

# Substance dependence

## *A hospital based survey*

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### ABSTRACT

**Objective:** To collect basic data on multiple and diverse issues such as drugs of dependence, smoking, initiation age, injection related harm, nutritional status, trauma, accidents, abnormal laboratory parameters and co-morbid conditions.

**Method:** Seven hundred and ninety nine subjects from a voluntary detoxification unit were studied. Four hundred and ninety seven charts from June 1995 to December 1995 were reviewed retrospectively. For the other 302 subjects admitted between September 1996 to December 1996, information regarding drug use, smoking, trauma, accidents and co-morbid conditions was recorded during the admission interview while the remaining data was later obtained from the charts.

**Results:** Sixty eight percent were under 35. Ninety seven percent were smokers and 55% started smoking before the age of 15. Sixty four percent initiated drugs before the age of 25 while 34% had been on drugs for less than 5 years. Eighty seven percent were using heroin or alcohol.

Fourteen percent were dependent on more than one drug. Among heroin users 91% were injecting, 21% had injection related complications, 69% had Hepatitis C Virus and 0.40% died. Forty four percent had at least one current medical disorder, 59% had one abnormal laboratory parameter and 21% below normal Body Mass Index. Nine percent had mental disorders and 1% presented with overdose. Twenty nine percent reported unintentional injuries and 12% reported of road traffic accidents. Seventeen point five percent had family history of drug use, 4.5% had mental disorders and 87% physical disorders.

**Conclusion:** More accurate and reliable data is required. Current services need to be improved. Preventative measures should focus on early detection and intervention and a central body for information collection should be established.

**Keywords:** Dependence, prevalence, co-morbidity, survey.

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Substance use is always a cause for concern to government and public alike.<sup>1,2</sup> Recent evidence<sup>3,4</sup> suggests that it may be on the increase. Drug treatment services were first set up in the Kingdom in the eighties. Three specially designated hospitals were opened for this purpose.<sup>5-7</sup>

Saudi Arabia is still lacking in comprehensive data on substance dependence. No proper information gathering system is in place and good epidemiological studies or surveys have not yet been carried out. It was felt that by surveying hospital

records of in-patients useful preliminary information on this important public health issue could be gathered

The objective of this study is to collect basic data on multiple and diverse issues to evaluate smoking, prevalence of different substances used, injection related harm, nutritional status, trauma, accidents, abnormal laboratory parameters, medical and psychiatric co-morbidity among the substance dependent.

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**Methods.** Seven hundred and ninety nine in-patients from a voluntary detoxification unit were studied. A form was devised to record information on age, drugs of dependence, duration of use, age at initiation of smoking and drugs, injection related harm, trauma, accidents, nutritional status, abnormal laboratory parameters, family history, medical problems and mental disorders (determined by the psychiatrist).

Two different periods of hospitalization are identified. The first is from June 95 to December 95 (inclusive). Four hundred and ninety seven in-patient charts were reviewed retrospectively. In the second period, September 96 to December 96 (inclusive), 302 in-patients were studied. The data collection method was slightly varied. Instead of retrospective collection of all data, information on smoking and drug history, medical problems, mental disorders, accidents, trauma and family history was initially recorded during the admission process, while the remaining data was obtained from the charts after discharge.

The admission process consisted of history taking and interviews by a psychiatrist followed by evaluation by an internist (such as charting history, recording physical findings and requesting investigations). All new cases had complete blood count, electrolytes, blood urea nitrogen, creatinine, random blood sugar, liver function tests, serology (hepatitis, human immunodeficiency virus, syphilis) and chest x-ray were carried out routinely. For re-admissions, LFTs and serology were repeated after 3 months and all other investigations after 6 months.

The data was collected in this manner for convenience. Two different periods were chosen to enable more subjects to be included in the study. It was felt this would not significantly influence the outcome as the purpose of the study was to collect preliminary information on a variety of diverse issues. Scientific investigation of differences between the 2 groups was never intended.

To avoid any reduplication of data, in-patients that were readmitted during the study period were excluded. All diagnoses were based on DSM-IV. Substance dependence was only considered and abuse was excluded.

