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Research Article

**SOCIO-DEMOGRAPHIC CORRELATES AND PATTERNS OF  
USE OF CAPTAGON USERS VISITING ALAMAL MENTAL  
HEALTH COMPLEX IN ALMADINAH****<sup>1</sup>Abdullah Ahmed Alshenguity, MD., <sup>2</sup>Emtinan Mohammed Salem Alruhaili, <sup>3</sup>Ahdab Qasem Alreheli, <sup>4</sup>Sara Homoud AlQaidi, <sup>5</sup>Razan Abdulmonem Almuzaini, <sup>6</sup>Moayad Ali Karbouji**<sup>1</sup>Consultant Psychiatrist Specialized in Addiction Medicine. Head of the Addiction Department at Alamal Mental Health Complex in Almadinah, Email: [alshenguity@yahoo.com](mailto:alshenguity@yahoo.com),<sup>2</sup>[Mis.imintinan@gmail.com](mailto:imintinan@gmail.com), Medical Intern, Taibah University Medical College.,<sup>3</sup>[ahdabqasemms@gmail.com](mailto:ahdabqasemms@gmail.com), Medical Intern, Taibah University Medical College.,<sup>4</sup>[saragaidy1@gmail.com](mailto:saragaidy1@gmail.com), Medical Intern, Taibah University Medical College.,<sup>5</sup>[razanmuzaini@gmail.com](mailto:razanmuzaini@gmail.com), Medical Intern, Taibah University Medical College., <sup>6</sup>Medical Intern, College of Medicine, Taibah University, Email: [Moayad-A-Karbouji@hotmail.com](mailto:Moayad-A-Karbouji@hotmail.com)**Abstract:**

**Background:** Captagon use disorder represents one of the most serious substance abuse problems in Saudi Arabia and the Middle East, with a few published data on the subject. Our objective is to describe the socio-demographic characteristics and patterns of use of Captagon users visiting Alamal Mental Health Complex in Almadinah.

**Patients and Methods:** a retrospective descriptive study of 98 patients, visiting the emergency and general psychiatry outpatient services of Alamal Complex between September 2016 and May 2017 and identified as having a substance use disorder with Captagon as the main substance of use. Information was taken from patients' records and if necessary, completed by a direct interview with the patient.

**Main Outcome Measures:** Descriptive epidemiology and statistical comparisons.

**Results:** Mean age was 33.2 (8.7) years, with basic education (87.7%), low and moderate income 95.9%, and only 30.6% were married. Mean age of initiation to Captagon use was 22.8 (7.2) years. Main daily Captagon's dose was 4.0 (3.9) tablets, on a continuous pattern (71.4%). The mean time from the beginning of Captagon use to the first manifestation of psychotic symptoms was 4.7 (4.3) years. The family history of substance use was found in only 3.1%, while the family history of psychiatric disorders was found in 20.4%. The risk of using cannabis or alcohol in addition to Captagon was significantly increased among stable work cases where it was increased 3.5 times compared to non-working cases (OR= 3.5; 95% CI= 1.10-11.7). Substance-induced psychosis and co-occurring disorders were present with 57.1% and 25.5% respectively, while isolated substance use disorders were found only in 17% of cases.

**Conclusion:** There was a significant statistical association between having a stable work and having a Poly-substance use in addition to a remarkable lack of family history of substance abuse in the sample studied. This shed light on the need for prospective and retrospective studies to understand the specific cultural nuances of substance use in the Kingdom.

**Conflict of Interest:** None.

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

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**INTRODUCTION:**

Amphetamine was synthesized for the first time in Germany in 1887 [1]. Amphetamine-type substances were used on a large scale in the second world war by the American and Japanese to enhance the performance of their soldiers and were responsible of a severe epidemic of addiction in Japan after the dumping of the stokes of the Japanese army at the end of the war [2].

Amphetamine and amphetamine-type substances are currently one of the most illicit drug used in the world. These substances occupy the second place worldwide after cannabis in Saudi Arabia [3], Asia, Western Europe and the United States of America [4].

