

Addictive Behaviors Amongst University Students: Contributing Factors, Student's Perception and Addiction Rates

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Abstract: Factors contributing to addictive behaviors affecting student health are analyzed in this study. Smoking, alcohol consumption, and the use of illegal drugs are assessed in a sample of 290 university students. General averages indicate that 37.2% of students smoke cigarettes, 49.8% drink alcohol regularly, and 17.9% have tried illegal drugs while 4.8% of them use it regularly. Age, academic achievement, gender, religion, family status and financial status were correlated to these addictive behaviors. Major findings show a clear relationship between smoking and most variables. The main factor involved in drinking was found to be religion, while illegal drug consumption was most clearly correlated to parents' education and monthly income. Students' self perception regarding smoking and tendency to use illegal drug was assessed showing that 11.7% of smokers consider themselves non-smokers while 11.8% considered trying illegal drugs acceptable. Addiction rates after initial consumption are analyzed showing 74.7% for alcohol, 51.7% for smoking cigarettes and 26.9% for drugs. A risk profile for each addiction type is presented.

Key words: Socioeconomic factors, smoking, alcohol, illegal drugs

INTRODUCTION

Addictive behavior affecting human health is on the rise in many advanced communities especially among young adolescents^[1-3]. Several studies have indicated that cigarette smoking, alcohol consumption and illegal drug use are common among university students^[4-9]. More specifically, 60% of individuals within the 21-25 age group have reported alcohol consumption 30 days prior to the study while 28% of the group aged 18-25 reported binge drinking in the US^[10]. Among first year medical students, 49% of men and 43% of women reported alcohol drinking above the low risk level defined as <21 units/week for men and <14 units per week for women, with the unit defined as ½ pint of beer or one glass of wine^[4]. A significant association was found between drinking and the use of illegal drugs with 45% of alcohol drinkers reporting having experimented with cannabis.

Few studies have been done on a wide scale in Lebanon, but the most recent work related to health behavior in university students was conducted in 2001^[11]. The results indicated that 34% of students were habitual smokers, while 7.4% were addicted, smoking more than 10 cigarettes per day. Regarding alcohol use, 47% reported habitual drinking while 11.5% reported binge drinking. As for illegal drug use, 12% reported ever trying illegal drugs. Within all these addictions, males scored significantly higher than females.

While the objective of the previous study was the analysis of the general health risk behaviors including

diet, exercise and violence in relation to gender and age, this current study aims at analyzing the addictive behaviors related to substance abuse in relation to a variety of personal characteristics including age, academic achievement, gender, religion, family status and financial status. In addition, this current study analyses self-perception in regard to addiction and shows significant results in regard to the addiction rate after initial use of each of the studied substances. The objective being to pinpoint those students whose profile makes them more prone to addictive behaviors in order to specifically target them in awareness campaigns.

Participants and Method: Students participating in this research were 291 students spanning all class levels at the Lebanese American University (LAU) who voluntarily and anonymously filled these questionnaires. The questionnaires were completed in batches spanning the 2004-2005 academic year. The questionnaire constituted of a series of objective questions for which students had to tick the answer or range that most appropriately applies to them. The answers varied between true and false, and 4 to 5 point scale for questions referring to level of addiction. Students undertook this exercise seriously and only one student gave an incomplete form, which was eliminated from the study making the total number of actual participants 290. Most profile questions were completely answered except for one student who did not specify a GPA, one student who did not specify parents' education, three students who did not specify their religion and seven students who did not check an

Table 1: Sociodemographic characteristics of the sample

Sociodemographic variable	Total prevalence		Sociodemographic variable	Total prevalence	
	N	%		N	%
Age group			Religion		
18-19	49	16.9	Muslim	220	76.7
20-21	149	51.4	Christian	50	17.4
22-27	92	31.7	Other	17	5.9
Gender			Class		
Male	188	64.8	Freshman	11	3.8
Female	102	35.2	Sophomore	81	27.9
Current Residence			Junior	89	30.7
Dorms	4	1.4	Senior	98	33.8
With parents	217	74.8	Graduate	11	3.8
Alone off campus	41	14.1	GPA		
Off campus with friends	19	6.6	1-1.99	14	4.8
Off campus with family other than parents	9	3.1	2-2.99	184	63.7
Mother's Education			3-4	91	31.5
No formal Education	23	8	Marital Status		
Brevet/BT	47	16.3	Single	283	97.6
Baccalaureate/TS	96	33.2	Married	5	1.7
University Graduate	123	42.6	Divorced	2	0.7
Father's Education			Family Monthly Income		
No formal Education	20	6.9	Less than \$1000	35	12.4
Brevet/BT	29	10	\$1000-2000	87	30.7
Baccalaureate/TS	67	23.2	\$2001-5000	96	33.9
University Graduate	173	59.9	\$5001-10,000	45	15.9
Family Status			More than \$10,000	20	7.1
Parents are together	253	87.2			
Both parents are dead	1	0.3			
Parents are divorced	8	2.8			
Parents are divorced	8	2.8			
mother is dead	20	6.9			
Parents are separated	8	2.8			

