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INTERNATIONAL JOURNAL OF SOCIOLOGY OF EDUCATION

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Date of publication: February 25th, 2012.

To cite this article: Achamma, G., Shireen, H., Asokan, G.V., Ailiya, A., Hassan,B (2012). Influence of Behavioral Patterns on Academic Performance- Comparison between Students of the Morning session and Afternoon session at the College of Health Sciences (CHS), Kingdom of Bahrain. *International Journal of Sociology of Education*, *1*(1), 54-70. doi: 10.4471/rise.2012.03

To link this article: http://dx.doi.org/10.4471/rise.2012.03

RISE - International Journal of Sociology of Education, 1(1), *54-70*

Influence of Behavioral Patterns on Academic Performance- Comparison between Students of the Morning session and Afternoon session at the College of Health Sciences (CHS), Kingdom of Bahrain.

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Abstract

Three hundred and two Nursing and Allied Health students attending either Morning or Afternoon session at the College of Health Sciences, Kingdom of Bahrain, were compared on their academic performance and behavioral patterns vis-à-vis, eating, sleeping, study time, recreation and family interaction. The questionnaire survey revealed significant differences between the two groups on many variables. A relatively greater proportion of the afternoon session students did not take breakfast and lunch. There was a highly significant difference between the wakeup time on weekdays and holidays. Excluding test days, a mean of 15.62 hours per week of outside class study time was estimated. Recreational activities were mainly sedentary in nature. Students spent 3.84 hours (mean) per day for sedentary recreational activities.

Keywords: Academic performance, Eating pattern, Sleep pattern, Study time, Recreation,

ISSN 2014-3575
DOI: 10.4471/rise.2012.03

Exclusive Morning and Afternoon sessions for academic programs are common features in universities all over the world with no exception in the Middle East. Multiple sessions provide additional educational opportunities to many school leavers as well as the employed who wish to pursue higher education goals alongside their careers. They facilitate utilization of existing facilities to their optimum potential. Nevertheless, time differences between the sessions they attend can place the respective students at an advantage or disadvantage in coping with the demands of their daily life, which may in turn influence their academic performance.

College of Health Sciences (CHS) established in 1976 is a pioneering institution for healthcare training in the Kingdom of Bahrain and a reputed center in the region. In 2006 the CHS opened up the additional Afternoon session for academic programs, to cater to the increasing demand for graduate nurses and other Allied Health personnel. The work hours, for the Morning session is between 8 a.m. and 2 p.m., and the Afternoon session is between 2 p.m. and 8 p.m. Since the inception of the Afternoon session at the CHS, there have been concerns among members of the faculty regarding the differences in academic performance between the students of the two sessions although the entry criteria are similar for both the sessions. It is assumed that time differences between the two college sessions present challenges and/or advantages to students of either session. The present study was undertaken to examine the differences in patterns of eating, sleep, personal study time, recreation, and family interaction and their influence on the academic performance as reflected in the cumulative grade point average (CGPA) of students of the Morning and the Afternoon sessions.

Previous studies have identified some of the behaviors that have a bearing on college students' academic performance which are briefed below.

Sleep:

Optimal sleep is an essential component of healthy lifestyle. In general, college students do not get the required 9 hours of sleep for optimal

alertness (Carskadon, Vieira, & Acebo, 1993; Mercer, Merritt, & Cowell, 1998) and tend to suffer from sleep deprivations (Wolfson & Carskadon, 1998). Lack of sleep in college students has been identified as one of the academic situational constraints that diminish students' performance (Hatcher & Prus 1991; Gupta et al., 2007) and cause anxiety and stress in students (Kelly, Kelly, & Clanton, 2001).

Furthermore, research has found that students who stay up late tend to have lower academic performance, poor quality of sleep and maladjustment to college life (Kim, 2007). Additionally, lower GPA has been associated with variables such as later weekday wake-up and later weekend wake-up times (Trockel , Barnes, & Egget, 2000; Wolfson & Carskadon, 1998). Students who regularly sleep significantly later on the weekend than they do during the week, tend to mal-adjust to the change in sleep pattern and develop psychomotor slowing and concentration problems, increased irritability and depression (Taub,1978).

