



# ASSOCIATION BETWEEN LIFE STYLE AND HEALTH BEHAVIOUR WITH SELF-REPORTED ACADEMIC PERFORMANCE AMONG UNIVERSITY STUDENTS IN GAZA STRIP, PALESTINE

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## ABSTRACT

**Purpose:** To investigate health behaviours and lifestyle correlates of self-reported academic performance among university students in Gaza Strip.

**Design/methods:** Cross-sectional study conducted in six universities and three colleges of Gaza, Palestine. This included 1438 students (806 females, 632 males; mean age 20.6 years  $\pm$  SD 2.6 years). Anonymous self-reported questionnaires were used to assess the association between socio-demographic variables and health behaviour, and academic performance.

**Findings:** In multiple linear regression, socio-demographic factors (younger age, gender, insufficient amount of money and intrinsic religiosity), health behaviours (eating salad and raw vegetables, low levels of physical activity), and receiving social support were found to be associated with self-reported academic performance. However, this study did not find an association between smoking, alcohol use and illicit drug use with academic performance.

**Social implications:** Despite the prevalence of some positive behaviours of the Gaza Strip students, they still need comprehensive health promotion programmes about their health and well-being. This may have the potential to influence the university students' academic achievement in a positive manner.

**Originality/Value:** This is the first study conducted to investigate health behaviours and lifestyle correlates of self-reported academic performance among university students in Gaza Strip.

**Keywords:** Association between Life Style and Health Behaviour with Self-reported Academic Performance among University Students in Gaza Strip Palestine.

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## INTRODUCTION: BACKGROUND AND AIMS

The majority of university students are aged between 18 and 21 when entering university, a transition age to adulthood, which is a time characterised by dramatic changes in life (Abd El-Kader and Mohammad, 2013). University years are a period when students increasingly make independent choices about their lifestyle and health practices (El Ansari et al., 2011). The early adoption of healthy lifestyles can help to ensure a healthy and productive adult population (Wald et al., 2013). Research evidence shows that education and health are closely linked (Bradley and Greene, 2013; Suhrcke and de Paz Nieves, 2011), and high academic performance by university students can be important for a better career success (Deliens et al., 2013; Peltzer and Pengpid, 2014). The evidence also shows that health is an important factor for academic achievement at school and in higher education (El Ansari and Stock, 2010).

A college student's life contains many important factors that may hinder or improve it Abd El-Kader and Mohammad (2013). These factors include student's living situation, health and, of course, academic performance. Academic achievement is extremely important for college students, as it is a main determinant of their future. Research shows health and wellbeing have direct impact on success rates, attendance and academic performance (James Irvine Foundation, 2011), that students have the best chance of succeeding when they are healthy. It is widely accepted that health and well-being are essential elements for effective learning (El Ansari and Stock, 2010). 'Health' in this context includes a nutritious diet, physical activity, emotional well-being, safety and a sense of security, absence of chronic conditions such as asthma or diabetes, and access to physical/mental health services (Abd El-Kader and Mohammad, 2013).

However, the pathways through which education leads to better health and longer life

expectancy are still not clearly understood. It is widely held, however, that education, health and social outcomes are very closely interdependent (El Ansari and Stock, 2010).

Many factors are associated with academic performance (Ulla Diez and Perez-Fortis, 2010), such as different socio-demographic factors that include female gender, older age, higher socioeconomic status, religious involvement and social support (Peltzer and Pengpid, 2014). Also, various specific health behaviours have been found to be associated with academic performance (Cogollo and Gómez-Bustamante, 2013). These include moderate-vigorous physical activity (Bradley and Greene, 2013; Wald et al., 2013), healthy dietary behaviours (i.e. diets low in saturated fats and refined sugars) (Bradley and Greene, 2013; Florence et al., 2008; Wald et al., 2013), adequate sleep duration and good sleep quality (Gomes et al., 2011; Wald et al., 2013) are beneficial to cognition (Francis and Stevenson, 2013; Hillman et al., 2008), suggesting that health behaviours may affect cognitive performance (Deliens et al., 2013).

