

## Prevalence of cannabis and amphetamine in Aseer Region, Saudi Arabia: a retrospective study

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### Abstract

**Background:** Cannabis and Amphetamine abuse is a public problem in Aseer region. It is associated with many occupational and legal consequences. The aim of this study was to assess the prevalence of cannabis and amphetamine addiction among two groups; job applicants group and narcotics group.

**Methods:** This retrospective study included 8750 subjects; of them 4649 were job applicants; while 4101 were narcotic crimes candidates. The research was done in the period from January 2016 to December 2017. The data was collected from the Poison Control and Forensic Chemistry Center, Abha, Saudi Arabia. Semi full data was only obtained from 30 of job applicants and 48 of narcotic group.

**Results:** In the narcotic crimes group; 1345(32.80%) were positive for amphetamine and 852 (18.33%) were positive for cannabis. In the job applicants; 56 (1.20%) were positive for amphetamine and 16 (0.34%) were positive for cannabis. Overall confirmed positive cases in the narcotic group were 2197 (53.57%), while in the job applicants group were 72 (1.55%). The overall prevalence of the amphetamine in the study groups was 16.01%; while the prevalence of cannabis in the study groups was 9.92%.

According to the newly obtained data; the age and the marital status were significantly correlated with the type of the drug; (P value 0.000 & 0.034). The mean age of the job applicants was (23.5 ± 2.21years), while for narcotic group was (29.2 ± 11.4 years). All study groups were males; except 6 females in the narcotic group. Concerning the marital status; 24 (80%) were married in job applicants, and 32 (66.7%) in the narcotic group. Concerning drug type; in job applicants 22 (73.3%) were amphetamine users, while in narcotic group 25 (52.1%) were amphetamine users. In job applicants 5 (16.7%) were cannabis users, while in narcotic group 12 (25%) were cannabis users, while both amphetamine & cannabis users were 11 (22.9%) in the narcotic group and 3 (10%) in job applicants respectively.

**Conclusion:** The overall total prevalence of amphetamine abuse in Aseer region is 16.01%, while the cannabis abuse prevalence is 9.92%. The predominant drug used among study groups is amphetamine. The age and the marital status significantly correlate with the type of the drug; (if its amphetamine or cannabis or both), that the younger and single mostly likely use amphetamine. National policies and active

programs, in coordination with public and private institutions, are required to face this phenomenon.

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**Keywords:** Cannabis, Amphetamine, Narcotic crimes, Job applicants, Retrospective study, Aseer, Saudi Arabia

## **Introduction**

Cannabis is a hallucinogens substance and comes from a plant named cannabis sativa<sup>1,2</sup>, it can be smoked for herbal incense, or vaporized and inhaled in e-cigarettes and other devices.<sup>3</sup> Medically cannabis is used as psychoactive drug.<sup>2</sup> Cannabis consumers and hospitalization related to cannabis use have been increasing.<sup>1,2</sup> Cannabis can be used as herbs form or as seizures.<sup>2</sup>

Amphetamines are a group of addictive drugs which stimulate the central nervous system<sup>4</sup>, it's used under other names like captagon, Biocapton, and Fitton. The commonest one used in Saudi Arabi is captagon.<sup>5</sup> Amphetamine-type stimulants, includes amphetamine sulfate, amphetamine hydrochloride, methamphetamine, and phenethylamines.<sup>6,7</sup> As historical background, captagon was first synthesized by the German in 1961 for the treatment of hyperactive and hyperkinetic children<sup>8</sup>, it is also used for the treatment of depression and narcolepsy.<sup>9</sup> Captagon metabolizes to form two active stimulant drugs amphetamine and theophylline.<sup>10,9</sup> The primary amphetamine drug market as captagon has been traditionally Arabian Peninsula countries and North Africa.<sup>11</sup> In the rich Arab countries, millions of captagon tablets were seized every year, which represents about one-third of global amphetamine seizures within a year.<sup>12</sup> Different forms of the drug are available. The tablet forms can be placed on the tongue where it disintegrates quickly followed by ingestion of the disintegrants with saliva.<sup>13,14</sup> One of the problems of the captagon is that it can be taken without water, the presence of food decreases the rate of its absorption.<sup>13</sup> After the cessation of the legal production of this captagon in 1986; counterfeited products have been produced illegally in far-east Asia and south-east Europe<sup>15</sup>, which reaches its market in Arab world.<sup>16,17</sup>

