Risk factors lead to Bango abuse among drivers and secondery school students in Assiut province.

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ABSTRACT

Background: The present study was designed to determine the risk factors that lead to bango abuse among secondary school student and drivers in Assiut province.

Methods: Urine samples were taken from 1000 volunteers after filling a questionnaire, 500 students from different secondary schools and 500 drivers in Assiut province. The risk factors that lead to bango abuse among drivers and students were determined through the questionnaire. Screenings of the samples were done by using Thin Layer Chromatography (TLC) and then positive samples confirmed by high performance liquid chromatography (HPLC).

Results: Prevalence of bango abuse was 12% in drivers of the studied group. Bango abuse concentrated in age group of 21- 31Y/O by 51.7% and in those driving microbus, van and half van by 30%, 28.3% and 23.3% respectively. Abuse was more among cigarette and shisha smokers by 83.3% and 100% respectively. Also it was found that bango abuse is more prevalent in cases with 5 - 15Y work experience (58.3%of cases). In students, it was found that bango abuse was prevalent in 11.6%, concentrated in male students by 100%, and in those with daily fund more than one pound (44.8%). The abused students tend to be more aggressive toward their friends and their family members (by 65.5% and 96.6% respectively).

Conclusion: Bango abuse leads to deterioration of the academic achievement, and may be associated with antisocial and violent behavior, which may be a leading cause to develop crime.

Keyword: Bango abuse, Driver,Risk factor, Student

INTRODUCTION

Cannabis is the most frequently consumed illicit drug in most developed and developing countries.In recentyearsthere has been noticeable increase in cannabis and its products consumption among teenagers and young adults (1).

All over the world there is growing interest in contribution of drugs in traffic accidents, and how to consider adequate measures to reduce their incidence (2).

Africa is the second largest producer of herbal cannabis in the world (3). In Egypt, drug addiction is considered one of the most serious problems that worry both people and government. It affects young people within their productive years. It may lead to many problems such as social maladaptation, decreased works productivity and job loss (4).

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"Bango" is the name of cannabis leaves used in Egypt and North Africa (5).

Cannabis produces dose related impairment in cognitive and behavioral functions that may potentially impair driving and motor vehicle or operating machinery. These impairments are larger and more persistent for difficult tasks that depend on sustained attention. The most serious possible consequence of acute cannabis use is road traffic accident if a user drives under its effect (6).

The effect of recreational doses of cannabis on driving performance in laboratory simulators and standardized driving courses have been reported by some researchers as being similar to the effects when blood alcohol concentrations are between 0.07% and 0.1%. However, studies of the effects of cannabis related conditions in roads have shown much more modest impairments probably because cannabis users are more aware of their impairment and less inclined to take risks than alcohol users (7).

Cannabis makes subjects more violent, rare individual with some predisposition to aggressive or violent behavior may triggered into express such behavior under the influence of the drug (8).

Elwan, et al. in their study on effect of cannabis on brain aging in Egyptians were found that, cannabis addicts has significantly poorer attention than non addict normal volunteers(9).

This study has been designed to evaluate the predisposing factors and demographic data of bango abuse through a questionnaire in drivers and students.

MATERIALS AND METHODS

The present study covered 1000 human volunteers, 500 students from five different secondary schools of different areas in Assiut province, after taking permission from the Ministry of Education and from students' parents. The schools were selected randomly according to simple random selection. One-hundred students were randomly selected from each school from the third year according to systemic random selection after choosing the first one according to random selection. Every student filled a questionnaire.

The study also covered 500 drivers from the regular check up for drivers to obtain the driving license in Assiut province after taking permission from the Ministry of Health, the drivers were selected randomly according to systemic random selection after choosing the first one according to simple random selection. Every driver filled a questionnaire and complete written consent before collection of the samples.

Exclusion criteria:

- All subjects that take a medication might lead to false positive or negative test with bango like non steroidal anti inflammatory drugs, and citric acid were excluded.

