

## Original Article

# Socio-Demographic Correlates and Patterns of Use Among Patients Visiting Addiction Services of Almadinah Specialized Psychiatric Hospital in Saudi Arabia

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### Abstract

**Background:** Substance use disorders are on the increase worldwide with negative consequences on individuals, their family and the community. Our objective is to study the socio-demographic and patterns of use in those requesting addiction treatment in Addiction treatment services of Almadinah Specialist Psychiatrist Hospital (ASPH).

**Methods:** A descriptive chart review study of 622 patients requesting treatment between the first January 2019 and 31 December 2012. Information was taken from patients' records and if necessary, completed by a direct interview with the patient. Data collected were analysed using Statistical Package for the Social Sciences (SPSS) version 22.0.

**Results:** The majority were male (96.6%) with a mean age of  $32.1 \pm 9.2$  years. More than half had less than a bachelor's degree, while 23.5% were highly educated. The majority of patients were single (70.7%), 53.1% reported difficulty keeping a job, 17.8% a high income, 90% a negative family history of substance abuse and 94.7% a negative family history of psychiatric illness. The most frequent substances used, in descendant order, were captagon (69.8%), cannabis (63%) and alcohol (30.7%). The mean age of initiation was around 21 years for the three main substances. The prevalence of co-occurring disorders was at 14%. Two thirds of patients were from the outpatient department (67.7%) and 32.2% from the emergency department (ED). Around a third of our sample visited the emergency room at least once during the month prior to their evaluation and overall, 32.3% needed hospital admission.

**Conclusions:** The fact that 90% of our sample reported a negative history of substance abuse with about 4 out of 5 having an early age of initiation to substance use emphasizes the urgent need for psychoeducational preventive efforts on substance abuse and dependence targeting our youths and their families, in multiple areas particularly in school and neighbourhoods.

**Keywords:** *Addiction, Captagon, cannabis, Alcohol, Substance use, Amphetamine, dependence*

## Introduction

Substance use is increasing worldwide and affects people at a young age as proved by surveys in different geographical regions in the world. For instance, Altwaijri et al. examined the lifetime prevalence, treatment and socio-demographic correlates of mental disorders among Saudi youth (aged 15-30) and found a 4% prevalence of substance use disorders (SUDs) (1).

In the Global Burden of Disease Study (2019), tobacco remains the second leading risk factor (8.71 million deaths) despite the more than 1% per year decline in age-standardised tobacco smoking exposure between 2010 and 2019 Alcohol use (2.44 million deaths) represented the tenth risk associated with the highest number of deaths worldwide for both sexes combined, and for all ages. When we consider only male sex the alcohol use became the 8<sup>th</sup> risk (2.07 million deaths) (2). Furthermore, it is known in medical literature that SUDs may mimic the full range of psychiatric illnesses, and that the presence of a psychiatric disorder increases the risk of having an SUD (3,4).

Captagon, brand name of fenethylline also known as amphetamine-ethyl-theophylline and amfetyline (5), is considered an illegal substance worldwide and represents with cannabis the most frequent illicit substances of abuse in Saudi Arabia (6,7). In recent years, there has been a remarkable surge of methamphetamine (known in the region as Shabou). This surge is most probably related to the unstable conditions on the borders of the Kingdom which discouraged the international traffic of illicit substances and encouraged consequently the shift toward Shabou; a substance that can be “cooked” locally. The increase in methamphetamine abuse was accompanied by a surge of violence that was behind the recent large-scale crackdown in Saudi Arabia on all kinds of illicit drug use.

The response to the public health problem represented by substance use necessitates knowledge about sociodemographic characteristics and patterns of use in the community to tailor evidence-based addiction treatment services which must be person centred, equitable and data driven

(4). Therefore, prior to the opening of addiction outpatient services in ASPH, sociodemographic characteristics and patterns of substance use of 98 patients visiting the emergency and general psychiatry outpatient services between September 2016 and May 2017 and identified as having a substance use disorder with captagon as the main substance of use were studied (6). As a continuation of the efforts towards gathering the necessary information needed to plan preventive actions and to organize treatment services, this study will take place in the newly established Addiction Treatment Services of ASPH. It will be on a larger scale compared to the previous one and will target a sample of patients who requested treatment, either on their own or under the pressure of relatives or employers.