Based on official statistics received from the National Committee for Narcotic Control (NCNC) and despite the effort to limit the use of substances of abuse and dependence in the Saudi Arabian community, a Muslim community known as religious and conservative, the amount of drug seized as well as the number of treatment seekers doubled in the period between 1998 and 2013. In addition to that, the number of arrests related to drugs in that period increased exponentially by 297.5% compared to what was documented in the preceding periods. In the year 2013 alone, 95.2% of drug related criminal cases (drug use, dealing or trafficking) were related to cannabis (41.5%), amphetamine (30.2%) and khat (23.6%) [3].

Captagon (Fenethylamine), as a drug, is the product of the combination of amphetamine and theophylline. It was first synthesized by the German Company Degussa AG in 1961. It has been indicated in the past (1960-1970) for the treatment of attention deficit hyperactivity disorder, narcolepsy and depression. Nowadays, there is no medical indication for the use of this substance [5].

Captagon is considered the first or second substance of abuse in the Kingdom of Saudi Arabia (KSA),

according to the area studied. In the last decades the main substances of abuse in KSA shifted from

alcohol and heroin in the main cities to a wide-spread of use of Cannabis and Captagon [6,7].

Captagon, an amphetamine type substance, is used for its stimulating and energizing effect, but its regular use is accompanied by multiple side-effects, among them the development of addiction, paranoid psychosis, and acute cardiovascular events. The consequences of Captagon use are catastrophic affecting the user's educational, legal, social and professional life [2,8].

Captagon use can manifest with psychosis and even with a full-blown picture of schizophrenia, in the form of irritability, aggression, hallucinations and paranoid delusions disturbing the life of others around the patient [9,10,11]. The incremental use of this substance has increased Psychiatric emergency visits as well as the number of cases of domestic violence in KSA. This surge of domestic violence was responsible for the formation of the General Directorate for Family Protection (on 2/3/2005); with 17 family protection committees formed within the 17 main administrative provinces throughout KSA.

Considering the scarcity of studies on Captagon use worldwide including in KSA, as a first step toward a solution to the problem, we set as objective to describe the patterns and the socio-demographic characteristics of Captagon users visiting Alamal Mental Health Complex in Almadinah. This information will be of great help to put down the foundation for further research in order to tailor and plan the treatment and the prevention of substance use disorders in the Kingdom.

**MATERIALS AND METHODS:**

This is a descriptive retrospective study in which we reviewed the files of all patients visiting Alamal Mental Health Complex in Al-Madinah, during the period between September 2016 and May 2017. We

have included all male patients, aged 18 and above, and having the diagnosis of Captagon use disorder, with Captagon being the primary substance of abuse. The study excluded patients who were reluctant to participate or who refused to sign the required informed consent, those with mental retardation or having a severe hearing problem or a medical condition severe enough to impair their ability to communicate with interviewers. A thorough review of medical files identified 145 cases of Captagon users with Captagon as a main substance of use. Only 98 patients had an available updated contact address and when contacted gave the consent to participate. The used instrument was a sociodemographic and drug use checklist which collected the current age, gender, employment status, income, educational level, marital status, past psychiatric and medical history, and drug use history (age of initiation, time of use from initiation to the onset of first psychotic symptoms, patterns of use, daily dose, and the amount of money spent on substance use per month). Information regarding diagnoses and mental state examination were also collected.

#### **Ethical Consideration**

Ethical approval was obtained from Medical Ethics Committee of Taibah University Medical College. Prior to any interview, respondents were informed regarding the nature and purpose of the study, and were given the assurance that all information given will be treated with confidentiality. A written consent was obtained from the patients prior to the interview.

#### **Statistical Analysis**

The collected data were analysed using Statistical Analysis System (SAS) software package<sup>12</sup>. Data was presented using frequencies number and percent and mean [SD]. The prevalence of co-occurring disorders among the studied Captagon users was assessed and its 95% confidence interval was calculated. Comparison of psychiatric, physical and mental state findings among the cannabis and alcohol users among the studied Captagon users was done using Chi square and Fischer Exact tests, as appropriate. P values  $\leq 0.05$  were used as indicators of statistical significant differences. Furthermore, the association of cannabis and alcohol use with the socio-demographic characteristics of the studied Captagon users was examined by logistic regression analysis.