Throughout the last few decades, the Arab nations across the Eastern Mediterranean Region (EMR) have encountered evident changes in their demographic profiles, socioeconomic characteristics and health status (El Ansari et al., 2014; Musaiger et al., 2012).

No study has yet been published on university students' health behaviour in Palestine, particularly examining their correlation with academic performance. Hence, attention should be given to university students and an assessment of their health behaviours and lifestyle correlates of self-reported academic performance is crucial in order to enhance their health behaviour and improve their academic achievement.

The aim of this study was to investigate health behaviours and lifestyle correlates of self-reported academic performance among university students in Gaza strip. The three specific objectives were to:

- describe the socio-demographic characteristics (e.g. age, gender, parent's education, social support, intrinsic religiosity, studies finance and financial sufficiency) and educational features (e.g. year of study, discipline) of the sample

- assess the prevalence of a range of health behaviour variables and lifestyle characteristics (e.g. food consumption patterns, physical activity, smoking and utilising drugs) of the students by gender and
- compare the academic performance as regards the health behaviours and lifestyle characteristics of their students.

## MATERIAL AND METHODS

### Sample and data collection procedures

The data were collected in 2015 at the nine participating universities and colleges. A cross-sectional study was carried out in six universities and three colleges of Gaza-Palestine. Ethical approval was provided by the participating institutions. Research assistants working in the participating universities asked classes of undergraduate students to complete the questionnaire at the end of a teaching class. Classes were recruited according to timetable scheduling using stratified random sampling. The students who completed the survey varied in the number of years they had attended the university. An information sheet accompanied each questionnaire outlining the research aims and objectives, and all students were informed that participation was voluntary and anonymous. All data were confidential and data protection was observed at all stages of the study. A representative sample of students was sought at all participating universities, and students were informed that by completing the questionnaire, they agree to participate in the study.

### Measure

#### Academic performance

Academic performance was assessed with one question: 'How do you rate your performance in comparison with your fellow students?' Response options; 1 = Much worse, 2 = Worse, 3 = the same, 4 = Better and 5 = Much better. Socio-demographic questions included age and gender. Socio-economic questions were assessed

by rating a student's amount of money, 1 = Always insufficient to 4 = Always sufficient, how they financed their studies and the highest degree that their parents have.

Social support was assessed using two questions: 'How many people do you know – including your family and friends – who support you whenever you feel down?' The responses were responded to None, One person, Two-three persons, More than three persons; 'On the whole, are you satisfied with the support you get in such situations?'; ranged from 1 = Very dissatisfied to 5 = Very satisfied. The level of social support was calculated by the sum of responses to both questions.

Religiousness was assessed with the two questions: how strongly do you agree with the following statement: 'My religion is very important in my life?', the responses ranged from 1 = strongly disagree to 5 = strongly agree; and 'How often do you attend religious services?', the response options were; 1 = Never, 2 = At least once a year, 3 = At least once a month, 4 = At least once a week and 5 = Daily. The level of Religiousness was calculated by the sum of responses to both questions.

### Health behaviour and lifestyle questionnaire

The health and lifestyle questionnaire included socio-demographic information (e.g. gender, age and financial situation), as well as questions related to health behaviours (nutrition, physical activity, smoking and alcohol consumption), social support, quality of life and university study related questions.

The questionnaire was developed as a general student health and wellbeing survey, similar to studies of student lifestyle implemented in several other countries, after applying some modifications relating to the Gaza Strip, Palestine context (El Ansari and Stock, 2010; El Ansari et al., 2011). It included socio-demographic information (e.g. gender, age), nutrition, dietary intake and food consumption patterns, as well as the importance of healthy eating, three levels of physical activity.

**Assessment of nutrition and importance of healthy eating (12 items):** Participants responded to the question; 'How often do you eat the following foods?' that asked participants

about the frequency of their usual consumption of sweets (rated on a five-point scale: 'several times a day', 'daily', 'several times a week', '1–4 times a month' and 'never'; this was later recoded into four categories).