However, Carskadon et al., (1993) concluded that in general, adolescents tend to become more evening orientated and are inclined to sleep later and wake up later due to a biological basis as measured from their circadian phase and melatonin secretion (Carskadon et al., 1993). Adolescents during puberty seem to find it difficult to sleep early as they are more alert during the evening time (Karacan, Anch, Thornby, Okawa, & Williams, 1975) this however, causes lack of sleep due to the early start of school (Hansen, Janssen , Schiff , Zee ,Dubocovich, 2005; Palazzolo, Piala, Camoin, & Rey, 2000).

Eating pattern, Physical Activity:

The transition to college life has an adverse effect on dietary habits (Grace, 1997). This has been found to contribute to weight problems during the first year of college life (Anderson, Shapiro, & Lundgren, 2003) and continue into late adulthood (Racette, Deusinger, Strube, Highstein, & Deusinger, 2005). Health problems in late adulthood such as osteoporosis, diabetes, hyperlipidemia have all been linked to poor eating habits during adolescence (Bazzano, 2006; Hallal, Victora, Azevedp, &Wells, 2006). Research has shown that erratic eating patterns during college life are due to change in lifestyle, limited finances and peer pressure (Selkowitz & Ann, 2000). Furthermore, healthy eat-

-ing habits in adolescence not only have positive effects on future health, but also have a positive correlation with the students' grades and academic performance (Trockel, Barnes, & Eggett, 2000).

It was found that students' engagement in physical activities declined drastically with the transition to college life (Garcia, Pender, Antonakos, & Ronic, 1998). The students who engaged in moderate physical activity were found to a have higher grade point average (Coe, Pivarnik, Womack, Reeves, & Malina, 2006). However students who exercised for an average of seven or more hours a week showed signs of addiction towards exercise and had relatively lower grades (Trockel et al., 2000).

Amount of study time:

Higher education experts are of the view that for every hour students spend in class each week, they are expected to be studying for two hours on their own (Babcock & Marks, 2007). This would mean that if students are taking a full load of 15 credit hours, they should be studying for 30 hours outside class. Authorities have commented that this requirement is not being met (McCormick, 2011). The available time-use surveys indicate that over the decades, there has been a declining trend in study time (Babcock & Marks, 2007).

Although research on relationship between study time and student performance has yielded inconclusive results (Rau, & Durand, 2000; Schuman, Walsh, Olson, & Etheridge, 1985), the time use pattern can reflect certain personal attributes of the individual who will soon enter the job market. Self- motivation and abilities to meet deadlines are some of the qualities that employers look for in their prospective employees.

Recreational activities:

Transition to college life has a strong impact on the recreational activities of students (Garcia. et al., 1998). The majority of students in

34 countries were found to engage in sedentary recreational activities using electronic gadgets all of which affected their academic performance (Brodersen, Steptoe, Boniface, & Wardle, 2007; Guthold, Cowan, Autenrieth, Kann, & Riley, 2010).

Family interaction:

Studies have concluded that academic performance of college students improves with more interactions within the family (Coe, et al., 2006; Lee, & Lee, 2007). This stems from the adult attachment theory that a strong bond between grown up children and their parents enables the children to cope better with the transition to college (Cutrona, Colangelo, Assouline, & Russell, 1994).

Method

Participants

The study was carried out among the CHS students belonging to the second and the third year of Nursing and Allied Health Programs attending either the Morning or the Afternoon sessions. The study excluded three groups of students in the CHS: the first year students who were less adapted to the college timings and had not earned their CGPA, the Ministry of Health staff who were on study leave enrolled for the RN-BSN Programs or other post basic programs, since they were used to the shift system in their work pattern, and lastly the students who moved from the Morning to the Afternoon session or the vice-versa during their course of study at the CHS.

Materials

A structured self-administered questionnaire was developed by the study investigators as the data collection instrument for the students of the CHS. Broadly, the questionnaire included personal data, cumulative-grade point- average (CGPA), eating patterns, sleep and study patterns on usual work days, assessment days and holidays, recreation and exercise habits, and amount of time spent with family.

The preference for study in either the Morning or the Afternoon session at the college, with reasons for the same, formed the concluding part of the questionnaire. The questionnaire was pretested on a small sample (n=30) of the students, who were the cohort of the main study, and changes were made to the questionnaire as deemed necessary for the main study. Participation in the study was voluntary with an informed consent obtained from all the participants.