#### **RESULTS:**

(Table 1) shows sociodemographic characteristics of the sample. The mean age of the studied cases was 33.2 [8.7] years with 51% of them were aged 32 or more. The majority of cases were urban residents (97.95%) with a basic education (87.7%). About two-

third of cases were single (62.2%), while 30.6% were married and 7.2% were divorced. The predominant income among the studied cases where low income was found in 50% and moderate income in 45.9%.

In (Table 2) we have patterns of use with the mean age of initiation 22.8 [7.2] years. The main daily use of Captagon was 4.0 [3.9] tablets on a continuous pattern in 71.4%, and the mean amount of money spent per month on the substance, in Saudi Riyal (SAR), was 534 [508] (range: 30-4000).

(Table 3) detailed the findings in history, physical and mental State examination in studied Captagon users. The majority of cases were of average body built (93.9%). The predominant symptoms were sleep disturbance, depressed mood and delusion found in 26.5%, 23.5% and 23.5%, respectively. Scars of previous injections, suggesting intravenous drug use most probably heroin, were found in only 3 cases (3.1%). Tuberculosis was detected in two cases (2.04%) and hepatitis C in two cases (2.04%). The risk of multiple substance use (the use by

Captagon users of cannabis or alcohol or both), was increased among university cases, moderate- and high-income cases, and those who reported a positive family history of substance use and psychiatric disorders, although not significant. A significantly increased risk was detected among stable work cases where the risk was increased 3.5 times compared to non-working cases (OR= 3.5; 95% CI= 1.10-11.7). The risk, however, was decreased among married and urban cases and those aged 32 years or more.

The prevalence of a co-occurring disorder was 25.5% (95% CI= 17.5-35.5). Substance use disorder alone was found in 17.4% (95% CI= 10.7-26.6) and was found combined with a substance induced disorder in 57.1% (95% CI= 46.7-66.9). The co-occurring disorder cases were 12 cases (46.1%) of schizophrenia, 8 cases (30.8%) of depression, 4 cases (15.4%) of bipolar disorder, and one case with personality disorders and obsessive-compulsive disorders.

#### **DISCUSSION:**

In Table 1, the age in years of our patients visiting Alamal in Almadinah during the study period was ranging from 16 to 67 with a mean age in years 33.2 (8.7), and 48% of them between 16 and 33. This echoed what was found in the sample studied in "The Study of the Addiction Phenomenon in Saudi Society" (SAPSS) in which 44.5% of cases were between 24 and 33 year-old<sup>3</sup>. SAPSS, implemented in 2011, covered the 4 only addiction residency

programs in the kingdom at the time (in Riyadh, Jeddah, Dammam and Al-Qassim) and was under the supervision of the NCNC and the Ministry of Health. The study was a survey covering 792 patients receiving treatment in those centres [3].

In our sample, the mean age of initiation of substance use in years (n=98) was 22.8 [7.2] (range: 12-48). In medical literature, the earlier the onset of substance use the higher the risk of development of drug use disorders [13]. The highest rate was at approximately 19 y-o [14], followed by a sharp decline of the risk rates after the age of 25. Table 4 manifested clearly this trend for SAPSS sample as well as for the age of initiation of Cannabis use and Alcohol use in our sample. Nonetheless, our sample showed a substantial late onset of use for Captagon users passing the age of 25 (23% of cases). This late initiation to the substance passing the age of 25 may be related to the high percentage of co-occurring disorders in our sample reaching one in every 4 cases. For these patients, having a mental illness itself represents a risk factor for substance use; either for example by making inappropriate decision to use Captagon to self-medicate a depressive illness or to use it as an over involvement in pleasurable activities in the context of a manic episode. Patients may also be acquainted to the substance by the drug dealer who might exploit them lately to distribute the drug in the street.

To further complicate the situation, we still have the dilemma of which is primary; the psychiatric illness or the substance use. On one hand, although some studies have suggested the presence of more pronounced grandiosity and visual hallucinations [15] in cases of amphetamine induced psychosis, the symptoms of amphetamines induced psychoses are in general very similar to those of an acute exacerbation of paranoid schizophrenia [16,17]. On the other hand, it seems that up to 25% of those who were initially diagnosed with drug induced psychosis after some years develop a primary psychotic disorder [18]. In our sample, Captagon induced psychosis was present in 57.1% of cases (95% CI= 46.7-66.9) with delusion, hallucination, disturbed sleep, and depressed mood the most frequently manifested symptoms.