**Physical Activity (three items):** respondents rated the items 'On how many of the past seven days did you participate in vigorous exercise for at least 20 min?'; 'On how many of the past seven days did you participate in moderate exercise for at least 30 min?' and, 'On how many of the past seven days did you do exercises to strengthen or tone muscles (push-ups, sit-ups or weight lifting)?'. The response scales for each of the three items were the number of days, ranging from 1 to 7 days.

**Tobacco Smoking (one item):** participants rated the item, 'Within the last three months, how often did you smoke? (cigarettes, Shisha or orgelp)' on a three-point response scale: 'daily', 'occasionally' and 'never'.

**Use of illicit substance (one item):** students responded to the question, 'Do/Have you ever use/used drugs?' with three response categories: 'Yes, regularly', 'Yes, but only a few times' and 'Never'.

**Frequency of binge drinking (one item):** measured using the question, 'Over the last three months: How many times (if any) have you had drunk any kind of alcoholic drinks?' Respondents rated the answer on a five-point responses scale: 'several times per a day', 'daily', 'several times weekly', 'once a week', 'less than once a week', 'never'.

### Data analysis

Data analysis was performed using SPSS software version 21.0 (Statistical Packages for Social Science). Descriptive statistics were used for reporting the proportion of academic performance and Pearson Chi-square for Socio-demographic, social support, physical activity, religious, health behaviour, smoking, illicit use of drugs, drinking and differences in proportion of academic performance. Multiple Linear Regression was used to assess the association between socio-demographic variables and health behaviour, and academic performance. All Variance Inflation Factors (VIF) were less than five; this means the multi-collinearity does not exist in our multiple linear models.

## RESULTS

### Sample characteristics

The current analysis employed data comprising 1438 students (806 females, 632 males; Mean age 20.6 years  $\pm$  SD 2.6 years) from six universities and three colleges of Gaza-Palestine as depicted in Table 1 and Figure 1. Tables 2 and 3 describe the academic performance of the university students in relation to socio-demographic and health behaviour variables.

### Associations with academic performance

In multiple linear regression, it was found that socio-demographic factors (younger age, gender, insufficient amount of money and intrinsic religiosity), health behaviours (eating salad and raw vegetables, low levels of physical activity), and social support were found to be associated with self-reported academic performance (see Table 4).

In multiple linear regressions, it was found that, according to the study, students self-report about their academic performance in comparison with their fellow students with regards to demography; females showed better and much better in their academic performance than males, while with increasing age, students' academic performance rate becomes worse and much worse than their fellow students. Financially, students with insufficient income reported that their performance was better relative to peers. Students' finance, however, had no significant effects on the academic performance of the students. In connection with physical activities, this was positive associated with the students' academic performance rate in comparison to their fellow students, mainly in practicing low levels of physical activity. As regards social support, this was positively associated with the students' academic performance. Similarly, students with high intrinsic religiosity rated their academic performance the same and for some close to much better than their fellow students.

When it came to the health behaviour variables, it was interesting to note in this area that, amongst the selected 12 variables of health behaviour and its association with the rate of the students' academic performance, it was positive only with students who eat salad and raw vegetables in low

frequency; these students were more likely to rate their academic performance as being better relative to their fellow peers. Finally students who used to eat cakes, cookies, snacks, fast food, canned food, fresh fruits, fish and dairy products has a negative effect on the student's performance relative to peers; but this effect was not significant.

Generally the percentage of students who reported that they smoked, drank alcohol or used illicit drugs was very low, and there was no association between smoking, drugs and drinking alcohol with their academic performance.