Brevet: 9th Grade official degree (Intermediate school completion)
 BT: Baccalaureate Techniques (Technical Certificate)
 TS: Technique Superior (Higher Technical Diploma)
 Baccalaureate: High school degree

income range. The sample was 64.8% males and 35.2% females with an average age of 21.0 (SD=1.64, min=18; max=27). A general profile of the sample is presented in Table 1. Some of the main observations in the students' profile are that 74.8% of students are living with their parents and that 87.2% of the students' parents are together. The father's education is generally higher than that of the mothers with up to 59.9% of fathers holding a university degree. Regarding students' religion, 76.7% were Muslims, 17.4% were Christians and 5.9% have noted "other" for religion. The students are almost evenly distributed among the sophomore, junior and senior classes with a total of only 7.2% being in the freshman or graduate level. The majority of students (63.3%) had a GPA between 2 and 2.99, while the vast majority (97.6%) were single. Family monthly income had a large variation among the ranges indicated.

RESULTS

Smoking: While there are many forms of smoking tobacco, this study focuses on the two most common forms, namely cigarettes and argyle (hubble bubble). Students' attitude towards each is analyzed and the addiction rate is calculated.

Cigarette smoking: Like many other third world countries, Lebanon still lacks the legislative framework that prohibits cigarette advertising. In addition, cigarette sales to minors are still ongoing while some shy attempts by some NGO's have been made to prevent such sales. This general attitude has contributed to a relatively high level of consumption among minors and adults alike. Figure 1 illustrates the drastic differences and clear relations in smoking behavior observed when the personal profile is

changed. It was found that 37.2% of students are habitual smokers with approximately half of them (17.6% of the total population) being average smokers (1 pack per day). Only 4.8% were considered heavy smokers while 14.8% were light smokers. Significant variations were observed in most categories studied. Gender was an important factor with 44.1% of males smoking vs. 24.5% of females. In addition, 14% of the male smokers are considered heavy smokers vs. only 8% of female smokers. As for age, the older students clearly had a higher smoking percentage than younger students: 47.8% for the 22-27 age group, 37.6% for the 20-21 group and 16.3% for the 18-19 group. While religion did not seem to play an important role in addiction rates (30% for Christians and 37.3% for Muslims), students who checked "other" for religion had a 52.9% smoking addiction. This group in particular, has an unusually high addiction rate in all substances studied (smoking, alcohol and drugs). Students whose parents are together are significantly less prone to smoking addiction (35.2%) than students whose parents are not together (51.3%). In addition, the GPA also shows a very clear relationship between decreasing GPA and rising level of addiction. The habitual smokers drop from 64.3% to 39.7% to 27.5% as the GPA rises from the 1-2 to 2-3 to 3-4. In line with the increased consumption with age, habitual smokers also increase with class: around 46% of senior and graduate students are habitual smokers, 35% of juniors, dropping down to 27% for both freshmen and sophomores.

The effect of current residence with the student's parents or away from them was gauged and 32.7% of students who are living with their parents smoke vs. 50.5% of those who are not. Surprisingly, as the level of parents' education rises, the addiction level rises going from around 23% for students with either parent having no formal education all the way up to 43% for students whose parents are university graduates. Finally, higher family income also increases the addiction level with students whose household income is less than \$1000 having 28.6% addiction vs. 45% addiction for students whose income is more than \$10,000 with a steady rise among income fractions

Argyle smoking: A common form of tobacco smoking in Lebanon is the argyle or the hubble bubble. This form of tobacco smoking used to be more common among older people; however, over the past few years, it has become increasingly popular among young people and university students. Usually consumed in social gatherings, it is rarely perceived as a health hazard. This has contributed to the widespread use among youngsters in Lebanon. Table 2 shows that 22.8% of students habitually use argyle while 30% use it occasionally. In this context, occasionally is defined as once per month while habitually is defined as any consumption above that. Amazingly, this table

indicates that regardless of social and economic status of the students, habitual consumption constitutes between 20% and 35% of almost each category with the exception of those having "other" for religion. There is no clear increasing or decreasing patterns for habitual users in any category except for the negative relationship with GPA.