Procedure

The data collection began in November 2010 after one month of 'Ramadan' (the fasting month for the Muslims), to prevent any carry over effect of fasting, thus allowing time for students to resume their normal daily routine. It may be noted that during Ramadan, sleeping and eating timings are almost reversed and different from the usual routine.

The data were collected from students during work hours of the college. Students were informed in advance about the survey and were requested to keep a record of their CGPA and secondary school grades to avoid any recall bias when answering the survey. Students were informed about the purpose of the study and were encouraged to participate. In a given class, all students were asked to answer each question at the same time with a pause between the questions to maintain uniformity of instructions or response to queries on any particular question. This also helped to minimize non-response on questions. The coded data were input on Excel spread sheets and converted to SPSS for analysis.

The Students t-Test was used to compare the means of two groups if the normality condition was satisfied and the Mann-Whitney Test was used for non-normal data. Furthermore, the Kruskal-Wallis Test was used to compare the means of more than two groups and the Pearson Correlation coefficient to identify the relationship between two quantitative variables.

Results

Based on our inclusion criteria, three hundred and twenty students of the Morning and Afternoon sessions of 2010-11registered in the Nursing and Allied Health programs were found eligible. Of them, three hundred and two students completed the questionnaire. On average, students took

15 minutes to answer the questionnaire. Sixty percent of the sample belonged to the morning session and the remaining forty belonged to the afternoon session. The CHS student population being predominantly female, the sample comprised of 87.1% female students and 12.9% male students, with a mean age of 20.3years. Majority (82%) were single and less than one fifth (17.2%) were married. Table.1 gives distribution of the subjects by marital status, gender, session and year of study.

Table.1 Distribution of study sample by session, year of study, marital status and gender:

		Marital Status							
		Single		Married		Others*			
Sessions	Year of study	Male	Female	Male	Female	Male	Female	Total	
morning	2nd yr	0	26	1	3	0	6	36	182(60.26%)
	3rd yr	16	83	4	22	0	21	146	
afternoon	2nd yr	7	42	0	4	0	2	55	120(39.74%)
	3rd yr	10	33	0	18	1	3	65	
Total		33	184	5	47	1	32	302 (100%)	
		217		52		33			

* include the engaged (n=30), separated / divorced. (n= 3)

There was a significant difference between mean CGPA for the morning (3.00) and afternoon session students (2.75) as seen inTable. 2 and correlated to marks obtained in the secondary school board which was marginally higher for the morning students as compared to the afternoon students.

Table 2. Comparison of selected attributes for Morning and Afternoon sessions

	Batch				t-Test
	AM		PM		P-value
Characteristics	Mean	SD	Mean	SD	
Secondary School Board Grade (%)	87.93	6.12	85.83	4.65	0.001
CGPA	3.00	.54	2.75	.55	0.000
Study time on non test working day(hours)	1.96	1.72	1.90	1.85	0.773
Study time on test day(hours)	5.69	2.29	5.24	2.24	0.092
Study time on holiday(hours)	3.44	2.87	2.74	2.58	0.033
Time spent for physical recreational activity in a day(hours)	1.36	.90	1.72	1.60	0.196
Time spent for sedentary recreational activity in a day(hours)	3.96	3.69	3.72	3.22	0.586
Time spent with family on working days (hours)	2.96	2.25	2.59	3.52	0.268
Time spent with family on holidays (hours)	9.56	7.01	12.01	8.58	0.011
Time spent with friends outside college time on working days (hours)	1.37	2.46	1.19	2.27	0.526
Time spent with friends outside college time on holidays (hours)	2.37	3.22	2.43	3.45	0.866
Bedtime on working days	23:28	1.59	1:02	2.00	0.000
Wake up time on holidays	9:39	1.73	11:10	1.84	0.000
Bedtime on holidays	0:55	1.73	2:04	1.89	0.000

Eating pattern and academic performance:

Eating patterns of the Morning and afternoon students regarding regularity with breakfast, lunch and dinner was compared (Table.3).

