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Psychostimulant Drugs Abuse among Libyan Medical Students

Salma Bukhatwa [1*], Ali A elmabsout [2], Nahla A. Elhouseni [3], Hadel B. Bennaser [3], Sondos M. Elfergany[3], Aisha Kashbour [3], Eman Alyamani [3]

[1]Department of Pharmacology and Toxicology, Faculty of Pharmacy, University of Benghazi, Benghazi, Libya.

[2]Department of Nutrition, Faculty of Public Health, University of Benghazi, Benghazi, Libya.

[3]Department of Pharmacy Practice, Faculty of Pharmacy, Libyan International Medical University, Benghazi, Libya.

*corresponding author: Salma Abdelkerim Bukhatwa, Salma.Bukhatwa@uob.edu.ly

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ABSTRACT: *The psychostimulant substances were used by medical students is a phenomenon partially well-known. The aim of present work was to find the prevalence of use and abuse of psychostimulant drugs among medical students. A descriptive cross sectional study was conducted A structured questionnaire about potential use of caffeine, nicotine, and amphetamine as psychostimulant drugs use, was distributed by electronic means (google forms), among medical students from various levels at different faculties from 18 Libyan medical universities. A total of 752 students responded to the study. About 81.6% of respondents were caffeine users, 13.4% smokers and 6.8% were amphetamines consumers. More than 50% of Caffeine consumers reported increase in their caffeine consumption after started their university studies and 66.9% of nicotine consumers reported increase in nicotine consumption after started their university studies while 81.1% of amphetamine consumers reported that taking amphetamine only since they have started the university studies. About 73.5% of respondents have consume caffeine mainly during examination period. Furthermore, nicotine consumers reported different reasons for being smokers. About 52% of amphetamine consumers abuse amphetamine mainly during examination period. Nearly 47.3% of caffeine consumers reported their intention to quit caffeine intake but only 24.3% succeeded to quit. Similarly, 64.4% of nicotine consumers reported their intention to quit smoking but only 25.4% of them succeeded to quit. For amphetamine consumer approximately 39.4% have intention to quit amphetamine intake however only about 27.8% of them succeeded to quit. The use of psychostimulant substances by medical students in Libya is a phenomenon that should be evaluated systematically due to its prevalence and potential impact.*

KEYWORDS: Libya, medical students, psychostimulants, caffeine, nicotine, tobacco, amphetamine, Adderall, abuse

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INTRODUCTION

Central Nervous System (CNS) stimulants are drugs which enhances the chemical and electrical activity of the CNS and lead to user more alert, anxious, active, restless and eventually have general stimulated effect than normal (1). Furthermore, the medication that stimulate psychomotor cause excitement and euphoria, relieve fatigue, and increase motor activity and examples for psychomotor stimulants are amphetamine, caffeine, and nicotine (2).

The use of psychostimulant drugs intake causes high abuse potential, as they increase physical activity, mental alertness, and attention. The students are generally active groups and such activities may needed to be enhanced therefore, the students excuse this abuse to improve their academic performance so they can study for longer time than usual without requiring a break (3). According to latest statistics in Libya published in 2018 there were about (141,413) students studied at medical Libyan universities (4). Although, the psychostimulant drug abuse has been a banned among the academic students for a considerable period due to their use has been the subject of several studies (5, 6). The result of such studies found that about 14% of training physicians have reported abusing psychostimulant drugs for non-medical reasons is alarming (7). Earlier studies carried out in South Western Nigeria on abuse psychostimulant drug by students found that, students were use alcohol, tobacco, hypno-sedatives and other stimulants (8). In Osogbo, Nigeria there paucity of information on use of kola nut as a stimulant among students, hence a this study was conducted to determine the prevalence and associated risk factor of kola nut chewing among secondary school students (9). There were a number of studies were undertaken to determine the prevalence and pattern of drug use among the various classes of undergraduate medical students at the College of Medicine of different Universities and concluded useful findings (10-12).

Despite the widespread use of psychostimulants in various parts of the world, however, none have ever dealt with the Libyan scenario with its unique characteristics. It is desirable to further examine if psychostimulant drug abusers in medical school are likely to abuse other substances during their medical education and later in their professional career. Therefore
the aims of this study to find the prevalence of use and abuse the psychostimulant drugs among medical students in Libya.

METHODOLOGY

A cross sectional study was conducted in different medical college in Libya by using structured questionnaire for studying the potential psychostimulant drugs use.