Collectionandpreservationofthe samples:

Urine samples (10-50 ml) were collected in plastic containers, transferred to the lab in portable refrigerator and freezes in -20ºC until analysis (10). The samples were collected in front of a teacher in case of students and in front of a laboratory assistant in case of drivers, to avoid dilution of the samples. Then the samples checked for color and temperature. (11). Each sample took a serial number in view of the volunteers.

Preparation of the samples:

The cannabinoid metabolites present in urine bound to glucoronide and thus hydrolysis step is necessary before actual analysis. The most important conjuagate in cannabinoid analysis is 11-nor –9 carboxy Δ^9tetrahydrocannabinol glucoronide, which is present in urine and also found in small amounts in blood and hair (12).

Urine samples (5 ml) hydrolyzed by adding 1 ml 10% NaOH, then made acidic by adding 1 ml HCL. The mixture then extracted by adding mixture of n-Hexane: Ethylacetate in a ratio of (9:1), the organic layer (the upper layer) collected and

evaporated at 50˚C in water bath. The extract then used for thin layer chromatography (TLC) and confirmed by high performance liquid chromatography (HPLC) (13,14).

Thin layer chromatography (TLC):

Thin layer chromatography used as a screening test for detection of cannabis and its metabolites in the different samples. It is a qualitative method and not quantitative. It relies on reproducible migration pattern by the drug on thin layer and adsorbent (silica gel coated glass plates).

The volunteer's samples were spotted along with known bango extract on silica gel plate and then put in solvent (mobile phase) consisted of petroleum ether : acetone in a ratio of (4:1), the solvent runs up the plate, then leaved to dry and sprayed with fast blue B salt.

The color spot of the samples compared with the known positive spot of bango plant. The spot location was located by the Rf (Retention Factor)

Rf was calculated by the following equation: Distance traveled by the drug / Distance traveled by the solvent (15).Positive samples confirmed by high performance liquid chromatography.

RESULTS

The present study is cross sectional study and was conducted on students of secondary schools and drivers in Assiut province. The total number of students was 500 from different secondary schools, 58 of them were positive, and60 of 500 drivers were positive for bango abuse, represented by 11.6% and 12% respectively (table 1).

Table (2) shows the relation between the age groups and bango abuse in the drivers. It shows that significant variation in distribution of bango abuse between different age groups, which concentrated in the younger groups (21 - 31 years old) which represented 51.7% and (31- 41 years old) which represented 46.7% of positive cases.

Table (3) shows the relation between cigarette smoking and bango abuse in the drivers. It shows that bango abuse was more in the heavy smokers which represented 83.3% of positive cases; while 15% were in moderate smokers.

Table (4) shows the relation between the smoking of shisha and bango abuse in the drivers. It shows that shisha smoking was present in 100% of the positive cases of bango abuse.

Table (5) demonstrates the relation between type of car and bango abuse in the drivers. It shows highly significant bango administration among those driving microbus, van and 1/2 van which represented (30%, 28.3% and 23.3%) respectively, followed by those riding taxi which represented (11.7%) of positive cases.

Table (1): Distribution of positive and negative samplesfor bango abuse in the drivers and students by usingurine analysis.

		Urine analysis		
		Positive	**Negative**	**Total**
Drivers	**No.**	60	440	500
	%	12%	88%	
Students	**No.**	58	442	500
	%	11.6%	88.4%	

Table (2): Age distribution of drivers positive to bango abuse by urine analysis.

Age groups	**Urine analysis**		**Total**
	Positive		
	No.	**%**	
21- 31Y	31**	51.7**	179
31- 41Y	28**	46.7**	160
41- 51Y	1	1.7	99
51- 61Y	----	----	50
61- 70Y	----	----	12
Total	60		500

***P < 0.05 highly significant.*

Table (3): Relation between cigarette smoking and bango abuse in drivers by urine analysis:

Cigarette smoking	Urine analysis		Total
	Positive		
	No.	%	
No smoking	1	1.7	217
Less than 30 cigarettes/ day	9	15.0	156
More than 30 cigarettes/ day	50**	83.3**	127
Total	60		500

***P < 0.05 highly significant*

Table (4): Relation between shisha smoking and bango use in drivers by urine analysis:

Shisha smoking	Urine analysis		Total
	Positive		
	No.	%	
No	----	----	343
Yes	60**	100**	157
Total	60		500

***P < 0.05 highly significant*

Table (5): Type of cars and bango abuse in drivers by urine analysis:

Type of car	Urine analysis		Total
	Positive		
	No.	%	
Taxi	7	11.7	117
1/4 van	3	5.0	83
1/2 van	14**	23.3**	86
Van	17**	28.3**	117
Bus	1	1.7	11
Microbus	18**	30.0**	86
Total	60		500

***P < 0.05 highly significant*

Figure (1) shows the relation between the duration of work and bango abuse in the drivers. It shows that bango administration raise with increasing in the duration of work to reach maximally in 5-15 year group which represented (58.3%) of positive cases and then decline in the older groups and this coincidence with the results of age distribution of bango which decrease with increasing in the age.

Table (6) shows the sorting of all significant and non significant studied factors that relate to questionnaire and bango abuse in the drivers. It shows that the age groups, cigarette, shisha smoking and duration of work came at first followed by type of car then followed by the non significant factors.

Table (7) illustrates that male represent 100%of the positive cases.

Figure (2) shows relation between activities in school and bango use in the students group. It shows that only 1.7% of positive cases share in the school activities while 98.3% of positive cases are less active.

Table (8) illustrates the relation between bango use in the students group and cooperation of these students with their friends. There was a highly significant relation between the bango use and the cooperation between students which represented (65.5%) of positive cases and also they appeared to be more aggressive.

Figure (3) demonstrates the relation between daily fund of the students and bango use. It shows that the larger the fund, the more abuse of bango. Students receive more than one pound / day showed the highest percent which represented 44.8%, followed by students with self fund which mean working to bring their daily fund which represented 36.2%.

Figure (4) illustrates the relation between abused students and parents' relation and bango use in the students group. It shows that abused student appeared in family with troubles between parents; slightly decrease in separated parents to disappear in good relation between parents which represented (81%, 19% and 0%) respectively.

Table (9) demonstrates the relation between bango use in the students group and number of family. There was a highly significant relation between the increase in family numbers and bango abuse, the higher percent of abuse appear in family

Having 8-11 persons and families consists of more than 11 persons in number which represented (63.8% and 24.1%) respectively.

Table (10) shows the relation between the bango use in the students group and students – parents' relationship. It shows that abused students to be more aggressive and seeking quarrel with their parents, 96.6% of abused students with bad relation with their parents.

Table (11) shows sorting of all significant and non significant studied factors that may be a leading cause for bango abuse amongst the students group. There was a highly significant relation between cigarette smoking, shisha smoking, and number of family, relation between parents and daily fund and bango administration among students.

Table (6): Significance of all factors in drivers that administrate bango in order:

	Standardized Coefficient (Beta)	T value	Significant P value
Age	-0.305	-5.153	0.000**
Cigarette smoking	0.330	9.436	0.000**
Shisha smoking	0.414	11.681	0.000**
Period of work	0.235	4.293	0.000**
Type of car	0.090	2.604	0.009*
Owner of work	0.031	0.895	0.371
Treatment	0.024	0.704	0.482
Education level	-0.026	-0.693	0.489
Children number	0.026	0.416	0.678
Residence	0.008	0.220	0.826
Marital status	-0.005	-0.098	0.922

Table (7): Relation between sex and bango use in the students group.

Sex	Urine analysis		Total
	Positive		
	No.	%	
Males	58**	100**	400
Females	----	---	100
Total	58		500

***P <0.05 highly significant.*

Table (8): Relation between cooperation with friends and bango use in students group.

Cooperation with friends	Urine analysis		Total
	Positive		
	No.	%	
Yes	20	34.5	190
No	38**	65.5**	310
Total	58		500

***P <0.05 highly significant.*

Table (9) Relation between number of family and bango use in the students group.