## DISCUSSION

This study aimed to investigate differences in health behaviours and lifestyle correlates of self-reported academic performance among university students in Gaza Strip. In agreement with findings of previous studies (Deliens et al., 2013; Richardson et al., 2012; Vaez and Laflamme, 2008), female college or university students tended to have higher grades than male students. Results indicate a consistency with previous studies (Malecki and Demaray, 2006; Peltzer and Pengpid, 2014; Sirin, 2005) that socio-demographic factors (social support and high intrinsic religiosity) were associated with academic performance. However, it disagreed with these studies' results about a positive association between coming from a wealthier family background and high academic performance rate. The present study demonstrated that students who complained that the amount of money was insufficient, reported the same rate or/and claimed to be much better in their academic performance in comparison to their peers. This agreed with the findings of El Ansari and Stock (2010) who reported that income had no effects on the actual grade that was achieved by the student.

However, it is worth mentioning that longstanding access restrictions imposed by Israel have undermined Gaza's economy, resulting in high levels of unemployment, food insecurity and aid dependence (OCHA, 2015). This justified that university students in Gaza used to live in a low economic situation and suffered from an insufficient amount of money to cover their studies; they then have to cope with the situation of achieving their academic study despite poverty. This can explain the result that revealed that

studies' finance was not associated with academic performance. Moreover, the study results are consistent with other findings (Richardson et al., 2012) that confirmed the positive association between social support and academic performance. Social support was associated with participation in physical activity (Hohepa et al., 20007). Also, social support can be associated with dietary health behaviours including fruit and vegetable consumption (Kubik et al., 2005). Some studies found that social support is positively correlated to academic achievement (Mackinnon, 2012; Robbins et al., 2008).

On the other hand, the study found that amongst the selected 12 variables of health dietary behaviours, only one variable (eating salad and raw vegetables with low frequency) was associated with better academic performance. This finding has been confirmed by Wald et al. (2013), and is in contrast with the study by Peltzer and Pengpid (2014) who did not find an association between vegetable intake and academic performance. Moreover, it is worth mentioning that this study revealed a negative association between eating cakes/cookies, snacks, fast food/canned food, fresh fruits, fish/sea food and dairy products with academic performance; however, this association was not significant. Students who were on a diet, ate more in the student restaurant, consumed more sugar containing or diet sodas or ate French fries more frequently, tended to have lower GPAs. Similar results have been found in adolescents showing that unhealthy food choices (including fast foods) were negatively related, whereas fruit and vegetable consumption was positively related to secondary school end of year achievement (Deliens et al., 2013; Kristjansson et al., 2010; Sigfusdottir et al., 2007).

Although this study revealed an association between students with physical activities and academic performance, what is interesting is that the students with a low level of physical activities who reported that their academic performance rate was the same when compared with their peers, and for some tended to be much better than their fellow students, this is in contrast with findings of other studies that found that students with high levels of physical activity were more likely to have better academic performance than other students (Bradley and Greene, 2013; Peltzer

and Pengpid, 2014; Singh et al., 2012; Wald et al., 2013). According to Singh et al. (2012) regular participation in sport activities may improve students' classroom behaviour and concentration during the lessons. However, when spending more time exercising, students possibly tended to spend less time on their academic work, so this might have offset the beneficial effects of physical activity on GPA at university (Deliens et al., 2013). On the other hand, other studies indicated that physical activity was not related to academic performance (Deliens et al., 2013; Ruthig et al., 2011).

Unlike some previous studies (Aertgeerts and Buntinx, 2002; Bradley and Greene, 2013; Deliens et al., 2013), this study did not find an association between smoking, alcohol use and illicit drug use with academic performance. However, Palestinian youths face obstacles that stem from their large demographic size, where the World Health Organization's (WHO) quality of life-Bref (WHOQOL-BREF) study in 2005 concluded that the quality of life in the Palestinian territories is lower than in almost all other countries included in the study, while levels of fear and distress among the population were higher than in most other countries (Giacaman et al., 2009).