Substance abuse including amphetamine and cannabis has been confirmed in many Muslim countries including Gulf Arab nationals.<sup>16,17</sup> One of the countries jeopardizes with this trade is Saudi Arabia; three out of four Saudi treated for drug problems are addicted to amphetamines, especially in the form of captagon.<sup>11</sup> There are many other names for amphetamine in Saudi Arabia as street names, the most common names are: Alabyad (white), Abu mlaf, Lajah, Al qeshtah, Al asfaar (yellow).<sup>18</sup> In the last few years, there was an increase in the use of cannabis and amphetamine.<sup>1</sup> The risk factors for this initiation are peer pressure and psychosocial stresses<sup>12,19</sup>, as well as social communication media, electronic websites. All these factors; fire the drug abuse and increase its distribution.<sup>11</sup>

The aim of this study is to assess the prevalence of captagon and cannabis addiction among two groups Saudi natives in Aseer which is one of Saudi Arabia regions, located in the southwest of the country. It has an area of 76,693 square kilometers (29,611 sq mi) and an estimated population of 1,913,392. It shares a short border with Yemen. The capital of the Aseer Region is Abha.<sup>20</sup> The two groups to be assessed are job applicants group and narcotic crimes group, in order to increase the awareness of Saudi community as well as neighboring countries to tackle the growth of this phenomenon.

## Methods

This retrospective study included 8750 subjects, of them 4649 were job applicants, while 4101 were narcotic crimes cases. The data was collected from the records of Poison Control and Forensic Chemistry Center, Ministry of Health, Abha- Aseer Region in Saudi Arabia. The study covered two years period from January 2016 to December 2017. The Poison Control Center used two steps policy in identifying amphetamine and cannabis from the specimens. The first step was screening, while the second step was confirming. The only data available was either from narcotic crimes or from job applicants. Non-job seekers and non-narcotic crimes did not include in the study. Recently; semi full data was only obtained from 30 of job applicants and 48 of narcotic crimes group.

**Statistical analysis:** Data were analyzed using Excel 2016. The descriptive analysis was done by calculating the number and percent of categorical variables in order to summarize information. IBM SPSS Statistical program version 20 was also used for the semi full data obtained later from just 30 job applicants and 48 narcotic cases. Simple descriptive statistics (mean and Standard Deviation), were used to describe the observed variation in this study. ( $P < 0.05$ ) was considered significance.

## Results

The study revealed that; concerning amphetamine, when the specimens were screened for amphetamine; 1378 (33.60%) of cases were positive for the amphetamine in the narcotics group, while in job applicants 59 (1.27%) of cases were positive for the amphetamine. The confirmed amphetamine positive cases were 1345 (32.80%) in the narcotics group, while confirmed amphetamine positive cases in job applicants were 56 (1.21%). The prevalence of amphetamine in Aseer region (including the two groups) was 16.01% (Table 1).

Concerning cannabis; in screening step; 871 (21.24%) of cases were found positive in the narcotics group; while in job applicants 17 (0.37%) of cases were positive for cannabis. In the confirming step; 852 (20.78%) of cases were positive for cannabis in the narcotic group; while in job applicants; 16 (0.34%) were positive for cannabis (Table 2). The total prevalence of cannabis in Aseer region (including the two groups, excluding the falsely positive cases) was 9.92% (Table 2).

In semi full data of the narcotic group; significant correlation ( $P$  value 0.000) was found between used drug and age of the drug users, a significant correlation ( $P$  value 0.034) was also found between the marital status and the type of the drug used. In the narcotics group; the mean age was ( $23.5 \pm 2.21$  years), ranged between (19-28 years), in the same group; the marital status showed that 24 (80%) were single while 6 (20%) were married, their nationalities showed that 39 (81.2%) were Saudi, while 9 (18.8%) were non-Saudi (Table 3). Concerning the drug type in semi full data of the narcotic; 25 (52.1%) were amphetamine users, of them 22 cases were under 25 years. cannabis users in the same group were 12 (25%), while 11 (22.9%) were both amphetamine & cannabis users (Table 3). Gender wise; 42 (87.5%) of the narcotic group were males and 6 (12.5%) were females of them 4 were Saudis and amphetamine users, while 2 non-Saudis and cannabis users. All the females were single with mean age ( $26 \pm 5.7$  years).

