The Relation between Tobacco Smoking and Drug Use in Second-Year Medical Students of Maastricht University

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Abstract: **Smoking is accounted as the third most widely used psychoactive substance. It is associated with mental disorders and many log-term diseases. Drugs are found to be associated with short-term health complications. We wanted to investigate the correlation between tobacco and substance use because of their high risks in mortalities and morbidities.**

Methods: SHABS survey has been conducted amongst 580 second-year medical students in Maastricht University. In this research, tobacco smokers have been divided into three groups according to the amount of the cigarettes smoked per day. The three groups were correlated with drug use by the use of Chi-square computed throup SPSS.

Results: A total of 580 students participated in the survey. However, the proportion of the current smoker was 7.9% and that of illicit drug users was merely 5.5%. Of those who is currently using substances, 6 participants (~42.9%) who smoked less than one cigarette/day, 7 participants (50%) who had less than half pack a day and only 1 participant (~7.1%) who smoke more than half pack.

Conclusion: There is no significant correlation between smoking and drug use among second-year medical students of the Maastricht University.

Keywords: **SPSS, tobacco smoking and drug use, SHABS survey.**

1. INTRODUCTION

By 1990, tobacco use is accounted for more than 513,000 deaths throughout Europe, and approximately 25,000 in the Netherlands (1). Tobacco is ranked as the third most globally used psychoactive substances in the general population after alcohol and caffeine. Clinically it is found that use is strongly correlated with other substance use. (2)(3)(4). Smoking is more common amongst patients using greater amount of alcohol and other drugs (5) and amongst those with more problematic use of alcohol and other drugs. (6) Clinical studies have shown high rates of tobacco use among people with depression (7), anxiety disorder and psychotic illnesses (8). A US study of young adults found that nicotine dependence strongly predicted dependence upon alcohol, cannabis, and other drugs (9). Furthermore, cigarette smoking is associated with a number of serious long-term health consequences, including cancer, heart disease and stroke according to Public Health Service (10).

A Dutch study about rate of smokers in the Netherlands had revealed that the rate of smoking, between 1970 and 1995, significantly decreased, due to the increase in cigarette prices by the Dutch government and the extensive health education (1). Media, however, negative peer/relative influence, depression and anxiety play a role in negative behavior such as consuming alcohol, tobacco, and illicit drugs.

On the other hand, equally risky, drugs have more serious health consequences in the short-term period. Thus, acute overdoes, for example, of cocaine can results in seizures, cardiac arrhythmia and respiratory arrest. The use of cocaine continue to increase, according to a 2006 survey, approximately 35.3 million Americans aged 12 or older have tried cocaine in lifetime, with 6.1 million having used it, in the past year (11).

In this study, we think if there is a relation between tobacco smoking and drug use. According to Louisa Degenhardt and Wayne Hall research about tobacco and other substance (12) , there is relation between tobacco and drug usage, and we suspect the same result in our study. We wanted to investigate the correlation between tobacco and substance use because of their high risks in mortalities and morbidities. Our research focuses more on cigarette smoking and how does that correlates with drugs use and is there a real correlation between the two?

2. METHODS

A cross-sectional cohort study has been conducted by the use of the Student Health Behavior and Attitude Survey (SHABS). By 2011, an anonymous questionnaire was distributed among 580-second year medical students in Maastricht University in the Netherlands. This questionnaire includes many subjects such as questions about tobacco smokers, drug substances, alcohol drinking, dietary restraint and weight, other aspects of risk behavior, sexual behavior.

This research, we assessed tobacco smokers and its influence on drug use by using the following two question: *"R6: How many cigarettes/roll-ups have you smoked on average in the past four weeks?"* and *"D4: How often in your life have you used ecstasy, speed, or cocaine?"*

The first question has been classified, according to Bachman and his colleagues and his definition to tobacco smokers, into three categories: 1) Less than 1 cigarette per day, 2) less than half pack per day, and 3) half pack or more per day (*). Whereas the second question was simply answered by 1) No, never and 2) Yes.