## CONCLUSIONS AND RECOMMENDATIONS

Overall this research concludes that most Palestinian students in Gaza Strip do not exhibit positive health practices with regards to the consumption of health food and physical activity within accepted and recommended levels. In terms of study financial sufficiency, students with insufficient income reported that their performance was better relative to peers, while study finance had no significant effects on the academic performance of the students. This is justified because long standing access restrictions imposed by Israel have undermined Gaza's economy, resulting in high levels of unemployment, food insecurity and aid dependence. Hence, the university students in Gaza are used to living in a low economic situation and suffer from having an insufficient amount of money to cover their study; they then have to cope with the situation to achieve their academic study despite this poverty. With regards to social

support and high intrinsic religiosity, these were found to be positively associated with the students' academic performance.

Although the current study did not find a significant relationship between studies finance, health behaviour and life style with the academic performance of the students, there is consensus in the literature regarding the link between overall health behaviour, life style and financial sufficiency on academic achievement. Even though the prevalence of some advantageous behaviours of the Gaza Strip students were positive, they need comprehensive health promotion programmes regarding their health and well-being. This may have the potential of positively influencing the university students' academic achievement.

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## BIOGRAPHICAL NOTES

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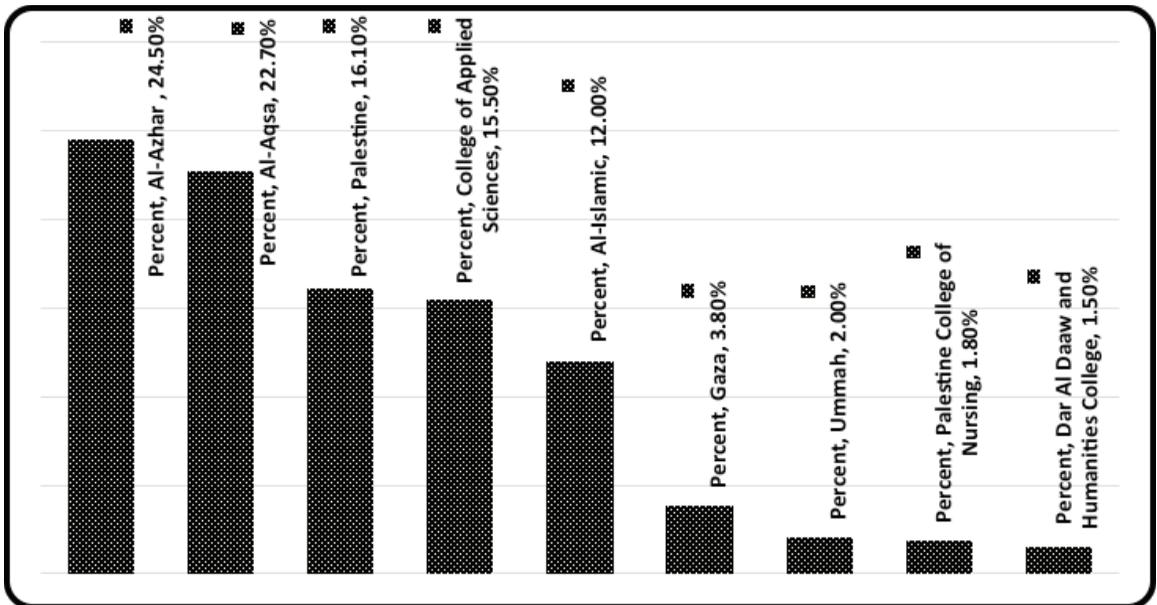
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**Table 1 Students distribution according universities and colleges in the Gaza Strip**

University	N	Percent (%)	Mean of age
Al-Azhar	352	24.5	19.8
Al-Aqsa	327	22.7	19.9
Palestine	232	16.1	20.2
College of Applied Sciences	223	15.5	21.4
Al-Islamic	173	12.0	21.5
Gaza	54	3.8	21.8
Ummah	29	2.0	22.3
Palestine College of Nursing	26	1.8	22.5
Dar Al Daaw and Humanities College	22	1.5	22.3
<b>Total</b>	<b>1438</b>	<b>100.0</b>	<b>20.6</b>