## Methods

This is a descriptive chart review study for patients requesting treatment from their substance use at Addiction treatment services in ASPH. We aimed to identify among the patients the proportion of those diagnosed with multiple substance use disorder, the proportion of substance induced psychosis and the type of associated substances to it, the proportion of substance users with co-occurring disorders, the possible association between different patterns of substance use and different socio-demographics, and the psychopathology associated with different types of SUDs.

We reviewed all 1367 files of patients visiting Addiction services of ASPH, between the first of January 2019 and 31 of December 2021. We included all patients 18 years old or above and having a substance use disorder diagnosis according to the Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition (DSM5). After excluding those not having a diagnosis of SUD, those who are lost from follow up and/or from contact as well as those who refused to give consent to participate in the study, our final sample was 622 patients.

Information was collected anonymously and directly from patients' files on a data checklist for socio-demographics, patterns of use, descriptive psychopathology, physical symptoms and co-

occurring disorders. When there is a need to contact a patient for some information that are not available in his file, an informed consent was signed prior to the collection of the needed data.

### Statistical analysis

Collected data were entered and analysed using SPSS version 22.0. The sociodemographic data were presented using frequencies, means and standard deviations (SD), as appropriate. The prevalence of co-occurring disorders was assessed, and its 95% confidence interval was calculated. The proportion of patients manifesting substance induced psychological and neurological symptoms was calculated and compared by the type of substance used using Chi square and Fischer Exact tests, as appropriate. P values  $\leq 0.05$  were used as indicators for statistically significant differences. Furthermore, the association of drug use with the sociodemographic characteristics of the studied patients was examined by multivariate logistic regression analysis.

### Results

The mean age of the studied patients was  $32.1 \pm 9.2$  years ranging between 16 and 76 years, 45.8% of them were below 30 years of age and the majority were male (96.6%). Those having a bachelor's degree or more represented 23.5% of cases. Single patients represented 70.7% of the sample. High income level was reported by only 17.8% of the studied patients, while more than half (53.1%) reported difficulty in keeping a job. A negative family history of substance abuse was reported in 90% of cases, while 94.7% reported a negative family history of psychiatric illness. Two thirds of the patients were from the outpatient department (67.7%), 32.2% were from the emergency department (ED) and 32.3% needed hospital admission. Around a third of our sample visited the emergency room at least once during the month prior to their evaluation. (Table 1).

The most frequent substance use among the studied patients was for captagon (69.8%), followed by cannabis (63%) and then alcohol (30.7%). Others were lyrica (7.1%), benzodiazepine (5.6%),

methamphetamine (2.4%) as well as cocaine and tramadol (1.5%).

**Table 1. Sociodemographic characteristics of studied patients:**

Characteristics*	N= 622		
<b>Age in years; mean <math>\pm</math> SD (Range)</b>	32.1 $\pm$ 9.2 (16-76)		
<b>Age categories in years</b>			
< 30	285 (45.8)		
$\geq 30$	337 (44.2)		
<b>Patients' sex</b>			
<b>Male</b>	601 (96.6)		
<b>Female</b>	21 (3.4)		
<b>Education</b>			
<b>Illiterate</b>	147 (23.60)		
<b>Less than university</b>	329 (52.9)		
<b>University and higher</b>	146 (23.5)		
<b>Marital status</b>			
<b>Single</b>	440 (70.7)		
<b>Married</b>	119 (19.1)		
<b>Divorced</b>	63 (10.1)		
<b>Work history</b>			
Stable work history	151 (24.5)		
Difficult keeping work	330 (53.1)		
Never been working	141 (22.7)		
<b>Income level</b>			
Low	219 (35.2)		
Intermediate	292 (46.9)		
High	111 (17.8)		
<b>Family history of substance abuse</b>			
Yes	62 (10.0)		
No	560 (90.0)		
<b>Family history of psychiatric diseases</b>			
Yes	33 (5.3)		
No	589 (94.7)		
<b>Received from</b>			
Outpatient department (OPD)	421 (67.7)		
Emergency room (ER)	201 (32.3)		
<b>Need for hospital admission</b>			
<b>Yes</b>	200 (32.2)		
<b>No</b>	422 (67.8)		
<b>Number of visits to the emergency room in the month prior to the evaluation</b>	Captagon (n=434)	Cannabis (n=391)	Alcohol (n=191)
<b>1-3 times</b>	36 (8.3)	49 (12.5)	14 (7.3)
<b>&gt; 3 times</b>	100 (23.0)	68 (17.4)	38 (20.0)