## Discussion

Drug abuse is considered a public, security and the occupational problem facing Aseer region in Saudi Arabia. Cannabinoids use can cause serious mental and physical health problems including violent behavior and suicidal thoughts. In Table 2; this study

shows (20.78%) of narcotic crimes were associated with cannabis use, while only (0.34%) of jobs applicants were found cannabis users, but in the semi detailed data obtained recently; the study shows that 52% were amphetamine users, while 25% were cannabis users (Table 3). This finding reflects the prevalence of amphetamine use among Saudi youth, especially who are newly graduated and the youth in similar ages. Comparing the finding of this research to a survey study done by AL-Hagwi<sup>17</sup> among medical student in Riyadh, Saudi Arabia capital, the percentage of substance abuse was 3%, which is higher than the finding of this study. Bamofleh et al. (2017)<sup>18</sup> in Western Saudi Arabia found that the most addicted age group is 15-25 years, the same findings were found in this study that the range of the study population is between 19-28 years. Supposing the methods used for screening and confirmation were sensitive and specific, as it's according to the protocol adopted in Saudi Arabia. The confirmatory step used here is crucial because any positive result decision; leads what is worse for the candidate. The confirmatory technique used in this research was important, for example; in the narcotics group the positive cases were reduced by 33 cases, which were formerly falsely positive for amphetamine, when using the screening technique. In job applicants group, the cases were reduced by 3 cases, which were also falsely positive for amphetamine. In this research (16.01%) of narcotic crimes were related to amphetamines (captagon) abuse, while only (1.21%) of job applicants were found positive to amphetamines, with the ratio approximately 1:15. Still, the prevalence of captagon abuse in the narcotic group is the higher than in applicants pursuing jobs. These findings are in agreement with that declared recently in Arab News<sup>21</sup>, by the Saudi National Committee for Narcotics Control to the Media; that forty percent of Saudi addicts taking captagon, and the majority of drug users in the Kingdom aged between the 12-22 years. Continuing what they said; the Captagon pills used by the young drug-addicted Saudi were found mainly counterfeited which may contain lead, contraceptives or even mercury, this structure can cause damage to brain cells and another health problems as reported by Arab News.<sup>21</sup> It's important to note that not all the candidates of narcotic crimes were Saudi natives, some of them were non-Saudi residents about 19% were non-Saudi. But all jobs candidates were Saudi natives. Health-related consequences of drug abuse in Saudi Arabia are numerous as reported by Ahmed et al (2016).<sup>15</sup> Another sequence of amphetamine usage is its strong relationship with psychosis in Saudi Arabian patients when its concentration increased in the urine above 1000 ng/ml as reported Ehab and colloquies (2011).<sup>22</sup> In this study; the predominant drug used among study groups is amphetamine. The age and the marital status significantly correlate with the type of the drug; if its amphetamine or cannabis or both, that the younger and single mostly likely use amphetamine, while the elder most likely use cannabis or both of them. This study also shows that 90% of job applicants using amphetamine or cannabis in semi full data study were less than 25 years of age (Table. 4). Substance abuse is one of the most serious problems facing Aseer and Saudi society. The phenomenon worsens if we knew that a considerable amount reached in local drug market is counterfeited type as reported recently by Ahmed and colleagues in (2016).<sup>15</sup> Smuggling of abused drug especially amphetamine and crystal methamphetamine into Gulf countries increased approximately 3 times in the year 2016 than the year before as explained by Gulf News (2017).<sup>12</sup> Peer pressure and negative media are another factor fueling the phenomenon. Amphetamine and cannabis addiction in Saudi Arabia have a bad impact on the physical, psychological and social function of the drug addicts. Its known that Saudi Arabia is one of leader Muslim countries; religious programs are suspected to have a good effect on whole over the Muslim countries, same suggestions and conclusion were reported by Bamofleh and colleagues (2017)<sup>18</sup> and Katselou et al., (2016).<sup>11</sup> In job applicant in Aseer Region; the prevalence of cannabis abuse among them is 0.34%, while the prevalence of amphetamine abuse is

1.21%. Cannabis and amphetamines abuse are relatively lower in Aseer society. As far as we know it's the first study; giving nearly the exact situation of the prevalence of addiction to cannabis and amphetamine in job applicants in Aseer region in western Saudi Arabia.