Smoking perception: Of special interest is the students' perception of their smoking habits. Table 3 presents the results obtained regarding students self-perception as a smoker or non-smoker. On average, 11.7% of habitual cigarette smokers (at least one pack per week) consider themselves non-smokers vs. 42.6% of argyle smokers (at least once per month). Of these argyle smokers, 50% did not smoke cigarettes, which means that 82.4% of argyle smokers who do not smoke cigarettes do not consider themselves smokers. This is quite in line with the fact that argyle users are not considered "smokers" within the common population. Habitually cigarette-smoking males are more prone to perceive themselves as non-smokers than females (13.9% vs. 8.5% for cigarette smokers), whereas the reverse is true when it comes to smoking argyle. Older students are more inclined not to consider themselves as smokers with 14.8% of the 22-27 age group thinking this way vs. 2.6% for the 18-19 age group. Muslim smokers are slightly more prone to consider themselves non-smokers than Christians. Of most concern are students with the lowest GPA who are clearly unaware of their smoking problem with 57.1% of them believing they are no smokers. No clear pattern is observed with the monthly income.

As far as smoking intensity is concerned, two smokers (3.9%) of those who finish one pack per day, 6 students (30%) of those who smoke 2-6 packs a week and 15 students (65.2%) of those who smoke one pack per week consider themselves non smokers. While these numbers may be reasonable, of the argyle smokers who consume more than one argyle per week (all the way up to more than one a day), 41-45% consider themselves non-smokers. This percentage rises up to around 58% for students consuming one argyle per month up to one per week.

Alcohol consumption: Alcohol consumption within the context of the Middle Eastern culture needs to be addressed with special emphasis on religion. Since Muslims are forbidden by their religion from drinking alcohol, significantly less consumption may be expected. This is clearly illustrated in Table 4 by the fact that 39.2% of Muslims drink habitually while 82% of Christians do. This is also associated with less exposure since only 57% of Muslims have ever tried alcohol vs. 92% of Christians. Keeping this factor in mind and that 76.7% of the students are Muslims, 65.9% of students have tried drinking alcohol at least once while 49.8% drink it habitually.