**Results.** Dependence was diagnosed in 799 subjects. One subject had chronic schizophrenia but no substance disorder. Eighty six percent (684 subjects) were dependent on a single drug (Table 1), 11% (91 subjects) were dependent on 2 drugs and 3% (24 subjects) were dependent on more drugs. Eighty seven percent (692 subjects) were using heroin or alcohol. Eighty three percent (663 subjects) were aged between 20-39 and 68% (545 subjects) were under 35. The youngest age recorded was 17 and the eldest was 66 (Table 2). Thirty one point five

percent (252 subjects) initiated drugs before age of 20 and 64% (507 subjects) before the age of 25. The youngest was 10 (volatiles) and the eldest 59. Alcohol, volatiles and polydrugs were initiated before 20. Seventy percent (560 subjects) had been on drugs for less than 10 years and 34% (271 subjects) for less than 5 years. Alcohol was the only substance used for periods in excess of 20 years, the maximum was 56.

Ninety seven percent (759 subjects) were smokers. Three percent (23 subjects) were non-smokers. Smoking status was not recorded in 2% (18 subjects). Smoking was initiated before drugs in 93.5% (710 subjects), with drugs in 5% (36 subjects) and after drugs in 2% (13 subjects). The youngest was 4 years of age and the eldest was 32, both heroin dependent. Fifty five percent (418 subjects) started smoking before 15 and 92% (696 subjects) before the age of 20. (Table 2).

Seventy five percent (476 subjects) had positive hepatitis serology (Table 3). The overall prevalence of hepatitis C virus (HCV) was 69% (437 subjects). The total number of heroin users in the study was 574 (including all diagnostic categories) - of these 396 were HCV positive ie. 69% of heroin dependent were HCV positive and 91% of HCV positive subjects were heroin dependent. The overall prevalence of HBs Ag positivity was 12% (77 subjects), of these 48 were taking heroin ie. 8% of heroin dependents were HBs Ag positive and 62% of HBs Ag positive subjects were heroin dependent. The prevalence of both HCV and HBs Ag positivity together was 6% (38 subjects), of these 24 were taking heroin ie. 4% of heroin dependent were sero-positive for both and 63% of hepatitis B & C sero-positive were heroin dependent. Serology results were not recorded in 168 subjects (21%). Past history of jaundice was reported by 19% (115 subjects). Sixty eight percent (78 subjects) were

**Table 1** - Diagnostic categories and prevalence.

Drug dependence	No. of subjects	(%)
Heroin	505	(63)
Alcohol	85	(11)
Volatiles	39	(5)
Amphetamine	34	(4)
Other drugs*	21	(3)
Heroin and alcohol (HA)	35	(4)
Heroin and other drugs(HOD)	26	(3)
Alcohol and other drugs (AOD)	24	(3)
Other two drugs combinations (OTD)§	6	(1)
Polydrugs	24	(3)
<b>Total</b>	<b>799</b>	<b>(100)</b>

\*Cannabis 7, Dextromethorphan 6, Benzodiazepine 4, Khat 2, Cocaine 1, Parnate 1  
§Excluding alcohol and heroin

**Table 2** - Initiation of smoking, initiation of drugs and duration of abuse.

Range in years	Number of subjects		
	Smoking initiation	Drug initiation	Abuse duration
0-9	71	-	560
10-19	625	252	212
20-29	59	404	19
30-39	4	111	6
40-49	-	30	1
50-59	-	2	1
Over 60	-	-	-

**Table 3** - Hepatitis, serology and liver functions.

	Number of subjects
History of jaundice	115
+ve hepatitis C serology	399
+ve hepatitis B serology*	39
+ve hepatitis C & B serology	38
Abnormal LFT§	199
+ve serology and abnormal LFT	117
+ve serology and H/O jaundice	87