\*Data are presented by mean  $\pm$  SD or by N (%). SD: standard deviation, N: numbers

Multiple substance use was present among patients according to the type of substance in descending order as follows: methamphetamine (100%), alcohol and pregabalin (90.1%), benzodiazepine (82.9%), cannabis (74.5%) and captagon (66.1%) (Tables 2).

**Table 2: Distribution of substance use, and the presence or absence of multiple substance use among patients (N= 622):**

Substance of use	Relative frequencies n (%)	Multiple substance use	
		Yes	No
<b>Captagon use</b>	434 (69.8)	287 (66.1)	147 (33.9)
<b>Cannabis</b>	392 (63.0)	292 (74.5)	100 (25.5)
<b>Alcohol</b>	191 (30.7)	172 (90.1)	19 (9.9)
<b>Lyrica</b>	44 (7.1)	40 (90.1)	4 (9.9)
<b>Benzodiazepine</b>	35 (5.6%)	29 (82.9)	6 (17.1)
<b>Shabu (n= 15)</b>	15 (2.4)	15 (100.0)	0 (0.0)
<b>Others</b>	15 (2.4)		

\*Three cases of cocaine use, 6 cases of tramadol use and 6 cases of volatile substance use.

The characteristics and patterns of use of main substances used by the studied population varied. For captagon use, the mean age of initiation (AOI) was  $21.9 \pm 5.9$  years. About half of the patients

started their captagon use after the age of 22 (48.6%). The mean daily use of captagon was  $3.5 \pm 3.9$  tablets. The most frequent pattern of use was continuous use in 71.4% of cases. The mean time from start of use to the first psychotic symptom (FPS) was  $5.2 \pm 3.7$  years and the mean amount of money in Saudi Riyal (SR) spent per month was  $590 \pm 640$  SR (Table 3). For cannabis use, prevalence among studied patients was at 63%. The mean AOI of cannabis use was  $21.8 \pm 5.8$  years. More than half of patients started cannabis use before the age of 22. The mean daily dose was  $6.1 \pm 6.7$  joints. The most frequent pattern of use was continuous (72%). The mean time from start of use to FPS was  $7.3 \pm 4.2$  years and the mean amount of money spent per month was  $745 \pm 533$  SR. (Table 3). For Alcohol use, the prevalence among patients was 30.7% and the mean AOI was  $21.3 \pm 5.6$  years. About a quarter of patients started alcohol use above the age of 25 (26.7%), while 22% started at 22-25 years of age. The mean daily dose was  $0.6 \pm 0.8$  Liter. The pattern of use was distributed as 15% binge, 40% continuous and 45% recreational. The mean time from start of use to FPS was  $8.3 \pm 4.8$  years and the mean amount of money spent per month was  $300 \pm 260$  SR. (Table 3).

There was a statistically significant difference in types of associated symptoms between alcohol use and cannabis use, with the highest frequency of depressed mood having been found among alcohol users, while poor eye contact and suicidal behavior were highest among cannabis users. Although not significant, delusion, hallucination and bad grooming were more frequent among captagon and alcohol users. Memory loss, tardive dyskinesia, obsession, and concrete thinking were less frequent among the studied patients irrespective of the type of substance used (Table 4).