Table 3. Comparison of eating patterns of Morning and Afternoon session students

Eating patterns		Session				Chi-square test P-Value
		Morning		Afternoon		
		n	%	n	%	
Breakfast	Taken	136	74.7%	51	42.5%	
	Not taken	46	25.3%	69	57.5%	0.000
Lunch	Taken	155	85.2%	74	61.7%	
	Not taken	27	14.8%	46	38.3%	0.000
Dinner	Taken	157	86.3%	110	91.7%	
	Not taken	25	13.7%	10	8.3%	0.151
Breakfast time	04:00-07:59	59	46.1%	7	14.0%	
	08:00-11:59	69	53.9%	42	84.0%	0.000
Lunch time	12:00-15:59	122	83.6%	32	44.4%	
	16:00-19:59	24	16.4%	39	54.2%	0.000
Breakfast type	Home made	66	48.9%	47	92.2%	
	Not home made	69	51.1%	4	7.8%	0.000
Lunch type	Home made	140	92.7%	23	31.5%	
	Not home made	11	7.3%	50	68.5%	0.000
Breakfast with	Family	37	27.6%	26	51.0%	
	Friends	67	50.0%	1	2.0%	
	Alone	30	22.4%	24	47.1%	0.000
	Family	109	71.7%	12	16.2%	
Lunch with	Friends	6	3.9%	50	67.6%	
	Alone	37	24.3%	12	16.2%	0.000
	Family	133	85.8%	70	63.6%	
Dinner with	Friends	9	5.8%	13	11.8%	
	Alone	13	8.4%	27	24.5%	0.000

Breakfast was missed by 38.1% of the students. Among this a higher proportion was the afternoon students (57.5%). An overall 24.2% of the respondents did not eat lunch and this was significantly higher among the afternoon students (38.3%). A relatively smaller proportion (11.6%) of the sample skipped dinner. No significant difference in CGPA was found among students who ate or missed breakfast, lunch or dinner. Differences were also found among the Morning and Afternoon students

with respect to the time of eating and the type of food consumed either homemade or takeout meals. These however were not found to be correlated to CGPA.

Sleep patterns and academic performance:

Marked difference in sleep patterns between the two groups has been revealed in the study (Table.2). Wakeup time and bedtime on work days differed considerably between the Morning and Afternoon students. Similarly there was a highly significant difference in the sleep patterns between the work days and holidays for both the groups. The mean wakeup time for the Morning students on work days and holidays was 5.56 a.m. and 9.39 p.m. respectively. The Afternoon students had a mean wakeup time of 9.09a.m. on work days and 11.10 a.m. on holidays. The Morning students had a mean duration of 6.3 hours of sleep against a mean of 8.07hrs for the afternoon group on work days. On the whole 22.6% of the respondents (40% of Afternoon students and 11% of Morning students) woke up only after 12 noon on holidays. One fifth (18.3%) of the Afternoon students and 7.7 % of the Morning students reported going to bed later than 4a.m. on holidays. An overall 62% of the students slept after midnight on an exam day and a small fraction (3.7%) reported that they did not sleep at all on the night before exams.

The wake up time or bedtime had no effect on the CGPA of students of both the sessions.

Study time and academic performance:

It was found that students spent 15.62 hours (mean) in a week to study. This excluded the test-days. Twenty five percent of the students reported that they didn't study if there was no test scheduled. On assessment days students spent 5.3 hours (mean) to study (Table.2). The more number of hours of study time on holidays and non test working days were found to be correlated ($p< 0.03$) to their higher CGPA for the students of Morning session and not for the Afternoon students.

Recreational activities, Exercise and CGPA:

Recreational activities were mainly sedentary in nature with a mean of 3.84 hrs per day (Table 2). Physical recreational activities were reported by 37.2% of the students. Mean duration of physical recreation was 1.5 hours per day.

One fifth of the respondents were on a daily exercise regimen. However, more than two thirds (69.20%) of the students either did not exercise at all (56.3%), or exercised occasionally (12.9%). The pattern was similar for both the Morning and the Afternoon students.

No significant difference was found between the CGPA and nature of recreational activities students engaged in.

Family interaction:

Family interaction in terms of time spent with family on working days and holidays was looked at. Time spent with the family on working days was similar for students of both groups whereas time spent with the family during holidays was significantly higher for the afternoon groups of students. Sharing meal with family members was considered as an indicator of the degree of family togetherness. It was found that students joined their families for meals in 76.6% for dinner, 53.5% for lunch and 34.1% for breakfast. There were significant differences between morning and afternoon students in the percentages of meals shared. Morning students had lunch and dinner with their family more often than the Afternoon students who were proportionately higher in joining their families for breakfast.