Questionnaire design

The structured questionnaire was distributed by electronic means (Google forms) during the period from January17th, 2021 to February 24th, 2021. The questionnaire was distributed using the following link:https://docs.google.com/forms/d/e/1FAIpQLScJcBZNieM7n2Y4Ya63Cb9tR-R_CrlwQ0G2u-OsJ6JyCnDQkw/formResponse .The questionnaire is composed of four sections as follow: personal

information (section I), financial information (section II), scientific information (section III) and general information (section IV). Study design and objectives of the study were explained at the introduction part of the Google form. The questionnaire was confidential as the students were not asked to write their names or any other symbol indicating their identity.

Ethical approval
The study protocol was approved by the ethical committee at the Libyan International Medical University.

Data analysis
The data from the questionnaires was entered using Excel. Data set was exported to SPSS v.22, for complete analysis as described in (13). Statistical analysis was carried out for the complete sample which were created according to measurements in which frequencies and percentages were used. To determine the differences regarding each categorical variable in the groups, Chi-square test was performed and $p \leq 0.05$ was considered to be statistically significant.

RESULTS

Section I: Personal information and affiliation
A total of 752 students responded to the study. About 73% of respondents were female. Distribution of respondents by age was shown in Table 1. Only 4.5% of respondents were married and only 3% of respondents were non-Libyan. Respondents to study were from 18 out of a total of 20 medical universities in the country. Respondents' distribution by university is shown in [Table 2].

Table 1. Demographic data of participants

	No. of Participants	**Percentage %**
Sex: Female	550	73%
Male	202	27%
Age: 18-21	354	47.1%
22-25	332	44.1%
25-30	50	6.6%
More than 30	16	2.1%
Marital state: Single	713	94.8%
Married	34	4.5%
Divorced	5	0.7%
Nationality: Libyan	729	97%
Non-Libyan	23	3%

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Table 2. Participated universities in the study

University	No of participant	%	University	No of participant	%
Benghazi University	399	53.1%	Zawiya University	12	1.6%
Tripoli University	94	12.5%	AlZwitinah University	2	0.3%
Libyan International Medical University	86	11.4%	Sabratha University	13	1.7%
Omar Al-Mukhtar University	59	7.8%	Tobruk University	2	0.3%
Misurata University	32	4.3%	Gharyan University	4	0.5%
Sebha University	7	0.9%	Asmaria University	4	0.5%
Sirte University	14	1.9%	Aljufra University	3	0.4%
Almergib University	4	0.5%	Ajdabiya University	5	0.7%
Al Zintan University	3	0.4%	Sidra University	9	1.2%

Section II: Financial information

Nearly 77.8% of respondents reported that they have a job (Figure 1). Only 16.4% of respondents reported that they never had the ability to cover their monthly expenses (Figure 2) and 67% of respondents reported that intake of stimulants does not cost them a lot (Figure 3).

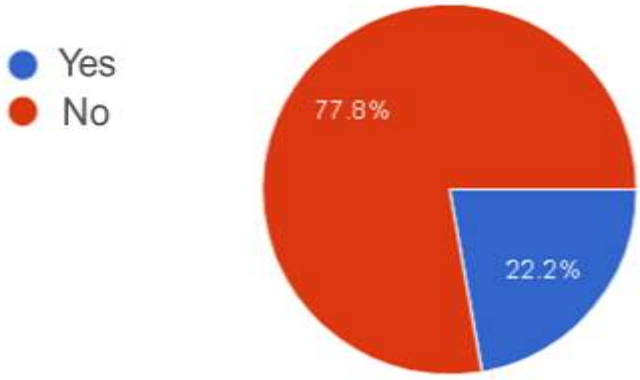

Figure 1. Job description of participants.

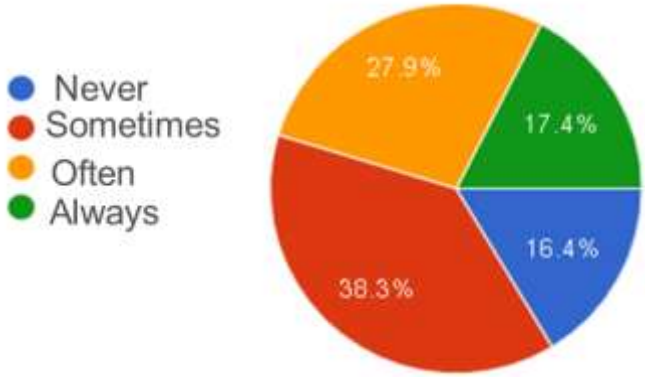

Figure 2. Financial state of participants.