\*HBsAg §Bilirubin, ALT, AST, ALK, GGT

**Table 5** - Accidents and unintentional injuries.

	No. of subjects	Drugs involved
<b>Road traffic accidents</b>	96	Alcohol, heroin
Driver injuries	36	heroin
Non-driver injuries	2	heroin
Driver suicide attempt	1	heroin
Unintentional injuries	234	Alcohol, heroin, volatiles
Fractures	191	Alcohol, heroin, volatiles
Head injuries	14	Alcohol, heroin, volatiles
Burns	18	Alcohol, heroin
*Other injuries	11	Alcohol, heroin

\*Lacerations, dislocations No=Number

**Table 4** - Complications secondary to injections.

Complications	Number of subjects	
	Current	Past
Abscess	35	18
Cellulitis	7	7
Septicemia	1	-
Deep vein thrombosis	4	1
Digital gangrene	1	2
Limb atrophy	-	1
Abscess away from injection site	2	18

**Table 6** - Drug induced symptoms.

Symptoms	Number of subjects (%)
Suspiciousness	34 (4)
Auditory hallucinations	24 (3)
Visual hallucinations	10 (1)
Elation	3 (0.38)
Low mood	25 (3)
Suicidal thoughts	7 (0.88)
Self harm	2 (0.25)
Anxiety	8 (1)
Disorientation	6 (0.75)
Non-specific*	5 (0.50)

\*tinnitus, apathy, poor concentration

Table 7 - Main feature of overdoses.

Diagnosis	Age	Years of abuse	Comorbidity	Presentation	Drug reportedly taken	Urine drug screen	Remarks
Heroin	35	3	-	Coma	Heroin	+ve benzodiazepines, barbiturates	-
Heroin & Benzodiazepine	37	10	-	Coma	Heroin	+ve opiates, benzodiazepines	Released from jail 4 days before OD
Alcohol	25	4	-	Coma	Alcohol	+ve alcohol	Relapsed after 1 year of abstinence
Heroin	30	10	Anxiety Neurosis	Coma	Heroin	Not done	-
Heroin	33	7	-	Drowsy	Heroin	+ve cannabis, opiates, benzodiazepines	-
Heroin & Benzodiazepine	30	14	Anxiety Neurosis	Coma	Heroin	+ve barbiturates	On benzodiazepines
Benzodiazepine	20	1	Anxiety Neurosis	Coma	Benzodiazepine	Not done	On benzodiazepines
Heroin	25	8	-	Drowsy	Heroin	+ve benzodiazepines, barbiturates	-
Heroin & Cannabis	35	10	Personality disorder	Drowsy	Heroin	+ve opiates, benzodiazepines	PH of 2 overdoses

heroin dependent and 76% (87 subjects) were sero-positive. Ninety percent (78 subjects) of the sero-positive were heroin dependent. History was not recorded in 24% (190 subjects). The overall prevalence of LFT abnormalities was 33% (199 subjects). Results were not recorded in 24% (195 subjects). Among various abnormalities, alanine aminotransferase (ALT) was elevated in 58% (116 subjects), aspartate transaminase (AST) 54% (108 subjects), GGT 8% (16 subjects), alkaline phosphatase 6% (12 subjects), bilirubin 4% (8 subjects) and more than one parameter in 33% (65 subjects). Twenty four point five percent (117 subjects) of sero-positives had abnormal LFT - raised ALT constituted 67.5% (79 subjects). Among the sero-positives with raised ALT, 97% (77 subjects) were heroin dependent and 90% (71 subjects) had HCV. Sixty three point five percent (54 subjects) of alcohol dependent had abnormal LFT. Raised ALT constituted 57% (31 subjects), GGT 5.5% (3 subjects) and more than one parameters 37% (20 subjects).

Ninety one percent (455 subjects) of heroin users were injecting intravenously and 0.40% (2 subjects) intramuscularly. Route was not recorded in 13% (75 subjects). Overall injection related complications were seen in 21% (97 subjects) of IVDUs. Fifty one point five percent (50 subjects) were current. (Table 4). Abscess at the injection site was present in 12% (53 subjects). This constituted 55% of all complications. The most common region affected was inguinal - 72% (38 subjects). Abscess in other parts (eg. axilla, neck etc.) constituted 20% (20 subjects). Other complications seen were cellulitis

14% (14 subjects), DVT 5% (5 subjects), digital gangrene 3% (3 subjects) septicemia 1% (1 subject) and limb atrophy 1% (1 subject). There were no HIV cases. Two IVDUs died (0.40%) - one developed septicemia while cause in the second case was not established.