Table 3. Characteristics and patterns of use of main substances used by studied patients:

Characteristics*	Captagon N=434	Cannabis n= 392	Alcohol N=191
Mean age of initiation (mean $\pm$ SD)	21.9 $\pm$ 5.9	21.8 $\pm$ 5.8	21.3 $\pm$ 5.6
Age of initiation in categories			
< 13	6 (1.4)	5 (1.3)	6 (1.4)
14-16	51 (11.8)	79 (20.2)	37 (19.4)
17-19	103 (23.7)	82 (20.9)	41 (21.5)
20-21	63 (14.5)	60 (15.3)	18 (9.4)
22-25	106 (24.4)	83 (21.2)	42 (22.0)
> 25	105 (24.2)	83 (21.2)	51 (26.7)
Mean daily dose	3.5 $\pm$ 3.9 (1-25)	6.1 $\pm$ 6.7 (1-22)	0.6 $\pm$ 0.8
Pattern of use			
Binge	31 (7.2)	44 (11.0)	29 (15.0)
Continuous	303 (70.0)	282 (72.0)	76 (40.0)
Recreational	100 (22.8)	66 (17.0)	86 (45.0)
Mean time from use to first psychotic symptom (in years)	5.2 $\pm$ 3.7	7.3 $\pm$ 4.2	8.3 $\pm$ 4.8
Mean money spent per month in SR	590 $\pm$ 640	745 $\pm$ 533	300 $\pm$ 260

N: numbers, SD: standard deviation

Table 4: The distribution of associated psychological and neurological symptoms by the type of substance used among studied patients:

Psychological and neurological symptoms	Captagon (n= 434)	Cannabis (n= 392)	Alcohol (n= 191)	P value
Bad grooming	42 (9.7)	29 (7.4)	21 (10.9)	0.15
Poor eye contact	27 (6.2)	113 (28.8)	14 (7.6)	<.0001**
Tardive dyskinesia	1 (0.2)	0 (0.0)	0 (0.0)	-
Suicidal behavior	10 (2.5)	12 (30.1)	7 (3.7)	0.01**
Depressed mood	53 (12.3)	70 (17.8)	95 (49.5)	0.002**
Delusion	118 (27.5)	94 (23.9)	52 (27.2)	0.10
Obsession	2 (0.4)	6 (1.5)	3 (1.6)	0.09
Death wishes	27 (6.2)	32 (8.1)	17 (8.9)	0.14
Suicidal ideations	20 (4.6)	18 (4.6)	12 (6.4)	0.36
Concrete thinking	1 (0.2)	1 (0.2)	0 (0.0)	-
Illusion	4 (0.8)	7 (1.7)	2 (1.1)	0.23
Hallucination	76 (17.5)	62 (16.0)	34 (17.8)	0.85
Pseudo-hallucination	13 (3.0)	12 (3.1)	4 (2.1)	0.20
Recent or remote memory deficit	5 (1.1)	7 (1.7)	3 (1.6)	0.22

\*Data are presented by n (%). \*\* P – value < 0.05 is statistically significant

The prevalence of co-occurring disorders among the studied patients was 14% (87/622; 95% CI= 11%-17%). The diagnosis of a substance induced disorder was found in 23.8% of the studied patients (95% CI= 21%-27%), while the isolated diagnosis of an

SUD was found among 62.2% of them (95% 58%-66%). Of cases of co-occurring disorders there were 26 with schizophrenia (30%), 36 with depression (41.5%), 13 with bipolar disorder (15.0%) and 12 with anxiety disorders (13.5%) (Table 5).