3. STATISTICAL ANALYSIS

The outcome of the questionnaire was analyzed by SPSS program by applying the Chi-square test as this test compares the differences between the observed and expected values. A significant level of 0.05 was chosen. The null hypothesis was: there is no correlation between the two variables.

4. RESULTS

Of all students (n=580), the number of never smoked students was 460 (79.3%). On the other hand, there are only 46 participants (7.9%) who are currently smokers and 73 students (12.6%) were former smokers, *see Figure 3.* Regarding to substance use, we have found only 32 out of 580 students (~5.5%) who already used drugs, *see Figure 2.*

As clearly seen in *Table 1*, We have found that of all the thirty-two of the participants who have not used any illicit drugs; there were 14 students (70%) who smoke less than one cigarette a day, 12 students (63.3%) who smoke less than half pack of cigarette and 6 students (85.7%) who smoke more than half pack. On the other hand, there were 6 participants (42.9%) who smoked less than one cigarette/day, 7 participants (50%) who had less than half pack a day and only 1 participant (7.1%) who smoke more than half pack. All of those groups have used drug once or more in their life. (*Figure 1*)

The Chi-square value was 1.232 with a p-value of 0.572 (>α=.05) and the degree of freedom was 2. We have used the Fisher's test because there is one cell, which has less than 5 frequencies. The fisher's p-value, however, was the same as that of the Chi-square p-value. Meaning that the two variables are not statistically significant. Thus, the null hypothesis is to be rejected.

5. DISCUSSION

Breslau et al. and Madden et al. as well as many other researchers have clinically concluded that alcohol, and substance use consequences were significantly more common with those who were current smoker than those with had never smoked. (9)

In this study, however, we found the association between smoking and drug use was statistically insignificant (*p-value*=0.572 >.05) *see Table 2*. Thus, we have concluded that there is no significant relation between the tobacco smoker and substance use. If must be noted that there are covariates that have not been included in this study, including genetic factors, alcohol use, cannabis and other covariates that have significant correlations in increasing the risk of drug use.

Despite that fact that we have found the correlations increases between smoking and drug use amongst students who smoke less than one cigarette a day (30%) and amongst those who smoke less than half pack a day (36.8%). Thus, the high the number of cigarettes the person smoke, the higher the vulnerability to drug use *see Table 1 and 3*. This correlation, however, dramatically dwindles with those who smoke half pack or more (14.3%) and using illicit drugs. This does not meet what other researchers found about the increasing association between smoking and substance use. This is contradictory with what has been found that the current smokers have 5 times more likely to be involved with drug use (11).

Moreover, we have found that students who smoke half pack or less were at risk of 1.2 times higher than their fellow students who only smoke less than a cigarette a day (RR=1.2). Interestingly, the risk amongst those who smoke half pack or more was far more less than their peers who smoke half pack of less daily (RR=0.39).

The first explanation of this unexpected result is the number of participants in this sample was relatively small. One of the reasons that explain the decreased use of drugs with high number of cigarettes is that in this study the participants that were included were all well educated. This is also has been explained by Degenhardt and Hall in their research (11). A US study, Columbia university, had found that early age exposure to nicotine might cause neurological changes which can increase teen vulnerability to other substance like illicit drugs or alcohol. (*) This may give another explanation that we have no information regarding to the first exposure. So we think that if the participants who smoke more than half pack of cigarette have started extensive smoking one month before the survey they would have a very low chance to use illicit drugs.

The student status plays a crucial role in determinig the difference in smoking rates. This explains why there are generally a small number of college students, in this study, who smoke half pack or more compared to the little increased number of thier peers who smoke less than laf pack daily in the past 30 days. (11) Why there is a smaller correlation between smoking ans drug use can be explain by the socialization, the college enviroment. In particular the medical school atmosphere. To study lots of diseases that is correlated with smoking and drug use by these kind of population; this probably discharges students from potentiating drug use or even to increase the comsumption of tobacoo.

We believe that other associated reasons may also contribute and one of which is smoking can emerge in an increasingly 'popular' deviance, most of today's college students do not only use illicit drugs. Nonetheless, there is a great tendency to associate smoking with alcohol use or use of marijuana and might be with other illicit drugs (11).