Overall prevalence of road traffic accidents was 12% (96 subjects). Five percent (5 subjects) were multiple accidents (Table 5). Nineteen percent (28 subjects) alcohol and 10% (59 subjects) heroin dependent reported RTAs. Injuries were reported by 37.5% (36 subjects) - common were fractures 55.5% (20 subjects) and head injuries 25% (9 subjects). Fifty percent (18 subjects) of injured were heroin dependent, 30.5% (11 subjects) alcohol, 19% (7 subjects) heroin and alcohol HA and 5.5% (2 subjects) other diagnoses. One third (6 subjects) of injured heroin dependent reported being under the influence of another substance (alcohol, benzodiazepine). Three percent (3 subjects) attributed accidents to reasons other than drugs. There were 2 deaths (2%), a pedestrian and an accompanying passenger. One RTA (1%) involving a stationary object was attempted suicide by the driver. Unintentional injury was reported by 29% (234 subjects). The most common were fractures 82% (191 subjects), head injuries 6% (14 subjects), burns 5% (11 subjects).

Forty four percent (339 subjects) had a current medical problem (excluding injection and liver complications). Diabetes mellitus was present in 4% (35 subjects), hypertension 1.5% (12 subjects), asthma 3% (27 subjects), ischemic heart disease 0.63% (5 subjects), peptic ulcer disease (endoscopy

confirmed) 2% (19 subjects), epigastric pain (endoscopy not carried out or negative) 4% (34 subjects), hematemesis 0.50% (4 subjects) and anemia (Hb, Hct) 19% (149 subjects). Overall prevalence of seizures was 3% (22 subjects). Two percent (13 subjects) had idiopathic epilepsy, 0.50% (4 subjects) reported seizures after sustaining closed head trauma and 0.63% (5 subjects) had seizures during withdrawals. Three point five percent (3 subjects) alcohol, 0.19% (1 subject) heroin and 4% (1 subject) polydrugs dependent reported withdrawal seizures. Skin disorders were seen in 4% (32 subjects) - 84% (27 subjects) of those affected were heroin or alcohol dependent. Most common conditions seen were Taenia versicolor 69% (22 subjects), scabies 12.5% (4 subject) and pediculosis 6% (2 subjects). The overall prevalence of STD was 16% (127 subjects). Fourteen percent (110 subjects) reported undiagnosed urethral discharge and 86% (95 subjects) were heroin dependent 2% (16 subjects) reported gonorrhoea, 87.5% (14 subjects) were heroin dependent. 0.12% (1 subject) had history of treatment for syphilis, 0.75% (6 subjects) were VDRL and 0.12% (1 subject) TPHA positive. Tuberculosis was seen in heroin and alcohol users only. One percent (10 subjects) had active pulmonary TB and 2% (13 subjects) reported past treatment. Other health problems reported were renal stones 5% (39 subjects), cardiac abnormalities (excluding IHD) 3% (25 subjects), CNS disorders (old polio, migraine etc.) 3.5% (28 subjects), ENT disorders (deafness, DNS etc.) 3% (21 subjects), eye disorders (exophthalmos, xanthelasma etc) 0.50% (4 subjects), dwarfism 0.25% (2 subjects), achondroplasia 0.12% (1 subject), Burger's disease 0.12% (1 subject), congenital blindness 0.12% (1 subject), appendectomy 8% (66 subjects), inguinal hernia repair 2% (19 subjects) and perianal abscess surgery 0.87% (7 subjects).

Abnormal laboratory parameters were present in 59% (471 subjects). Hematological (excluding infection, anemia) abnormalities were seen in 23.5% (188 subjects). Macrocytosis in 6% (45 subjects). Microcytosis in 2% (14 subjects), increased platelet count 3% (24 subjects), reduced platelet count 1% (8 subjects), increased white cell count 6% (47 subjects), reduced white cell count 2% (16 subjects), and increased number of non-neutrophilic cells 4% (34 subjects) were most commonly seen.