**Table 5. Prevalence of co-occurring disorders among the studied patients (N=622):**

Diagnosis	No (%)	95% CI
Co-occurring disorders	87 (14.0)	11.0-17.0
Substance induced disorders	148 (23.8)	21.0-27.0
Isolated substance use disorders	387 (62.2)	58.0-66.0

## Discussion

Male patients represent 96.6% of our sample. This may be explained by the fact that in addition to the absence of a female rehabilitation inpatient treatment unit in ASPH, most of the time families avoid to open files for their daughters in the local psychiatric hospital and prefer to treat them away to avoid stigma.

The mean age of the studied patients was  $32.1 \pm 9.2$  years ranging between 16 and 76 years, with 45.8% of them aged less than 30 years. This distribution is similar to what was found in our previous sample of 98 patients having the diagnosis of captagon use disorder (2016-2017), with a mean age of  $33.2 \pm 8.7$ , and 48% of them between 16 and 33 (6). Also, the Study of the Addiction Phenomenon in Saudi Society (SAPSS), a survey done between 13 June 2010 and 3 June 2011 covering 792 patients admitted in four addiction treatment centres, found that 44.5% of cases were between 24 and 33 years (8). This younger age group reflects what is recognized in medical literature that experimentation with drugs often starts in adolescence, as does the process of addiction (9).

In our sample 70.7% of cases were single, 10.1% divorced and only 19.1% married. This distribution was similar to what was found by Ibrahim et al. while studying 612 patients representing all patients admitted in Al-Qassim psychiatric rehabilitation

centre during the year of 2016. They found that 54.9% were single, 9.5% divorced, 0.7% widower and 35 % married (10). This propensity of single patients in our sample can be explained by the fact that with their early age of onset these patients start the process of addiction early in their life and find themselves as ineligible bachelors in a society where marriage is always arranged between families. In our sample at least one out of three of those who got married ended by being divorced and in Al-Qassim sample the percentage of divorcees was around 9.5%. This reflects the close relation, going both ways, between substance use and divorce in medical literature. In United States of America, Amato et al. used the national panel data collected between 1980 and 1997 to classify 208 people's open-ended responses to a question on why their marriages ended in divorce. Drinking or drug use came as third reason after infidelity and incompatibility (11). In Sweden, Edwards et al. examined the association between divorce and the onset of drug abuse in a population-based Swedish cohort born during 1965–1975 ( $n = 651,092$ ) and found, in both sexes, an association between the increase of the risk of drug-abuse and the onset divorce (12).

In SAPSS, family history was positive for substance use in 35.3% of patients with 18.3% of them having families containing 3 or more substance users (8). In our sample 90% reported a negative family history

of substance use. This may reflect more pressure for treatment from families less tolerant to substance use compared to families where substance use is endemic.

In medical literature, there is a proved overuse of medical services by SUD patients (13,14). Around a third of our sample visited the emergency department (ED) at least once during the month prior to their evaluation, and many of these patients visited the ED more than 3 times during this period.

The most frequently used substances were by far captagon (69.8%), then cannabis (63%) and alcohol (30.7%) (table 2). This frequency echoed the shift in type of substance use among treatment-seeking subjects emphasized by AbuMadini et al. They studied 12,743 patients admitted in Alamal hospital in Dammam from 1986 to 2006. They compared relative frequencies of different types of substances in the first decade to those in the second decade and found an increase in relative frequencies of amphetamine and cannabis and a decrease in relative frequencies of heroin and other substances, while the relative frequency of alcohol stayed relatively the same (27.1 first decade and 26.7 the second decade) (7). Noteworthily, in our current sample the percentage of alcohol use was 30% and relatively the same frequency was found in Almadinah's sample of captagon users 2016-2017 which was at 35% (6,7).

In our sample, alcohol was used in 90.1 % of cases in a context of multiple substance abuse, while only 40% of users used the substance continuously. The intermittent and multiple substance use patterns may reflect the cognitive dissonance these patients may have toward their alcohol use because of the stigma and constraints faced in a religious society.