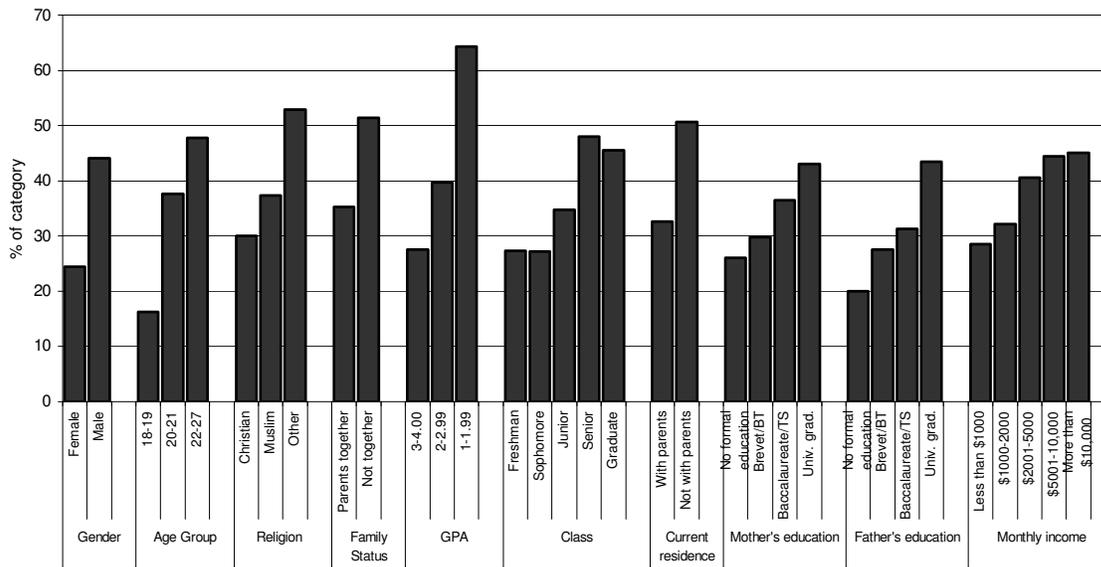


Fig. 1: Habitual smokers' percentages as a function of various variables

Table 2: Argyle consumption

Category	Habitually N (%)	Occasionally N (%)
Total	66 (22.8)	87 (30)
Gender	Male	58 (30.9)
	Female	29 (28.4)
Age Group	18-19	12 (24.5)
	20-21	36 (24.2)
	22-27	19 (20.7)
Religion	Muslim	47 (21.4)
	Christian	11 (22)
	Other	7 (41.2)
Family Status	Parents are together	60 (23.7)
	Parents are not together	6 (16.2)
GPA	1-1.99	4 (28.6)
	2-2.99	44 (23.9)
	3-4	18 (19.8)
Class	Freshman	3 (27.3)
	Sophomore	17 (21)
	Junior	21 (23.6)
	Senior	25 (25.5)
	Graduate	0 (0)
Current residence	With parents	52 (24)
	Not with parents	14 (19.2)
Mother's education	No formal education	7 (30.4)
	Brevet/BT	10 (21.3)
	Baccalaureate/TS	22 (22.9)
	University graduate	27 (22)
Father's education	No formal education	4 (20)
	Brevet/BT	8 (27.6)
	Baccalaureate/TS	13 (19.4)
	University graduate	41 (23.7)
Monthly income	Less than \$1000	7 (20)
	\$1000-2000	20 (23)
	\$2001-5000	21 (21.9)
	\$5001-10,000	13 (28.9)
	More than \$10,000	5 (25)

Students consuming five or more alcoholic drinks in the past month constituted 19.3%. Gender played an important role with males drinking significantly more than females: 56.1% vs. 38% for habitual

drinking respectively and 25% vs. 8.8% for binge drinking.

Older students are slightly more inclined to be habitual drinkers than younger ones (54% to 49% to

43% for the decreasing age groups). Students whose parents are not together are more prone to be habitual drinkers, 62.6% vs. 48% for those whose parents are together but both seem to have equal tendencies for binge drinking. In addition, students who are not living with their parents are more inclined to be habitual drinkers (55.6%) than students living with their parents (47.9%) and to have tried drinking at least once. Students in higher classes have a higher potential for trying alcohol and habitual drinking but not binge drinking. No clear trends are observed regarding GPA, father's education or household income. However, as mother's education increases, students report higher potential to try alcohols, higher addiction rates and increased potential for binge drinking.

Illegal drugs: The issue of illegal drug use is assessed from several points. Initially students having ever tried these drugs are assessed vs. those who habitually use it. Then, illegal drug use in the past 30 days is analyzed and finally, students' perception of drug use and accordingly their tendency to use it is measured.

Illegal drug use: Although not as common as cigarette and alcohol use, 17.9% of students reported using illegal drugs at least once, with 4.8% still using it habitually and 6.6% reporting using it in the past month (Table 5). Once again, males scored higher in all aspects: trying, habitual use, and use in the past month. Older students have tried illegal drugs at an alarming rate (27.2%), far more than the younger group (8.2%). Christians were more inclined to try (15.4% vs. 8.3%) and use (4.7% vs. 2%) drugs than Muslims. Students whose parents are not together are more prone to have tried drugs (27%), use it habitually (5.6%) and have used it in the past month (16.1%) than students whose parents are not together (16.6%, 4.7% and 5.1% respectively). GPA once more provided a good indication regarding the tendency to try and the habitual use of illegal drugs with lower GPA students having the highest trying (28.6%) and using (7.1%) rates. Seniors have higher scores in all three categories than the sophomore and junior classes. Surprisingly, students whose parents have higher levels of education are more prone, almost twice as much, to drug exposure and addiction than others. Finally, monthly income shows a direct relationship with exposure and drug addiction with students whose monthly household income is more than \$10,000 scoring a shocking 45% of them having tried illegal drugs, 15% with habitual use and 20% using it in the past month.

Illegal drug trying perception: In order to assess the general feeling of students and their tendency to try drugs, they were asked whether they consider trying illegal drugs as acceptable. A total of 34 (11.8%) students indicated that they consider it acceptable (Table 6). This was almost equally distributed between

males (12.3%) and females (11%); however, as the age group increased, the approval rating went up from 6.1% for the 18-19 age group, to 10.9% for the 20-21 group, to 16.5% for the 22-27 group. Christians were almost three times more accepting of the idea of drug use than Muslims. Students whose parents are together are less approving (11.2%) of drug trying than those whose parents are not (16.2%). Advanced classes showed a higher approval rating than freshman and sophomore classes. No clear patterns were observed regarding GPA, residence or parents' education. A direct relationship between approval rating and household income is observed reaching up to 25% for those in households making more than \$10,000.