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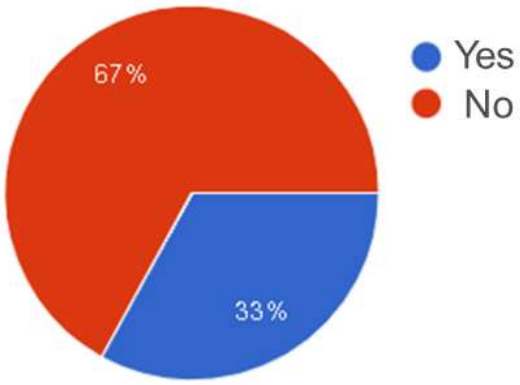

Figure 3. Stimulant's cost.

Section III: Scientific information
Stimulants' consumption

About 81.6% of respondents were caffeine users, 13.4% of respondents were smokers and 6.8% were amphetamines consumers [Table 3]. About 76.8% of caffeine consumers reported increase in their caffeine consumption after they have started their university studies and 66.9% of nicotine consumers reported increase in their nicotine consumption after they have started their university studies while 81.1% of amphetamine consumers reported that they started taking amphetamine only since they have started their university studies [Table 4]. About 73.5% of respondents reported that they consume caffeine mainly during examination period [Figure 4]. Nicotine consumers reported different reasons for being smokers as shown in [Figure 5]. About 52% of amphetamine consumers reported that their need for amphetamine was mainly during examination period [Figure 6].

Table 3: Stimulants' consumption among medical students

Stimulant	**No of consumers**	**%**
Caffeine	614	81.6%
Nicotine	101	13.4%
Amphetamine	51	6.8%

Table 4: Increased stimulant consumption following university entry

Stimulant	**No of consumers**	**%**
Caffeine	514	76.8%
Nicotine	79	66.9%
Amphetamine	43	81.1%

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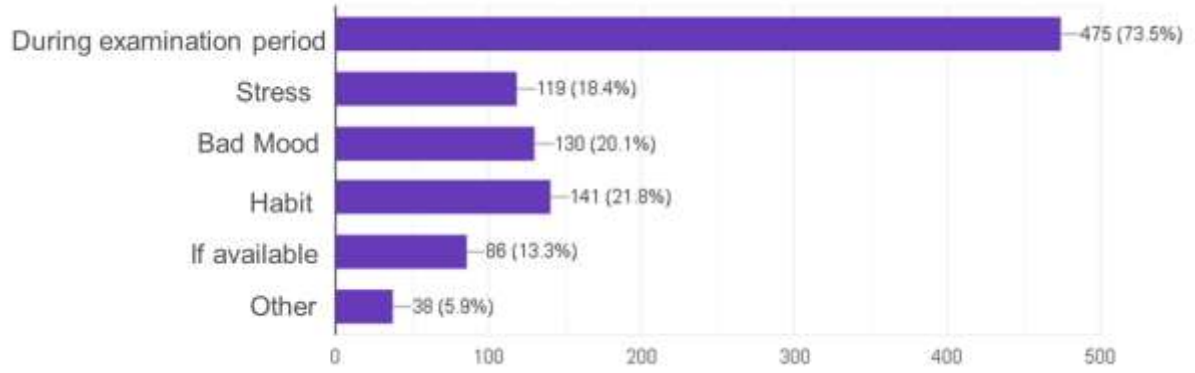

Figure 4. Reasons for caffeine consumption.