## **Conclusion**

Amphetamines and cannabis abuse are one of the serious problems facing Aseer Region society. The overall prevalence of amphetamine abuse is 16.01%, while the cannabis abuse is 9.92%. Drug abuse in Aseer Region is associated with occupational, legal and social and maybe medical consequences. The predominant drug used among study groups is amphetamine. The age and the marital status significantly correlate with the type of the drug; if its amphetamine or cannabis or both, that the younger and single mostly likely use amphetamine. National policies and active programs, in coordination with public and private institutions, are required to face this problem.

## **Declarations**

### *Ethical approval*

The permission for the study was taken from research committee at the University of Bisha and Poison Control and Forensic Chemistry Center in Abha. Informed consent was not taken, as it's a retrospective study. The data was taken from the records of candidates. The data used was from twelve district centers from (12) governates in Aseer region).

Availability of data and material

A prospective study; the data was taken from records of Poison Control and Forensic Chemistry Center, Ministry of Health, Abha- Aseer Region in Saudi Arabia, but records are available.

### *Competing interest*

Not applicable

## **Limitation**

Because of many considerations, the researchers were unable to find data concerning the gender, age distribution or socioeconomic status, except that released recently 30 for job applicants and 48 for narcotic group.

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### **Authors contribution**

**Mosleh Abomughaid:** was responsible for data collection and writing of the paper, the communication with the authorities.

**Eltayeb Tayrab:** was responsible for data analysis and writing the manuscript, he is the corresponding author.

**Abdullah Ahmed Alghamdi:** was responsible for data collection and communication for the approval.

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**Table1.** Characteristics of screened and confirmed study of amphetamine in narcotics crimes and job applicants groups in Aseer region (Jan 2016- Dec 2017), (n=8750)

Candidates	Screening results	Falsely positive cases	Percentage of screening positive cases	Confirmed positive	Percentage (%) of confirmed positive cases (prevalence)
Narcotic crimes (n=4101)	Negative	272 3			32.80%
	Positive	137 8	33	33.60%	1345
Job applicants (n=4649)	Negative	459 0			1.21%
	Positive	59	3	1.27%	56
Total (n=8750)			36		1401 16.01%

**Table 2.** Characteristics of screened and confirmed study of cannabis in narcotics and job applicants groups in Aseer region (Jan 2016- Dec 2017), (n=8750)

Candidates	Screening results	Falsely positive cases	Percentage of screening positive cases	Confirmed positive	Percentage (%) of confirmed positive cases (prevalence)
Narcotic crimes (n= 4101)	Negative	323 0			20.78%
	Positive	871	19	21.24%	852

Job applicants (n=4649)	Negative	463 2			0.34%	
	Positive	17	1	0.37%	16	
Total (n=8750)			20		868	9.92%

**Table 3.** Characteristics of amphetamine and cannabis ratio and percentage among (Saudi narcotics: non-Saudi narcotics) in Aseer region (n=48).

Nationality	Drug type	Single	Married	Ratio	Percentage ratio (%)	Total percentage
Saudi: Non-Saudi	Amphetamine	21:0	3:1	24:1	50%:2%	52%
	Cannabis	3:2	5:2	8:4	16.7%:8.3%	25%
	Amphetamine & Cannabis	3:3	4:1	7:4	14.7%:8.3%	23%

**Table4.** Descriptive study of age distribution and used drug in job applicants in Aseer region, (n=30).

Drug used	N	Mean age ± STD (years)	Percentage (%)
Cannabis	5	24.2 ± 2.59	16.7%
Amphetamine	22	23.14 ± 2.12	73.3%
Cannabis & Amphetamine	3	25.3 ± 2.21	10.0%
Total	30	23.5 ± 2.21	100%