Of the students who regard trying illegal drug use as acceptable, 23 (67.6%) have tried using drugs before and 10 (29.4%) still use it. This leaves 11 students (32.4%) who are tempted to try drugs.

Table 3: Habitual smokers who do not consider themselves smokers

Category		Cigarette Smokers N (%)	Argyle smokers N (%)
Total		23 (11.7)	84 (42.6)
Gender	Male	16 (13.9)	47 (40.9)
	Female	7 (8.5)	37 (45.1)
Age Group	18-19	1 (2.6)	15 (39.5)
	20-21	14 (13.3)	50 (47.6)
	22-27	8 (14.8)	19 (35.2)
Religion	Muslim	18 (12)	64 (42.7)
	Christian	3 (7.9)	15 (39.5)
	Other	2 (25)	4 (50)
GPA	1-1.99	2 (28.6)	4 (57.1)
	2-2.99	12 (10.4)	49 (42.6)
	3-4	9 (12)	31 (41.3)
Monthly income	Less than \$1000	4 (14.8)	10 (37)
	\$1000-2000	7 (10.6)	32 (48.5)
	\$2001-5000	9 (14.1)	28 (43.8)
	\$5001-10,000	2 (8.3)	8 (33.3)
	More than \$10,000	1 (9.1)	5 (45.5)

Addiction rates: With the available data, the addiction rate after first use was calculated and is shown in Table 7. The highest addiction rate was obtained for alcohol consumption with 74.7%, followed by cigarette consumption with 51.7% and drug use with 26.9%. It is to be kept in mind that habitual use of alcohol may or may not be considered an addiction depending on the amount of alcohol used. In our study, and in reference to local culture, we considered any consumption of alcohol as habitual (although not necessarily addictive). Males apparently become addicted more easily than females to cigarettes and alcohols while females are more prone to get addicted to drugs after first use.

While alcohol and drug use rates of addiction are not affected by age, cigarette addiction shows a clear relationship presumably as a result of continuous peer pressure. Muslims and Christians are equally susceptible to drug addiction but Muslims get addicted more frequently than Christians to cigarettes while the reverse is true for alcohol (keeping in mind the religion's effect discussed earlier). Students whose parents are not together get hooked more easily to

Table 4: Alcohol consumption patterns

Category		At least once N (%)	Habitually N (%)	Binge drinking N (%)
Total		191 (65.9)	143 (49.8)	56 (19.3)
Gender	Male	133 (70.7)	105 (56.1)	47 (25)
	Female	58 (56.9)	38 (38)	9 (8.8)
Age Group	18-19	29 (59.2)	21 (42.9)	7 (14.3)
	20-21	94 (63.1)	72 (49.3)	28 (18.8)
	22-27	68 (73.9)	50 (54.3)	21 (22.8)
Religion	Muslim	126 (57.3)	85 (39.2)	31 (14.1)
	Christian	46 (92)	41 (82)	16 (32)
	Other	16 (94.1)	15 (88.2)	8 (47.1)
Family Status	Parents are together	162 (64)	120 (48)	49 (19.4)
	Parents are not together	29 (78.4)	23 (62.2)	7 (18.9)
GPA	1-1.99	8 (57.1)	6 (42.9)	2 (14.3)
	2-2.99	130 (70.7)	94 (51.9)	42 (22.8)
	3-4	52 (57.1)	42 (46.2)	12 (13.2)
Class	Freshman	6 (54.5)	6 (54.5)	2 (18.2)
	Sophomore	49 (60.5)	37 (46.8)	15 (18.5)
	Junior	56 (62.9)	36 (40.4)	17 (19.1)
	Senior	72 (73.5)	57 (58.8)	20 (20.4)
	Graduate	8 (72.7)	7 (63.6)	2 (18.2)
Current residence	With parents	141 (65)	103 (47.9)	40 (18.4)
	Not with parents	50 (68.5)	40 (55.6)	16 (21.9)
Mother's education	No formal education	12 (52.2)	8 (34.8)	1 (4.3)
	Brevet/BT	28 (59.6)	22 (47.8)	8 (17)
	Baccalaureate/TS	59 (61.5)	42 (44.2)	17 (17.7)
	University graduate	92 (74.8)	71 (58.2)	30 (24.4)
Father's education	No formal education	11 (55)	9 (45)	3 (15)
	Brevet/BT	19 (65.5)	11 (37.9)	5 (17.2)
	Baccalaureate/TS	42 (62.7)	33 (50)	13 (19.4)
	University graduate	119 (68.8)	90 (52.6)	35 (20.2)
Monthly income	Less than \$1000	25 (71.4)	20 (58.8)	7 (20)
	\$1000-2000	54 (62.1)	37 (43)	17 (19.5)
	\$2001-5000	61 (63.5)	44 (46.3)	14 (14.6)
	\$5001-10,000	34 (74.6)	28 (62.2)	12 (26.7)
	More than \$10,000	14 (70)	11 (55)	5 (25)