Source: Earth and Human center for Researches and Studies

**Figure 1 Students distribution according universities and colleges in the Gaza Strip**

Source: Earth and Human center for Researches and Studies

**Table 2 Socio-demographic variables and academic performance (How do you rate your performance in comparison with your fellow students)**

Variables	Categories	Academic performance			Chi-square Sig.
		Much better and Better N = 578	The Same N = 654	Worse Much worse N = 206	
Gender Weight (kg)	Female	57.8%	53.5%	59.2%	0.197
	Male	42.2%	46.5%	40.8%	
Age in years	17–19	36.9%	44.8%	40.3%	0.007
	20–21	35.6%	33.8%	33.0%	
	22–24	20.8%	18.8%	20.9%	
	25 or more	6.7%	2.6%	5.8%	
Fathers' Education	>High school	55.7%	51.8%	52.4%	0.440
	Bachelors	36.7%	38.1%	39.8%	
	Master and PhD	7.6%	10.1%	7.8%	
Mothers' Education	>High school	67.6%	70.3%	67.0%	0.825
	Bachelors	29.6%	27.4%	30.1%	
	Master and PhD	2.8%	2.3%	2.9%	
Social Support	Low	7.3%	8.1%	12.6%	0.015
	Medium	22.1%	25.8%	29.1%	
	High	70.6%	66.1%	58.3%	
Intrinsic religiosity	Low	0.7%	0.9%	1.5%	0.007
	Medium	36.0%	33.5%	47.1%	
Amount of money	High	63.3%	65.6%	51.5%	0.177
	Sufficient	40.3%	41.1%	47.6%	
	Insufficient	59.7%	58.9%	52.4%	
studies finance	Parents	63.2%	68.7%	70.4%	0.068
	Loan and Scholarship	15.9%	15.7%	11.7%	
	Job and other	20.9%	15.6%	18.0%	
Smoking	Daily	10.0%	10.2%	7.3%	0.679
	Occasionally	10.6%	11.9%	12.1%	
	Never	79.4%	77.8%	80.6%	
Drugs	Regularly	1.2%	2.3%	1.5%	0.651
	Few times	2.6%	2.1%	2.4%	
	Never	96.2%	95.6%	96.1%	
Alcohol	High frequently	4.0%	3.4%	4.9%	0.297
	Low frequently	2.8%	1.2%	1.9%	
	Never	93.3%	95.4%	93.2%	
Physical	Low	61.1%	63.5%	70.4%	0.001
	Medium	28.4%	30.3%	27.7%	
	High	10.6%	6.3%	1.9%	

*Hints:* Social support levels: Low = 2–4; Medium: 5–6; High: 7–9. Religious levels: Low: 2–4; Medium: 5–7; High: 8–10.

Alcohol Levels: Never; Low frequently: once per a week or less; High frequently: several times per a week or more.

Physical activity levels: Low: 0–7; Medium: 8–14; High: 15–21.

Source: Earth and Human center for Researches and Studies.

**Table 3 Descriptive of health behaviour variables according to academic performance  
(How do you rate your performance in comparison with your fellow students)**