6. CONCLUSION

We can conclude that there is no significant correlation between smoking and drug use. Owing to the fact that this research has been conducted in well-educated medical students so that there is no correlation between smoking and drug use. So the level of awareness plays a crucial role in this study. Due to the fact that smoking can lead to other issues, for instance, use of alcohol or marijuana, this leads to further study to investigate the association between smoking and other issues.

7. LIMITATIONS

In this study, even though the number of participants was quite good, there was not enough number of participants who have continued smoking daily in their life (n=46) or those who were using drugs at least once (n=32). A sample of population should be at least 50. In this study, the participants were only second-year medical students of which do not represent the general population. The chi-equate test requires a frequency of at least 5 to get proper results.

8. RECOMMENDATION

Further research needed to be conducted in more variable participants but not only of one sector. As it was in our study, we only include the second year medical students. The sample of the study should contain more than 50 respondents on the two research questions, namely smoking and drug use, and we should ask the first exposure of nicotine and when did they started. The researchers should enlarge the participant's spectrum as to include other non-medical participants. Other

covariates, such as genetic, environmental (family and peers influence), anxiety or depression that contribute in such association should be taken into account.

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APPENDICES

Table 1. Shows the correlation between tobacco smoking and drug use amongst second-year medical students.

Have you ever used ecstasy, speed, or cocaine?			How many cigarettes/roll-ups have you smoked on average in the past four weeks? (per day)			
			Less than 1 cigarette	less half pack	more than half pack	Total
	No, never	Count	14 (70%)	12 (63,3%)	6 (85,7%)	32
		Expected Count	13,9	13,2	4,9	32,0
	Yes, at least once	Count	6 (30%)	7 (36,8%)	1 (14,3%)	14
		Expected Count	6,1	5,8	2,1	14,0
Total		Count	20	19	7	46

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Table 2: represents the results of the Chi-square computed by SPSS software.

With drug use	Prevelance	OR
Smoking per day		
Less than 1 cigerette	37%	0.42
Less than half pack	13%	0.56
More than half pack	8%	0.16

Table 3: The prevalence and the odds ratio (OR) of the second-year medical students who are smoking and using illicit drugs daily in 30-day interval.