The time spent with their family for the of the Morning students was not correlated to their CGPA, whereas time spent with their family on holidays and their CGPA for the Afternoon students was correlated.

Preference for shift:

Majority of the students expressed preference to study in the Morning session (77.7%) while 22.3% preferred the Afternoon session. The reasons for preferring the Afternoon session included: “More relaxed time to study in the morning” and “Do not have to wake up early”.

Discussion

The primary goal of the study was to examine whether differences exist between behavior patterns of students of the Morning session and the Afternoon session with respect to the selected behavioral variables and if so, further examine their extent of influence on the academic performance. The findings of our study revealed significant differences between the students belonging to the two sessions in relation to their behaviors namely: eating, sleeping and studying.

The trends revealed in the present study are consistent with available reports on students' behavior from Universities elsewhere in the world. Patterns of eating, sleep, recreation and time use match with the observations relating to their contemporaries in the western campuses in that there is a late to bed late to rise norm in general, irregular breakfast and lunch, decline in time spent for studies as well as increased sedentary recreation and reduced physical recreation (Grace,1997; Selkowitz 2000;Trockel, et al.,2000; Brodersen et al., 2007; Guthold et al., 2010). It is apparent that irrespective of regional and cultural differences, a global pattern of behavior is emerging among college students of today. It is a matter of concern however, that these emerging behavioral attributes of the present generation of college students are factors that impede academic performance and the quality of potential workforce of tomorrow in the long term.

In contrast with the earlier studies (Trockel et al 2000), the behavioral patterns were not found to influence the academic performance (CGPA) in the case of the CHS students. It may be noted that majority of the earlier studies related to students from residential campuses where the factors that influenced the behavioral patterns of the freshmen at college included lifestyle changes, work, peer pressure, finances etc. The circumstances of the students in the present study differ considerably from the earlier studies in that they are endogenous groups of day scholars primarily under familial influences. The difference in findings from the earlier studies may also be due to the limitation that our study did not account for the qualitative aspects of behavioral attributes covered in the earlier studies. For example, eating behavior did not take into consideration intake of snacks.

Although our findings do not indicate any particular advantage with respect to their daily chores for either session of students, there are some

arguments in favor of the afternoon college hours for the young adults. People have strong preferences for the times at which they engage in everyday activities (Yoon, , May, & Hasher,1999). These preference patterns are different across the adult lifespan, with younger students preferring afternoon and evening (Hasher, & Goldstein, 2001) due to the diurnal and nocturnal habits of younger students. Young people are more likely to be alert and functioning at near-optimal levels in the evenings (Carskadon & Acebo, 1997; Hansen et al., 2005; Palazzolo et al., 2000).

The academic programs of the Morning session at the CHS are sponsored by the Ministry of Health, and the Afternoon session by the Tamkeen (www.tamkeen.bh).The addition of the Afternoon session extends higher educational opportunities to include a wider section of the Bahraini society. Investment in higher education is invaluable in terms of human capital development in the nation. While it is important to ensure quality of curricular inputs in higher educational programs, much can be achieved to enhance the quality of manpower produced by making subtle behavioral inputs that are inexpensive in nature. The findings of the study reveal certain health- risk behaviors among the students varying in extent between the Morning and Afternoon groups. It is found that there is need to reinforce the importance of regular eating pattern among a sizable proportion of students and encourage them to adopt healthier lifestyles. Students need to be cautioned against the unhealthy and erratic sleeping habits particularly with bedtime and wakeup time on work days and holidays. Also, exercise and physical activity were found to be grossly neglected aspects of health behavior among the study group. It is imperative that as students enrolled in health care training, the CHS students adopt healthy life styles and be role models to other Bahraini youth. The CHS foundation program for the freshmen is possibly an apt avenue wherein simple but beneficial behavioral interventions can be introduced to encourage improved behavioral patterns and thereby enhance academic performance.

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Acknowledgement

We acknowledge the contribution of all those who supported the project in one way or the other from various capacities: the CHS research committee, the CHS administration, the Dean, and the faculty members. Thanks to Ms. Reena S. Joseph for editing the drafts and the CHS student participants for their sincere cooperation.

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