The mean time in years from the initiation of Captagon use to the manifestation of first psychotic symptoms was 4.7 [4.3] (range: 0.5-20). This mean time was kept almost the same as we looked in our sample at subgroups having multiple substance use (using in addition to Captagon, either Cannabis or Alcohol). This needs to be investigated further with a

regression analysis on a bigger sample size although some studies abroad have failed to demonstrate an additional effect of polysubstance use on the period between the age of initiation and the age at onset of psychosis [19,20,21]. Meanwhile, the time delay found in our study was similar to what was found in the analysis of the 2010 Australian Survey of High Impact Psychosis. In the latter 382 individuals with a psychotic disorder and a premorbid history of amphetamine use were analysed according to their age of initiation to amphetamine [22] and a delay of approximately 5 years from the initial exposure to amphetamine to the onset of psychosis was found.

Substance use disorders influence negatively the individual's ability to have a stable work history. Nonetheless, it is sometimes difficult to determine which developed first; whether the lack of employment led to substance abuse or whether substance abuse resulted in job loss [23]. In our sample 28.6% had a stable work, while 42.8% were unable to keep a job and 28.6% were jobless. This was almost similar to what was found in SAPSS's sample where 39.7% were able to keep a job while 48% were unemployed.

Stimulant users are known to use CNS depressant drugs (alcohol, cannabis, Benzodiazepines...) to mitigate consequences of the substance intoxication such as the paranoia, anxiety and restlessness [24]. They also use these CNS depressants to medicate withdrawal symptoms. In our sample a significantly increased risk for the use of Cannabis and/or alcohol in combination with Captagon was detected, among stable work cases where the risk was increased 3.5 times compared to non-working cases (OR= 3.5; 95% CI= 1.10-11.7).

When interpreting the association between substance use and job environment, it is important to take into account the great effect on the worker of predominant social stereotypes surrounding substance use [25]. For example, some kinds of substances like Captagon seem to be popular in some workplaces to the extent that non-users might become tempted or forced by peer pressure to use the substance in order to adapt and be accepted in their environment (i.e. Captagon use among security officers and track drivers).

It is estimated that 40% to 60% of the vulnerability to addiction is attributable to genetic factors<sup>26</sup> leaving the rest to environmental influence. In SAPSS's sample, the family history was positive for substance use in 35.3% with 18.3% of them living in families containing 3 or more substance users. An analysis of data from 612 patients admitted in Al Qassim

Rehabilitation Centre found that 18.8% of them had a positive family history for substance abuse [27]. Surprisingly, in our sample the family history of substance use was present in only 3.1%. This may be explained by the difference in groups studied. In SAPSS's and Al Qassim's samples they studied addiction treatment seekers while our group represented patients visiting the ER or outpatient services of a mental health hospital with 25.5% (95% CI= 17.5-35.5) of them having co-occurring disorders and 20.4% of them having family histories of psychiatric disorders.

Our study has shown some limitations that should be taken into consideration, as follows:

- a) We used a convenient sample of limited size.
- b) It 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.
- c) Given the pattern of comorbid use of other substances of abuse, mainly comorbidity with cannabis and/or alcohol, it is not possible to ascertain the weight of the independent effect of Captagon on the time to the onset of psychosis.
- d) The study did not include women with Captagon use disorders which nonetheless are in small numbers in our community, but are still in need to be studied, individually and in the social context related to their use.

To conclude, these findings add to the growing body of literature on Captagon use in the Middle East, and shed light on the need for prospective and retrospective studies to understand the specific nuances of the culture of substance use and abuse in Saudi Arabia.