Abnormal random blood sugar results were present in 11.5% (84 subjects). Four point five percent (35 subjects) were known diabetics. Their results were not included. Random blood sugar (normal range 3.6 - 7.7 mol) was not recorded in 4% (34 subjects). Increased RBS (7.8 to 11.1 mmol) levels were present in 7% (51 subjects), diabetic range (above 11.1 mmol) in 0.95% (7 subjects) and decreased levels (below 3.6 mmol) in 3.5% (26 subjects).

Body mass index (BMI) was calculated to assess

nutritional status. Twenty one percent (151 subjects) had below normal (BMI under 19) and 7% (51 subjects) above normal values (BMI over 29). Body weight was not recorded in 9.5% (76 subjects).

The overall prevalence of drug induced psychological symptoms (Table 6) was 15.5% (124 subjects). These were short lived and reported mostly during intoxication and occasionally in withdrawals. Insight was preserved and recovery was spontaneous and complete. These did not meet diagnostic criteria of any mental disorder. Increased suspiciousness 4% (34 subjects), low mood 3% (25 subjects), auditory hallucinations 3% (24 subjects) and visual hallucinations 1% (10 subjects) were most common. Seventy one percent (5 subjects) of cannabis, 64% (25 subjects) volatile, 57% (12 subjects) other drugs, 56% (19 subjects) amphetamine, 25% (21 subjects) alcohol and 8% (42 subjects) of heroin dependent reported these symptoms.

The overall prevalence of mental disorders was 9% (69 subjects). Schizophrenia and other psychotic disorders constituted 4% (31 subjects), mood disorders 0.37% (3 subjects), anxiety disorders 0.37% (3 subjects), personality disorders 4% (29 subjects) and other disorders (eg. Wernicke's substance induced dementia) 0.38% (3 subjects). Drug induced psychosis 2% (15 subjects) and schizophrenia 1% (11 subjects) were the most common psychotic conditions present. Cannabis 43% (3 subjects), amphetamine 29% (10 subjects), volatile 15% (6 subjects), alcohol 1% (1 subject), heroin 0.19% (1 subject), alcohol and other drug AOD 25% (6 subjects), other 2 drug combinations OTD 33% (2 subjects) and polydrug dependent 8% (2 subjects) had a psychotic disorder. Anti-social personality disorder was the most common personality disorder diagnosed in 3.5% (28 subjects). Among diagnostic categories personality disorders were as follows: alcohol 9% (8 subjects), heroin 4% (20 subjects) and volatiles 2.5% (1 subject). One percent (9 subjects) presented with an overdose (Table 7). Sixty seven percent (6 subjects) were aged 30 or above. Seventy eight percent (7 subjects) were using heroin. Urine drug screen was positive for opiates in only 50% (3 out of 6) though heroin was reportedly taken in all overdoses. Forty four percent (4 subjects) had a co-existing psychiatric disorder (3 anxiety disorders, 1 personality disorder). All denied any suicidal intent.

Seventeen point five percent (140 subjects) reported drug use in family. Heroin 55% (77 subjects) and alcohol 26% (36 subjects) were most commonly used 76% (107 subjects) were siblings, 17% (24 subjects) other relatives such as cousin and 6.4% (9 subjects) parents. Five percent (5 subjects) of heroin users with family history reported concurrent drug use by others siblings. Heroin 20.5% (104 subjects), alcohol 13% (11 subjects),