Table 5: Illegal drug use

Category		At least once N(%)	Habitually N(%)	In the past month N(%)
Total		52 (17.9)	14 (4.8)	19 (6.6)
Gender	Male	41 (21.8)	10 (5.3)	14 (7.4)
	Female	11 (10.8)	4 (3.9)	5 (4.9)
Age Group	18-19	4 (8.2)	1 (2)	1 (2)
	20-21	23 (15.4)	7 (4.7)	11 (7.4)
	22-27	25 (27.2)	6 (6.5)	7 (7.6)
Religion	Muslim	35 (15.9)	9 (4.1)	13 (5.9)
	Christian	12 (24)	3 (6)	4 (8)
	Other	5 (29.4)	2 (11.8)	2 (11.8)
Family Status	Parents are together	42 (16.6)	12 (4.7)	13 (5.1)
	Parents are not together	10 (27)	2 (5.6)	6 (16.2)
GPA	1-1.99	4 (28.6)	1 (7.1)	1 (7.1)
	2-2.99	35 (19)	10 (5.4)	12 (6.5)
	3-4	13 (14.3)	3 (3.3)	6 (6.6)
Class	Freshman	2 (18.2)	0 (0)	0 (0)
	Sophomore	8 (9.9)	3 (3.7)	3 (3.7)
	Junior	15 (16.9)	3 (3.4)	7 (7.9)
	Senior	26 (26.5)	8 (8.2)	9 (9.2)
	Graduate	1 (9.1)	0 (0)	0 (0)
Current residence	With parents	38 (17.5)	13 (6)	15 (6.9)
	Not with parents	14 (19.2)	1 (1.4)	4(5.5)
Mother's education	No formal education	3 (13)	0 (0)	2 (8.7)
	Brevet/BT	9 (19.1)	0 (0)	1 (2.1)
	Baccalaureate/TS	14 (14.6)	4 (4.2)	6 (6.3)
	University graduate	26 (21.1)	10 (8.1)	10 (8.1)
Father's education	No formal education	2 (10)	1 (5)	2 (10)
	Brevet/BT	4 (13.8)	0 (0)	0 (0)
	Baccalaureate/TS	8 (11.9)	0 (0)	4 (6)
	University graduate	38 (22)	13 (7.6)	13 (7.5)
Monthly income	Less than \$1000	3 (8.6)	0 (0)	0 (0)
	\$1000-2000	14 (16.1)	4 (4.7)	5 (5.7)
	\$2001-5000	16 (16.7)	4 (4.2)	6 (6.3)
	\$5001-10,000	9 (20)	3 (6.7)	4 (8.9)
	More than \$10,000	9 (45)	3 (15)	4 (20)

Table 6: Students regarding trying illegal drugs as acceptable

Category		N (%)
Total		34 (11.8)
Gender	Male	23 (12.3)
	Female	11 (11)
Age Group	18-19	3 (6.1)
	20-21	16 (10.9)
	22-27	15 (16.5)
		19 (8.7)
Religion	Muslim	12 (24.5)
	Christian	3 (18.8)
	Other	28 (11.2)
Family Status	Parents are together	6 (16.2)
	Parents are not together	1 (7.1)
GPA	1-1.99	22 (12.1)
	2-2.99	11 (12.2)
	3-4	0 (0)
Class	freshman	3 (3.7)
	Sophomore	13 (14.8)
	Junior	15 (15.6)
	Senior	3 (27.3)
	Graduate	28 (13)
Current residence	With parents	4 (10)
	Not with parents	2 (8.7)
Mother's education	No formal education	5 (11.1)
	Brevet/BT	8 (8.3)
	Baccalaureate/TS	19 (15.6)
	University graduate	3 (15)
Father's education	No formal education	4 (13.8)
	Brevet/BT	4 (6.1)
	Baccalaureate/TS	23 (13.5)
	University graduate	1 (2.9)
Monthly income	Less than \$1000	10 (11.6)
	\$1000-2000	9 (9.5)
	\$2001-5000	8 (18.2)
	\$5001-10,000	5 (25)
	More than \$10,000	

alcohol and cigarettes but not to drugs. Lower GPA, increasing parents' education and higher classes (senior vs. sophomore) are clearly correlated to higher cigarette addiction rates, but not to alcohol and drug use. Although students from higher income families have a high addiction rate, no clear relationship can be observed across.