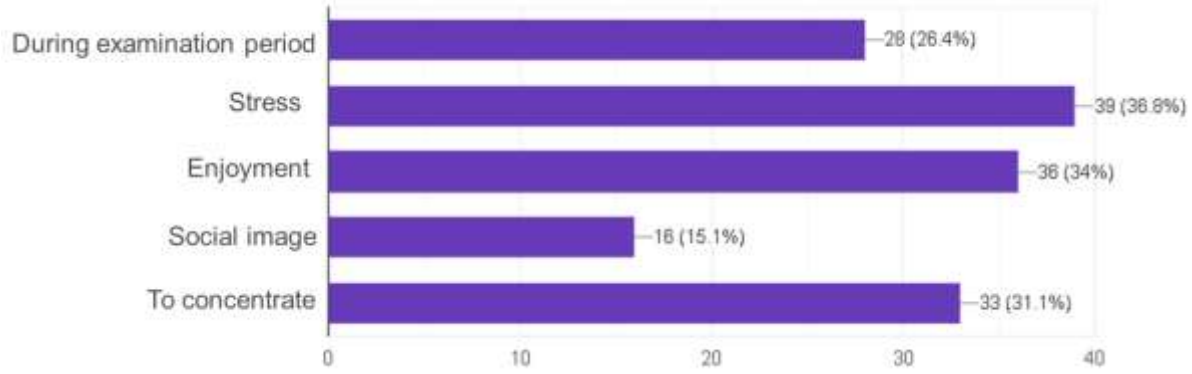

Figure 5. Reasons for nicotine consumption

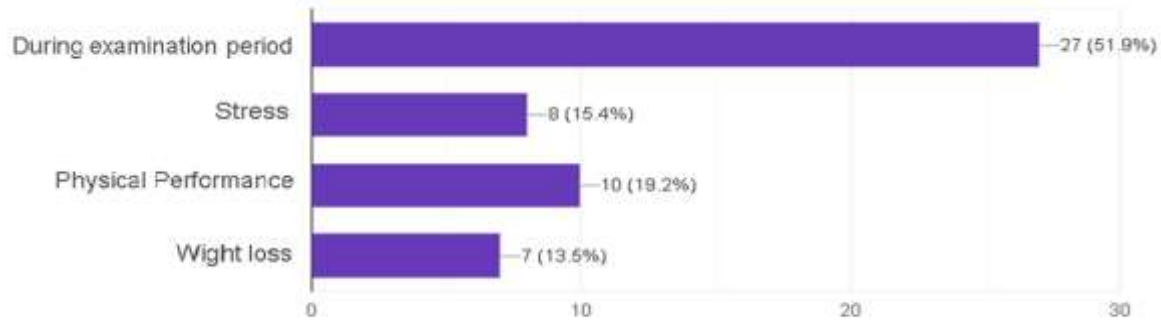

Figure 6. Reasons for amphetamine consumption.

Stimulants' quitting

Nearly 47.3% of caffeine consumers reported their intention to quit caffeine intake however only 24.3% of them succeeded to quit [Table 5]. Nearly 64.4% of nicotine consumers reported their intention to quit smoking however only 25.4% of them succeeded to quit [Table 5]. Nearly 39.4% of amphetamine consumers reported their intention to quit amphetamine intake however

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only about 27.8% of them succeeded to quit [Table 5]. In the table 6, about 66% of students got passive smoking, 25.2 and 8.3% have cigarette smoking and water pipe smoking respectively.

Table 5: Stimulant quitting success rate

Stimulant	**% With intention to quit**	**% Success to quit**
Caffeine	47.3%	24.3%
Nicotine	64.4%	25.4%
Amphetamine	39.4%	27.8%

Table 6: forms of smoking

Form of smoking	**No of consumers**	**%**
Cigarette	76	25.2%
Water pipe	26	8.3%
Passive smoking	200	66.2%

In this study, 55.7% of the consumers had used amphetamine despite their knowledge of substance's harmful abuse [Figure 7].

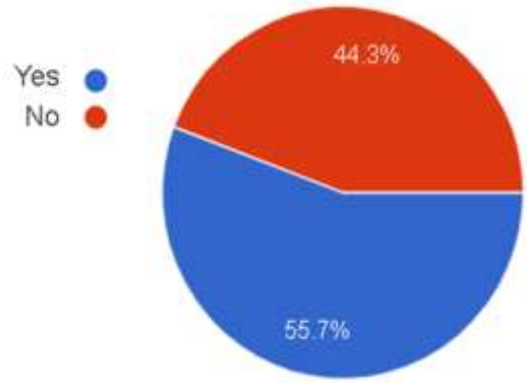

Figure 7. Awareness of amphetamine harmful effect

DISCUSSION

This is not the first study to note that medical students have abused prescription and non-prescription stimulant for non-medical reasons in which some to enhance studying and academic performance (2). The Iranian study reported that almost 10% of their sample population had also abused stimulants to increase concentration and enhance studying ability. In addition, a study by Watkins et al (8) found that at a southern medical school, over 50% of the respondents had abused psychostimulant medications at some point. Furthermore, another study has been found that 7% of pharmacy students had abused psychostimulant medications (9). The aforementioned studies provide evidence that psychostimulant medication abuse is a prevalent and growing problem among medical students (2).