volatiles 20.5% (8 subjects), amphetamine 6% (2 subjects), other drugs 14% (3 subjects), heroin and alcohol HA 6% (2 subjects) heroin and other drugs HOD 11.5% (3 subjects), alcohol and other drug AOD 12.5% (3 subjects) and polydrugs dependent 17% (4 subjects). Four point five percent (36 subjects) had family history of mental illness. Schizophrenia and other psychotic disorders were reported by 2% (18 subjects). Among family members 55.5% (20 subjects) were siblings, 30.5% (11 subjects) parents and 14% (5 subjects). Females were more affected siblings 55% (11 subjects) and parents 73% (8 subjects). Heroin 2.5% (13 subjects), alcohol 3.5% (3 subjects), volatiles 10% (4 subjects), amphetamine 15% (7 subjects), other drugs 14% (3 subjects), heroin and alcohol HA 8.5% (3 subjects), heroin and other drugs HOD 4% (1 subject), alcohol and other drug AOD 4% (1 subject) and polydrugs dependent 4% (1 subject) reported mental illness in family. Eighty seven percent (563 subjects) had family history of medical disorders. Diabetes 19% (108 subjects) asthma 17% (98 subjects) and hypertension 16% (91 subjects) were most common. Parents constituted 77% (435 subjects). History was not recorded in 19% (154 subjects).

**Discussion.** The findings reconfirmed significant medical and psychiatric co-morbidity<sup>8-12</sup> among substance dependent<sup>13-15</sup> and first degree relatives. A substantial number had a current medical disorder, mental disorder or an abnormal laboratory parameter. Although the conditions encountered were quite similar, the prevalence rates were somewhat different.<sup>8,16-19</sup> For instance, the rates for some conditions, like diabetes mellites raised RBS and HBsAg positivity were high while others like STD infection related complications and mental disorders were low. It is likely that these differences are not real. Overlooked information, under reporting and observer bias probably contributed to some of the observed discrepancies. Other factors like the type of population sampled, setting and methodology employed to calculate the data also influenced the results.<sup>20-23</sup> Despite these drawbacks the study provided useful information on the scale of problems seen in this group. Further studies are now required to fully assess these findings.

It is clear from the results that drug treatment centres must be able to provide comprehensive medical evaluation, treatment and prevention. Dependency physicians should be further trained and more experienced in dealing with general medical conditions commonly seen in these individuals. This would make them better and more effective at treating substance dependence. The counselling and educational services need to be broadened to meet the extensive needs of this group. Apart from drugs

issues like STD, accidents, trauma and nutrition should be routinely covered. Serious consideration should also be given to hepatitis B immunization in selected cases. Unintentional injuries were reported by a substantial number of subjects similar to previous studies.<sup>24,25</sup> These are mostly seen in the ER where this kind of trauma is often not linked to drugs.<sup>26,27</sup>

Trauma is a recognized symptom of drug use. It is important that medical staff treating trauma are made aware of this fact through training and education. Inclusion of drug history and selective drug screening in routine assessment of trauma cases would facilitate early detection, intervention and proper management of these individuals. RTAs were reported predominantly by alcohol and heroin users. Most of those sustaining injuries also belonged to these 2 categories. Although alcohol is the most commonly implicated substance it is important to recognise that other drugs also contribute (Table 5).<sup>24,28</sup> This requires further investigation and study. Thirty seven point five of accidents resulted in injuries and 2% deaths, the cost of damages is not known but is likely to be significant. To some extent this may be preventable if such individuals were promptly identified before they cause any harm. This would require the cooperation of a well trained police force. The police must be able to correctly identify impaired and dangerous driving, conduct rapid roadside screening tests and refer immediately suspected cases for confirmatory drug testing. This would increase public awareness about this problem, help in earlier identification of involved drug users and provide deterrence against drug taking and driving.

Smoking is very prevalent and nicotine dependence is more severe in drug users.<sup>29-31</sup> Vast majority of the subjects in the study were smokers yet nicotine dependence was not diagnosed in a single case. Smoking has always been regarded less dangerous and less important to drugs. It is seldom discussed by doctors when seeing patients.<sup>32</sup> Physicians require proper education and training on management of smoking. It must be regarded equally important to drugs and treated independently like other addictive substances.

The results indicate that more comprehensive and reliable data is required to fully assess the status of substance dependence. Good epidemiological studies and proper surveys must be undertaken. There is need to establish central information gathering body on drugs which would collect regular data from all involved agencies. This would help in monitoring the trends and consequences of drug use in the country. The data could be used to set priorities and make recommendations for research, prevention, treatment and service development.

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