Number of family	Urine analysis		Total
	Positive		
	No.	%	
3 or less	---	----	8
4-7	7	12.1	245
8-11	37**	63.8**	200
More than 11	14	24.1	47
Total	58		500

***P <0.05 highly significant.*

Table (10): Relation between the bango use and the relationship of the students with their parents.

Correlation with parents	Urine analysis		Total
	Positive		
	No.	%	
Good	2	3.4	288
Bad	56**	96.6**	212
Total	58		500

***P <0.05 highly significant*

Table (11): Significant of all factors in students administrated bango.

	Standardized Coefficient (Beta)	T value	Significant P value
Sex	**-0.500**	**-7.500**	**0.000****
Activity in school	**-0.401**	**-7.439**	**0.000****
Cooperation with friends	**0.367**	**7.045**	**0.000****
Daily fund	**-0.127**	**-4.191**	**0.000****
Cooperation with brothers and sisters	**-0.209**	**-5.182**	**0.000****
Cigarette smoking	**0.145**	**3.711**	**0.000****
Shisha smoking	**0.280**	**7.760**	**0.000****
Relation between parents	**-0.179**	**-5.990**	**0.000****
Number of family	**-0.132**	**-4.375**	**0.000****
Correlation with parents	**-0.209**	**-7.200**	**0.000****
Sport	**0.066**	**2.103**	**0.036***
Age	**0.042**	**1.418**	**0.157**

***P <0.05 highly significant.*
** P < 0.01 significant.*

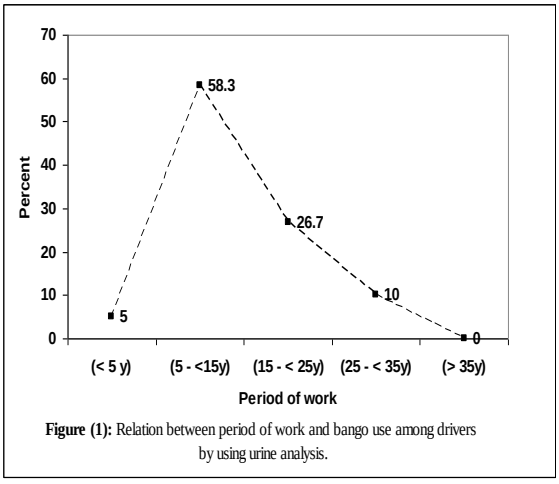

Figure (1): Relation between period of work and bango use among drivers by using urine analysis.

***P< 0.05 highly significant*

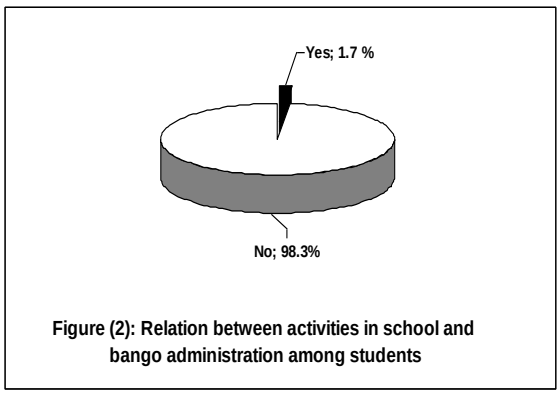

Figure (2): Relation between activities in school and bango administration among students