Caffeine is the most widely consumed psychoactive substance in the world. Caffeine is known to be the most widely consumed drug in human history, exceeding 80% of the world's

population nowadays (10). About 81.6% of students reported consuming caffeine. The finding of this study was consistent with other studies performed on medical students in two medical colleges in Irbid, Jordan, namely; Jordan University of Science and Technology, and Yarmouk University (10). In the previous work many students reported increased caffeine consumption by 76.8% after they have started their university studies. Caffeine usage among college students is known to increase alertness, concentration, and socialization as well as to defeat stress and exhaustion, and in particular, medical education, often requires extensive hours of studying. Medical students have large volume of material to read and work to do. The amount of caffeine consumption increases during exams period, which reflects student's belief about the effects of caffeine on mental alertness and stress relief. Moreover, during the pressure of examination periods, many students tend to increase their caffeine consumption without considering its adverse effects, but only for the take of beating sleepiness and exhaustion (10). In the current work, also, found that 52.7% of the consumers tried to quit caffeine consumption but 24.3% only succeeded to quit. The ones who failed to quit, this was because they developed some symptoms like difficulty in concentration, feeling nervous, anxious, irritable, and urge to consume caffeine (11).

According to WHO, the tobacco is epidemic and one of public health threats of the world. More than 7 million of those deaths are the result of direct tobacco use while around 1.2 million are the result of non-smokers being exposed to passive smoking (12). Smoking among medical students is an important public health issue. More effective measures to reduce tobacco smoking among medical students are needed worldwide (13).

In this study, 13.4% of the participants had abused nicotine despite the knowledge of substance abuse, even though they are medical students, and they are expected to be aware of the harmful effect of nicotine. This study also showed that 66.2% from respondents were passive smokers. These findings showed that more medical students were exposed to environmental tobacco smoke than to active smoking. This indicates the need for health education of families and the community about the health hazards of passive smoking (14).

In addition, this study showed that cigarette and water pipe consumers represented 25.2% and 8.3% respectively of study sample. Most students experiment with smoking during adolescence and did not intend to become regular, addicted, or dependent smokers. Some students continued to abuse this substance after entering the university as they believe that nicotine will help them to manage their stress during examination time, other reasons included enjoyment, concentration, and social image.

In the present study, 64.4% of students who use nicotine attempted to quit but only 25.4% succeeded to quit. Overtime, smoking behaviour can become a pattern and tolerance develops and then development of dependence and this explains the higher rate of failure from smoking cessation among the medical students (15). Cessation of smoking causes withdrawal symptoms like, depressed mood, irritability, restlessness, and anxiety. The intensity of these mood disturbances is like that found in psychiatric outpatients. Anhedonia which is the feeling that

there is little pleasure in life can also occur with withdrawal from nicotine, and from other drugs of abuse (14).

Amphetamine (Adderall) is a commonly used pharmaceutical stimulant due to its sympathomimetic effects. Nearly 6.8% of students admitted that they use amphetamine, 51.9% of which reported that they use amphetamine mostly during examination period for elevating mood, enhancing wakefulness, improving memory, concentrating, and learning. Then these are the leading factors to increase the prevalence of use of amphetamine among medical students in Libya as in many other countries (15).

Medical students who are amphetamine users may suffer tolerance, and find themselves taking more and more to achieve the same "boost" to their studying ability, and this can easily lead to exposure to serious side effects such as disorientation, rapid breathing, rapid heart rate, shaking, fever, seizures, loss of consciousness, hallucinations, muscle weakness, heart attack and even to addiction (16). About 60.6% of students who use amphetamine attempted to quit, where only 27.8% succeeded to quit. Despite the risks associated with the misuse of amphetamines, many college students continue to turn to stimulants to increase their academic, social, or physical performance (15).

CONCLUSION

The present study revealed that caffeine and nicotine were the most widely used psychostimulant substances by medical students in Libya. Even amphetamine is a prescribed drug but according to this study seems that many medical students in Libya have easy access to amphetamine. The use of psychostimulant substances by medical students in Libya is a phenomenon that should be evaluated systematically due to its prevalence and potential impact.

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Disclosure of conflict of interest
No conflict of interest.

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