prevalence of depression among university students: a systematic review and meta-analysis study. *Depress Res Treat* 2013; 2013: 373857.
17. Steptoe A, Wardle J. The European health and behaviour survey the development of an international study in health psychology. *Psychol Health* 1996; 11: 49-73.
18. Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *Appl Psychol Meas* 1977; 1: 385-401.
19. Qidwai W, Ishaque S, Shah S, Rahim M. Adolescent lifestyle and behaviour: A survey from a developing country. *PLoS ONE* 2010; 5: e12914.
20. Faisal R, Shinwari L, Hussain SS. Academic performance of male in comparison with female undergraduate medical students in Pharmacology examinations. *J Pak Med Assoc* 2017; 67: 204-8.
21. Duckworth AL, Seligman ME. Self-discipline gives girls the edge: Gender in self-discipline, grades, and achievement test scores. *J Educ Psychol* 2006; 98: 198-208.
22. Pendergast FJ, Livingstone KM, Worsley A, McNaughton SA. Correlates of meal skipping in young adults: a systematic review. *Int J Behav Nutr Phys Act*. 2016; 13: 125.
23. Pedrosa RH, Dachs JNW, Maia RP, Andrade CY, Carvalho BS. Educational and socioeconomic background of undergraduates and academic performance: consequences for affirmative action programs at a Brazilian research university. *IMHE*; 2006.
24. Taras H, Potts?Datema W. Obesity and student performance at school. *J Sch Health* 2005; 75: 291-5.
25. Alswat KA, Al-shehri AD, Aljuaid TA, Alzaidi BA, Alasmari HD. The association between body mass index and academic performance. *Saudi Med J* 2017; 38: 186-91.
26. Benner AD. Latino adolescents' loneliness, academic performance, and the buffering nature of friendships. *J Youth Adolesc* 2011; 40: 556-67.
27. Christopher G, MacDonald J. The impact of clinical depression on working memory. *Cogn Neuropsychiatry* 2005; 10: 379-99.