***P <0.05 highly significant.*

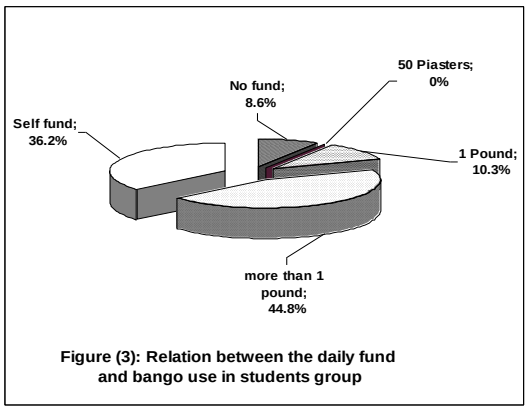

Figure (3): Relation between the daily fund and bango use in students group

***P <0.05 highly significant*

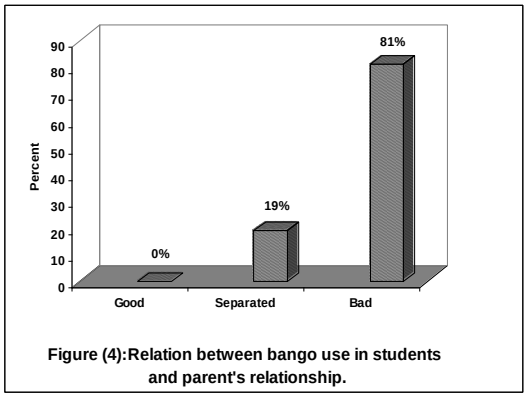

Figure (4):Relation between bango use in students and parent's relationship.

***P <0.05 highly significant.*

DISCUSSION

According to the WHO analysis, cannabis abusers are found in all age groups and social strata. Special target groups are adult smokers in rural areas of Africa and Eastern Mediterranean (16).

The risk of cannabis use is not confine to its toxic effects on the brain and other different organs, but also that the cannabis use significantly predicted future use of hard drugs, because cannabis acts as a gateway for more dangerous drugs (17).

In this study and through a questionnaire, the predisposing factors which lead to bango abuse among drivers and secondary school students were determined.

On agreeing to the results Kelly, et al. found that cannabis is generally the most common drug detected in accident involved drivers (18).

Jones, et al. reported that increase use of cannabis for recreational purposes has created a problem for road traffic safety in Sweden. In their study they found that over 10 years period (1995- 2004) that the mean age of cannabis users was 33 ± 9.4 years (19).

Avarez, et al. also found that driving under the influence of cannabis occurs more frequently and by higher number of times in those aged 20 – 29 years. However, it is also worth that high percentages were observed in all ages (2).

Kelly, et al. found that young males are over represented among drug abusing drivers (18).

The relation between tobacco smokers and bango abuse, Degenhard, et al., (2008) in their study about the order of drug abuse agreeing to the present results, describe that the "gateway" pattern of drug initiation explain the normal sequence of abused drugs, beginning with alcohol and tobacco use followed by cannabis, then other illicit drugs (20).

Also, Viveros, et al. reported that nicotine and cannabis are the most widely used drugs of abuse. These drugs are increasingly taken in combination, particularly among the adolescents and young adults (21).

Among students in this study it was found that bango was more abused among boys than girls, in those with self fund or in those with big daily fund. These students usually present in large family and/ or bad parents' relation or separated family. Those students usually were cigarette or shisha smokers.

On agreeing to the results, Okasha reported that although cannabis consumption in Egypt has century's long tradition, recent evidence on drug abuse shows new pattern and trends: young people from all socioeconomic strata of society are increasingly involved with both traditional drugs, such as hashish and the new pharmaceutical psychotropic substances that are emerging. A survey was done by the author on University students in Egypt showed that 34% of the students who had succeeded in their studies and 42% of those who had failed used drugs especially cannabis (22).

Another relevant factor is poor relations with parents, agreeing to the present results, found that this factor encompass the importance of having good and harmonic communications with parents, relates the ability to establish such communications and also concern the relationship between mother and child and the interaction between children and their parents and how the former identify with the latter. A bad child parent's relationship implies the elimination of the passive model as a protective factor. It also implies the loss of subjective norm, which prompts adolescents to adjust their behavior in accordance with the position of relevant figures within their social environment, such as in this case their parents (23-25).

Fergusson, et al. explained that increasing in cannabis use was associated with increasing risks of leaving school without qualification (26). Macleod, et al. were noted that there is a great association between cannabis and both lower educational attainment and increased reported use of other illicit drugs (27).

Hammer and Veglum found that the main differences between cannabis users and non users was that the users more often came from incomplete families or family with only one parents (28).

Kliewer and Murelle in their study in selected control American countries found that the problems with drug abuse including marijuana among students were the outcome of many risk factors included dysregulations, family habits of drugs use, negative interactions, school disengagement and exposure to community violence (29).

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