The mean AOI of our sample was around 21 years (captagon  $21.9 \pm 5.9$ , cannabis  $21.8 \pm 5.8$ , alcohol  $21.3 \pm 5.6$ ) with 74.8% of captagon users, 78.9% of cannabis users and 73.3% of alcohol users having used the substance before the age of 25 (table 3). It is known that adolescents are prone to experimenting with drugs (13,15,16) due to the delayed maturation of the prefrontal cortex until the mid-twenties (17). The earlier the onset of substance

use the higher the risk of development of SUD (18). This peak of experimentation among adolescents and young adults was clearly manifested in SAPSS's sample (8) and in the sample of captagon use disorder study in Almadinah (6).

Risk factors that occur at earlier ages pre-dispose to exposure to other risk factors later in the individual's life, often multiplying their effect, and that adverse social environments also increase the risk of drug use and SUDs across adulthood (4). The additive effect of different types of risk factors, with time, may explain why 20% of patients in our sample had a late onset of substance use; starting their use after the age of 25 (24.2 % of captagon users, 21.2% of cannabis users and 26.7% of alcohol users). Risk factors of substance use in Saudi society were studied by SAPSS. They divided risk factors into two main groups: the presence of risk factors and the absence of protective factors. They found that the most important risks were first, those related to experiences of adolescence where the presence of risk factors was 61.7% and the absence of protective factors was 60%. Second, experiences in neighbourhood environment where the presence of risk factors was 54.1% and the absence of protective factors was 53.6%. Third, the school environment with 45.3% for the presence of risk factors and 40% for the absence of protective factors (8).

The presence of a psychiatric disorder is associated with an increased risk for SUDs, and SUDs are associated with an increased risk for mental disorders (4). In our sample, the prevalence of co-occurring disorders among the studied patients was at 14%. There were 26 with schizophrenia (30%), 36 with depression (41.5%), 13 with bipolar disorder (15.0%) and 12 with anxiety disorders (13.5%).

In our sample 23.8% were diagnosed with a substance induced disorder, reflecting the fact that individuals predisposed to develop a primary psychotic disorder might have a predisposition to using substances and that the abuse of drugs might accelerate the course of an underlying psychotic disorder (19).

The delay between initiation to substance use and FPS in our sample was shortest with captagon ( $5.2 \pm 3.7$ ), followed by cannabis ( $7.3 \pm 4.2$ ), and alcohol ( $8.3 \pm 4.8$ ). These substances were mostly used in a context of multiple substance use (going from 66.1% for captagon to 90.1% for alcohol and even 100% for the 15 methamphetamine users). Studies failed to demonstrate an additional effect of polysubstance use on the period between the AOI and the age of FPS (20,21,22).

Regarding the limitation of this study, this is a retrospective study in which information was gathered at the beginning from medical files where data were compiled with an unknown reliability and validity. If necessary, as a second step, the data will be completed by a patient's interview that will also expose it to possible recall bias. In addition, some factors were not studied and need to be included in future research like topographical location, familial socioeconomic classes, parental divorce, tobacco use and school performance. Furthermore, our sample is almost exclusively male although substance abuse in females started recently to be a problem in need for specific attention.

## Conclusion

There is an urgent need for large scale, locally sponsored, retrospective, prospective and survey studies to fill the knowledge gap present in substance use, substance use management and in mental health in general. In addition, the fact that 90% of our sample reported a negative history of substance abuse with about 4 out of 5 having an early AOI to substance use, with some starting as early as elementary school, emphasizes the urgent need for preventive efforts of psychoeducation on substance abuse and dependence, targeting our youths and their families, particularly in fields like school and neighbourhoods.

## Disclosure

### *Conflict of interest:*

None

### *Funding*

None

## *Data availability*

Data that support findings of this study are embedded within the manuscript.

## *Ethical Consideration*

Ethical approval (with the IRB log No: 30-22) was obtained from King Salman bin Abdulaziz Medical City (KSAMC) Institutional Review Board, National Registration Number with NCBE, KSA: (H-03-M-11).

## *Author Contribution*

All authors contributed to data collection, drafting, and to the final writing of the manuscript.

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