Correlations among addictions: In an attempt to further understand the interrelationship between various addiction types, a comparison was made between smoking, alcohol and drug addicts. The results showed that 68.5% of smokers drink alcohol while 10.3% of them use illegal drugs. This compares well with the results obtained for alcohol consumers where 51.7% of habitual alcohol consumers smoke and 9.2% use drugs.

The most significant result was found when 78.6% of drug users were found to smoke while 92.9% of them drink alcohol showing a real self-destructive pattern.

DISCUSSION

In comparison with the results obtained at the American University of Beirut (AUB)^[11] a slightly higher percentage of students have tried cigarettes (72.1% vs 65.3% in the previous study) and are habitual users (37.2% vs 34.1% in the previous study) with similar male to female rates of consumption as that previously observed. Males are also more addicted to cigarettes and consume it more heavily than females.

As for argyle, 52.8% have reported using argyle regularly in our study vs. 30% ever trying it in the previous study, which presents a real cause for concern, as it seems that its use is spreading further. Self-perception data also is a cause for concern as some students are in denial regarding their cigarette or argyle addiction. More work needs to be done to inform students and the public at large that argyle use is simply another form of smoking.

As for alcohol consumption, our results compare well with the previous study with around 66% of students trying alcohol at least once. Similar percentage of males trying alcohol is reported (71%) while a slightly lower female percentage is shown in our sample (56.9% vs. 61.4% for AUB). As for habitual drinking, the results are similar for males and females in both samples. Regarding binge drinking, a higher percentage of students at LAU have been binge drinking (19.3%) than the AUB sample (11.5%). Both male and females at LAU have been binge drinking more than AUB students. However, these numbers are below those reported in the US where 60% have reported drinking in the past month and 28% reporting binge drinking^[10]. Nevertheless, if one was to compare the Christian population in the sample, 82% of students reported habitual drinking and 32% reported binge drinking. This is a serious cause for concern and special emphasis should be given in raising awareness in this group.

As for illegal drug use, a higher percentage of students at LAU (17.9%) have tried illegal drugs vs. AUB (12.0%) at least once. Both males and females at LAU have tried it more than AUB students. However 11.8% of LAU students consider trying illegal drugs as acceptable vs. 17.1% at AUB, which is a good indication that students are becoming more aware of the dangers of these addictive drugs. Again these numbers are far below those reported in the UK for medical students with around 50% for "ever trying drugs" and around 20% current users.

The addiction rates after first use reported present some new insight into the importance of "not trying" especially in the case of alcohol. Illegal drugs have the lowest addiction rate presumably due to the cultural pressures that frown upon such an addiction (unlike smoking and drinking). The results regarding correlations between addictions have clearly shown that drug addicts are most heavily engaged in smoking and drinking also.

One of the limitations of this work that need to be considered is that this work was done in one of the more expensive universities in Lebanon. The results do not necessarily apply to the general university student population in Lebanon. However, the personal profiles obtained, especially, household income and parents' education and their relevance to addiction rates could very well be applicable across. In addition, the comparisons regarding differences in alcohol consumption between religions should also hold true.