| Chi-Square Tests						
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	1,232[a]	2	,540	,572		
Likelihood Ratio	1,350	2	,509	,572		
Fisher's Exact Test	1,101			,572		
Linear-by-Linear Association	,462[b]	1	,496	,542	,309	,102
N of Valid Cases	46					
a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 2,13.						
b. The standardized statistic is -,680.						
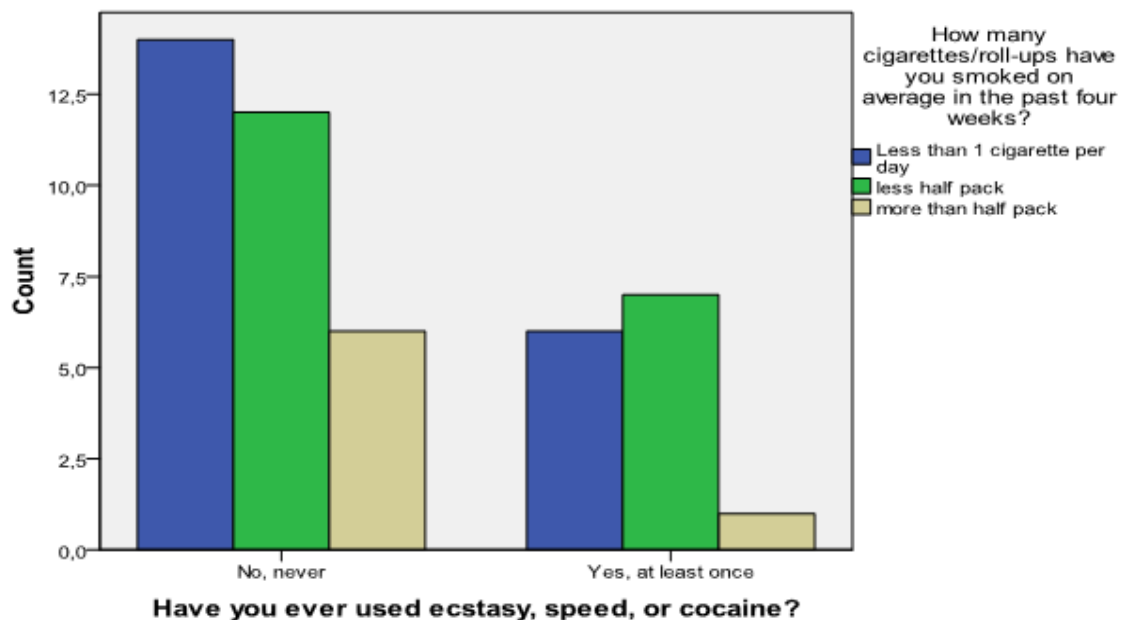
Figure 1: The correlation between tobacco smoking and drug use (e.g. ecstasy, speed, or cocaine) among the second-year medical students in Maastricht University. This shows the number of students who are smoking and those who are at a high risk to develop drug use.
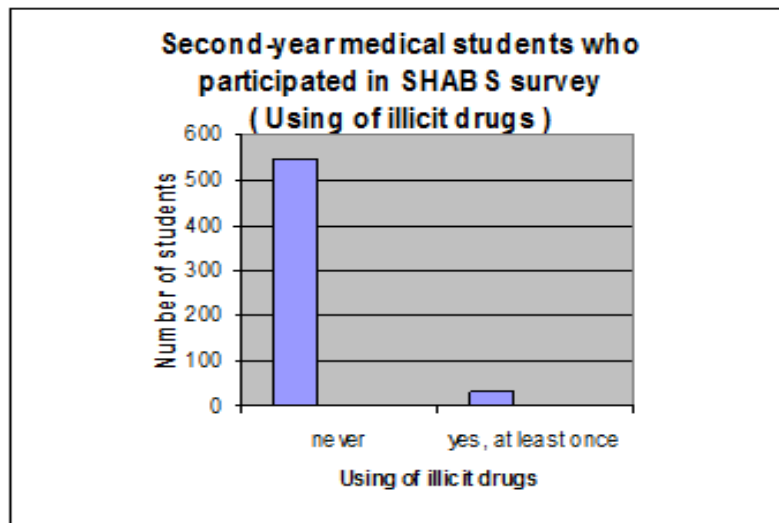
Figure 2: shows the number of second-year medical students who participated in SHABS survey. This graph represents those who is using illicit drugs (e.g. ecstacy, speed and cocaine).
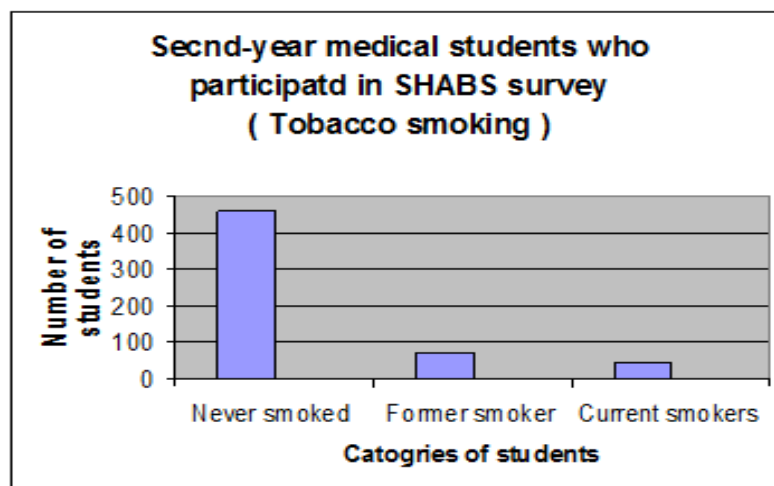
Figure 3 indicates the proportion of smokers, non-smoker and former smoker of students who participated in SHABS survey.