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**Table 1. Characteristics of the studied Captagon users**

<b>Characteristics*</b>	<b>All cases (n= 98)</b>
<b>Age in years; mean <math>\pm</math> SD (Range)</b>	33.2 [8.7] (16-67)
<b>Age in years</b>	
< 32	48 (49.0)
$\geq$ 32	50 (51.0)
<b>Education</b>	
Illiterate	1 (1.0)
Basic education	86 (87.8)
University and higher	11 (11.2)
<b>Residence</b>	
Urban	96 (97.9)
Rural	2 (2.1)
<b>Marital status</b>	
Single	61 (62.2)
Married	30 (30.6)
Divorced	7 (7.2)
<b>Mean duration of marriage** (Range)</b>	12.2 [8.4] (2-40)
<b>Work</b>	
Not working	28 (28.6)
Stable work	28 (28.6)
Difficulty keeping a work	42 (42.8)
<b>Income</b>	
Low	49 (50.0)
Moderate	45 (45.9)
High	4 (4.1)
<b>Birth order</b>	
First	20 (20.4)
2-5	61 (62.2)
> 5	17 (17.4)
<b>Family history of substance use</b>	
Yes	3 (3.1)
No	95 (96.9)
<b>Family history of psychiatric disorders</b>	
Yes	20 (20.4)
No	78 (79.6)
<b>Parental separation or loss of parents</b>	
Yes	6 (6.2)
No	92 (94.8)
<b>Substance use by peers</b>	
<b>Yes</b>	3 (3.1)
<b>No</b>	95 (96.9)

\*Data are presented by n (%) and mean [SD].

\*\* The mean is calculated for married and divorced subjects (n= 37)

**Table 2. Captagon use Patterns among the studied users**

<b>Patterns*</b>	<b>All cases (n= 98)</b>
<b>Mean age of initiation</b>	22.8 [7.2] (12-48)
<b>Mean daily dose</b>	4.0 [3.9] (1-25)
<b>Pattern of use</b>	
Binge	7 (7.2)
Continuous	70 (71.4)
Recreational	21 (21.4)
<b>Mean time from use to first psychotic symptom in years</b>	4.7 [4.3] (0.5-20)
<b>Mean money spent per month in SR</b>	534 [508] (30-4000)
<b>Cannabis use</b>	
Yes	61 (62.2)
No	37 (37.8)
<b>Alcohol use</b>	
Yes	35 (35.7)
No	63 (64.3)

\*Data are presented by n (%) and mean [SD].

**Table 3. Findings in History, Physical and Mental State Examination among the studied Captagon users (n= 98)**

<b>Psychologic and neurologic disorders</b>	<b>No (%)</b>
<b>Bad grooming</b>	10 (10.2)
<b>Body built</b>	
Thin	4 (4.08)
Obese	2 (2.4)
Average	92 (93.9)
<b>Scars of previous injection</b>	3 (3.06)
<b>Tardive dyskinesia</b>	1 (1.02)
<b>Suicidal behavior</b>	1 (1.02)
<b>Depressed mood</b>	23 (23.5)
<b>Delusions</b>	23 (23.5)
<b>Obsession</b>	1 (1.02)
<b>Death wishes</b>	3 (3.06)
<b>Suicidal ideations</b>	2 (2.04)
<b>Concrete thinking</b>	4 (4.08)
<b>Illusions</b>	0 (0.0)
<b>No orientations</b>	2 (2.04)
<b>Hallucination</b>	16 (16.3)
<b>Pseudo-hallucination</b>	0 (0.0)
<b>No recent nor remote memories</b>	3 (3.06)
<b>No insight</b>	8 (8.16)
<b>Seizure</b>	1 (1.02)
<b>Sleep disturbance</b>	26 (26.5)
<b>Hypertension</b>	6 (6.12)
<b>Gastritis</b>	1 (1.02)
<b>Alcoholic hepatitis</b>	1 (1.02)
<b>TB</b>	2 (2.04)
<b>Hepatitis C</b>	2 (2.04)

\*Data are presented by n (%).

**Table 4: Age of initiation of substance use among the studied cases\* and those studied in SAPSS:**

Age of initiation of substance use	Captagon (n= 98)	Cannabis (n= 61)	Alcohol (n= 35)	SAPSS's sample
< 13	1 (1.0)	2 (3.3)	1 (2.9)	9%
14-16	14 (14.3)	12 (19.7)	6 (17.1)	28%
17-19	19 (19.4)	18 (29.5)	14 (40.0)	32.1%
20-22	27 (27.6)	18 (29.5)	14 (40)	18%
23-25	14 (14.3)	2 (3.2)	0 (0.0)	7.4%
> 25	23 (23.4)	9 (14.8)	0 (0.0)	5.8%

\*P value = 0.14, not significant