Table 7: Percentage of students who develop habitual use after first trial

Category		Alcohol %	Cigarette %	Illegal Drugs %
Total		74.7	51.7	26.9
<i>Gender</i>	Male	79	79	24.4
	Female	65.5	65.5	36.4
<i>Age Group</i>	18-19	72.4	33.4	25
	20-21	76.6	50.9	30.4
	22-27	73.5	58.7	24
<i>Religion</i>	Muslim	67.5	52.9	25.7
	Christian	89.2	40.5	25
	Other	93.8	64.3	40
<i>Family Status</i>	Parents are together	74.1	49.5	28.6
	Parents are not together	79.3	65.5	20
<i>GPA</i>	1-1.99	75	75	25
	2-2.99	72.3	52.5	28.6
	3-4	80.7	43.9	23.1
<i>Class</i>	Freshman	100	33.4	0
	Sophomore	75.5	45.8	37.5
	Junior	64.3	47	20
	Senior	79.2	60.3	30.7
	Graduate	87.5	62.5	0
<i>Current residence</i>	With parents	73	47.3	34.2
	Not with parents	80	62.7	7.2
<i>Mother's education</i>	No formal education	66.7	42.9	0
	Brevet/BT	78.6	38.9	0
	Baccalaureate/TS	71.2	52.2	28.6
	University graduate	77.2	58.3	38.5
<i>Father's education</i>	No formal education	81.8	30.8	50
	Brevet/BT	57.9	38.1	0
	Baccalaureate/TS	78.6	44.7	0
	University graduate	75.6	59.1	34.2
<i>Monthly income</i>	Less than \$1000	80	47.6	0
	\$1000-2000	68.5	44.5	28.6
	\$2001-5000	72.2	58.3	25
	\$5001-10,000	82.4	60.6	33.4
	More than \$10,000	78.6	45	33.4

CONCLUSION

Based on the data presented in this study, the target group for addiction awareness is identified for each type of addiction. For smoking, the group with the highest risk constitutes of older Muslim males with senior or graduate standing whose parents are not together and whose GPA is low; parents are typically well educated and the household income is high. Students in this group generally are not living with their parents. A low GPA seems to be the most important factor. Unlike cigarette smoking, consumption of tobacco through argyle transcends all socioeconomic factors to affect all students almost equally.

For alcohol addiction, the group at highest risk is represented by older Christian males whose parents are not together and whose mother is well educated. Religion is the most important factor. For drug addiction, the highest risk group is represented by older Christian males in the senior classes whose parents are not together and whose GPA is low. This group's parents are typically well educated and have a high household income. The most important factor is a high household income.

Drug addiction is most important as drug addicts tend to smoke and are habitual drinkers. It is this group

that needs to be targeted most for addiction awareness. Levels of addiction after first use were presented and the highest addiction rate was found to be for drinking followed by smoking then illegal drugs. With these results at hand, awareness campaigns can be targeted to these specific groups in order to get the best results.

REFERENCES

1. Topolski, T., D. Patrick, T. Edwards, C. Huebner, F. Connel and K. Kiomi Mount, 2001. Quality of life and health-risk behaviors among adolescents. *J. Adolescent Health, 29: 426-435.*
2. Anteghini, M., H. Fonseca, M. Ireland and R. Blum, 2001. Health risk behaviors and associated risk and protective factors among Brazilian adolescents in Santos, Brazil. *J. Adolescent Health, 28: 295-302.*
3. Miller, P. and M. Plant, 1996. Drinking, smoking and illicit drug use among 15 and 16 year olds in the United Kingdom. *British Med. J., 313: 394-397.*
4. Newberry-Birch, D., M. White and F. Kamali, 2000. Factors influencing alcohol and illicit drug use amongst medical students. *Drug and Alcohol Dependence, 59: 125-130.*

5. Simmons, J., M. Christopher and A. McLaury, 2004. Personal strivings, binge drinking, and alcohol-related problems. *Addictive Behaviors*, 29: 773-779.
6. Webb, E., C.H. Ashtone, P. Kelly and F. Kamali, 1996. Alcohol and drug use in UK university students. *Lancet*, 348: 922-925.
7. Webb, E., C.H. Ashtone, P. Kelly and F. Kamali, 1997. Patterns of alcohol consumption, smoking and illicit drug use in UK university students: Interfaculty comparisons. *Drug and Alcohol Dependence*, 47: 145-153.
8. Wechsler, H., G. Dowdall, A. Davenport and E. Rimm, 1995. A gender-specific measure of binge drinking among college students. *Am. J. Public Health*, 85: 982-985.
9. White, H. and E. Labouvie, 1989. Towards the assessment of adolescent problem drinking. *J. Studies on Alcohol*, 50: 30-37.
10. SAMHSA, Substance Abuse and Mental Health Services Administration (2000). Summary of findings from the 1999 National Household Survey on Drug Abuse (DHHS Publication No. SMA 00-3466). Washington, DC: US Government Printing Office.
11. Shediak-Rizkallah, M., R. Afifi-Soweid, T. Farhat and J. Yeretian, 2001. Adolescent Health Related Behaviors in postwar Lebanon: Findings among students of the American University of Beirut. *International Quarterly of Community Health Education*, 20: 115-131.