Variables	Categories	Academic performance			Chi-square
		Much better and Better N = 578	The Same N = 654	Worse Much worse N=206	Sig.
Sweets	High frequency	52.4%	45.9%	b	0.049
	Low frequency	44.1%	51.8%	50.5%	
	Never	3.5%	2.3%	1.5%	
Cake/cookies	High frequency	38.2%	36.4%	35.9%	0.311
	Low frequency	56.9%	60.7%	61.2%	
	Never	4.8%	2.9%	2.9%	
Snacks	High frequency	49.8%	49.8%	47.6%	0.367
	Low frequency	42.4%	44.8%	47.1%	
	Never	7.8%	5.4%	5.3%	
Fast food/canned food	High frequency	24.9%	23.7%	22.3%	0.122
	Low frequency	62.3%	67.3%	63.6%	
	Never	12.8%	9.0%	14.1%	
Fresh fruits	High frequency	41.0%	38.5%	34.5%	0.565
	Low frequency	54.7%	57.0%	60.2%	
	Never	4.3%	4.4%	5.3%	
Salad/raw vegetables	High frequency	43.8%	36.4%	30.1%	0.001
	Low frequency	50.3%	57.2%	59.2%	
	Never	5.9%	6.4%	10.7%	
Cooked vegetables	High frequency	34.3%	25.7%	26.2%	0.012
	Low frequency	52.2%	61.0%	60.2%	
	Never	13.5%	13.3%	13.6%	
Lemonade/soft drinks	High frequency	33.0%	27.8%	28.6%	0.318
	Low frequency	61.4%	65.6%	64.1%	
	Never	5.5%	6.6%	7.3%	
Meat/sausage products	High frequency	21.3%	20.8%	18.4%	0.634
	Low frequency	72.1%	73.7%	77.2%	
	Never	6.6%	5.5%	4.4%	
Fish/sea food	High frequency	11.2%	9.3%	9.2%	0.354
	Low frequency	76.6%	81.3%	80.1%	
	Never	12.1%	9.3%	10.7%	
Dairy/dairy products	High frequency	32.5%	26.9%	31.1%	0.082
	Low frequency	44.1%	50.9%	50.5%	
	Never	23.4%	22.2%	18.4%	
Cereal/cereal products	High frequency	62.3%	61.9%	61.2%	0.795
	Low frequency	30.6%	32.1%	30.6%	
	Never	7.1%	6.0%	8.3%	

*Hints:* Food consumption: High frequently: daily and several times per a day; Low Frequently: Several times per a week and several times per a month; Never.

*Source:* Earth and Human center for Researches and Studies.

**Table 4 Linear regression analysis for association between independent variables and self-reported academic performance**

<i>Variables</i>	<i>Univariate</i>	
<b>Socio-demographic</b>	<b>B</b>	<b>P-value</b>
<b>Gender</b>		Ref.(Female)
Male	<b>-0.185</b>	<b>0.004</b>
<b>Fathers' Education</b>		Ref.(>High school)
Bachelors	-0.096	0.063
Master and PhD	-0.136	0.118
<b>Mothers' Education</b>		Ref.(>High school)
Bachelors	0.069	0.206
Master and PhD	-0.031	0.835
<b>Amount of money</b>		Ref.(sufficient)
Insufficient	<b>0.099</b>	<b>0.044</b>
<b>Studies finance</b>		Ref.(Parents)
Loan and Scholarship	0.089	0.175
Job and other	0.082	0.201
<b>Smoking</b>		Ref.(Never)
Daily	0.113	0.183
Occasionally	0.001	0.992
<b>Drugs</b>		Ref.(Never)
Regularly	-0.126	0.511
Few times	-0.065	0.677
<b>Alcohol</b>		Ref.(Never)
Low frequency	0.136	0.419
High frequency	0.054	0.676
<b>Physical activity</b>	<b>0.014</b>	<b>0.000</b>
Age	<b>0.031</b>	<b>0.001</b>
Social Support	<b>0.047</b>	<b>0.010</b>
Intrinsic religiosity	<b>0.037</b>	<b>0.004</b>
<b>Health behaviour</b>		
Sweets	0.018	0.478
Cake/cookies	-0.019	0.451
Snacks	-0.011	0.642
Fast food/canned food	0.013	0.552
Fresh fruits	-0.012	0.633
<b>Salad/raw vegetables</b>	<b>0.080</b>	<b>0.002</b>
<b>Cooked vegetables</b>	0.018	0.430
Lemonade/soft drinks	0.018	0.456
Meat/sausage products	0.000	0.990
Fish/sea food	-0.024	0.392
Dairy/dairy products	-0.024	0.224
Cereal/cereal products	0.002	0.940

*Hints:* Age; Physical activity; social support; health behaviour and intrinsic religiosity were taken as quantitative variables (Sum of points in questions).

*Source:* Earth and Human center for Researches and Studies.