Epidemiologic Assessment of Substance Use in the Arab World

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ABSTRACT

Epidemiological studies on substance use are rare in the Arab world. The purpose of this paper is to present a systematic review of all published epidemiologic research in the Arab world up to 2007 using several search engines such as PubMed, PsycInfo, and IDRAAC web database. Research in the Arab world was conducted on specific subpopulations ranging from students to autopsies, at times on large numbers and only one published article on a national basis. Despite the rigid laws against substance use in this region, alcohol is the most used substance, especially among high school and university students ranging from 4.3% to 70.1%. Males use substances more than females except for tranquilizers and barbiturates, the trends changing in a recent report from the L.E.B.A.N.O.N study. As reported by Western counterparts, substances carry a burden on several levels including social impairment, problems of violence, and HIV. Risk factors for substance use include mainly family problems and peer pressure. However, there remains a clear need for national data on substance use in the Arab world in an attempt to identify the magnitude of the problem, and track it for proper monitoring and intervention.

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Keywords: Alcohol, Arab, Epidemiology, Substance.

Introduction

Reports by the National Survey on Drug Use and Health (1) show that half of the US population aged twelve and above were current alcohol users (58.1% were males), 22.7% had had binge drinking (defined as 5 or more drinks on one occasion) at least once in the previous month, and 6.6% reported being heavy
drinkers (defined as 5 or more drinks on the same occasion on at least 5 different days in the past month). Illicit drug use was observed in (8.1%) of the total population above twelve years of age, the majority (54.5%) of whom used marijuana only, in the past month. Use of cocaine (1%), crack (0.3%), hallucinogens (0.4%) and heroin (0.1%) were relatively lower in the past year. When compared to other regions, Europe has the highest alcohol consumption in the world. In 38 countries, the average alcohol consumption per person in 1998 was 7.3 liters; ranging from 0.9 liters (Azerbaijan) to 1303 liters per person (Luxembourg) (2). The European National population surveys (3) have shown that cannabis is the most commonly used substance in the European adult population (aged 15–64 years) ranging between 2% and 31%. Ever use of amphetamines ranged from 0.1% to 5.9% (an exception is UK: 11.2%), ecstasy use ranged from 0.3% to 7.1%, and cocaine from 0.4% to 6%.

Substance abuse is coming to the forefront in the Arab World, as more individuals and populations are exposed to diverse cultures, introduced to a variety of contemporary substance and becoming more affluent. Consequently, while some are contributing to the world drug report (www.unodc.org). Scientific research pertaining to substance use in the Arab world has intensified, where health professionals seek to shed light on prevalence rates, etiology, risk factors, and treatment outcomes.

This paper examines prevalence rates of substance use, gender differences, co-morbidity and risk factors across epidemiologic studies in the Arab world. This enables us to understand how data in this part of the world compares to international data, and the pervasiveness of substance use, abuse and dependence in the Arab countries.

**Methods**

This review was conducted by the Institute for Development Research Advocacy and Applied Care (IDRAAC) for epidemiologic published articles up to end of 2007, in English, French, or Arabic language, with no restriction to study design.

**Keywords:** Alcohol, Amphetamine, Anabolic steroids, Analgesics, Antihistamines, Anti-parkinson, Anxiolytic, Barbiturate, Benzodiazepine, Betel nut,
Cannabis, Carbamate, Catnip, Cocaine, Codeine, Cortisol, Ecstasy, Hallucinogen, Hashish, Heroin, Hypnotic, Illicit, Kava, Licit, Marijuana, Mor-phonie, Nitrite, Nitrous oxide, Opiates, Opioid, Painkillers, Phencyclidine, Sedatives, Stimulants, Substance abuse, Substance use, Tranquilizers.

**Search Engines:** The search engines used were: PsycINFO, PubMed, and IDRAAC website search engine: (www.idraac.org).

Arab countries and regions: The countries included were: Algeria, Bahrain, Egypt, Gaza, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates, UAE, and Yemen. In addition, the following regions were included: Arab, Gulf, and Middle East.

**Screening search results and categorization:** The search resulted in a large number of articles which were screened, and of which 197 articles were reviewed for being possibly relevant. The full text for the probably relevant articles were retrieved either online through subscriptions or ordered from local or international libraries, or requested as hard copies from the authors (through many trials of contact by email or regular mail). We were able to retrieve 143 references out of which only 47 were included this review. The non-relevant references were non-epidemiologic studies (e.g. clinical trials, case-control studies), non-Arab samples, or dissertation abstracts. The results of this search will be presented first by country in alphabetical order, and then followed by a comparison across countries (Table 1).

**Results**

**Egypt**

Recent publications were scarce in Egypt. The published research targeted a variety of populations, such as community samples, student populations and clinical samples. In studies covering secondary school students, university students, and industrial workers in Egypt lifetime prevalence rates revealed that alcohol was mainly the predominant substance of choice among all categories, with secondary school students reporting the highest amount of consumption (22.5%), followed by male university students (22.1%), industrial workers
Similar to the male university student population, female university students demonstrated a peak age of onset of 19 years for trying tranquilizers (5.1%), followed by stimulants (4.8%), and hypnotics (4.2%), and they were least likely to use hashish (0.8%). Approximately 22% of the female students first tried alcohol just before 12 years.

Male students first used narcotics (hashish: 15.4%) and alcohol at 12 years; tranquilizers (5.8%), stimulants (14.0%), and hypnotics (4.2%), were mostly first tried between 15 and 16 years of age (4-7). Factors predicting substance use included getting ready for exams, “stress”, personal bodily problems and pains, and peer pressure (6).

A representative sample of 4% of male secondary school pupils enrolled during the academic year of 1985/86 (7) were divided into: urban and rural groups. The highest rate of substance ever used by the students was narcotics (5.9%), and 16.3% admitted to continued use of narcotics (narcotics included in this Egyptian study cannabis, opium, and heroin), followed by ever use of minor tranquilizers (2.7%), hypnotics (2.3%), and stimulants (1.8%). Prescription psychotropic drugs were used at least once by 5.5% of the male sample, and 21.4% of these reported continued use, of which only 16.2% used them more on a regular basis (4-10 times a month). Higher rates of alcohol use were recorded by the rural student population (28% vs. 21.14% in the urban sample) and continued use of narcotics was more prevalent among the urban student population, 17.6% of urban ever users vs. 10.2% of rural ever users. Additionally, the urban student population was found to start alcohol and prescription psychotropic drugs at a younger age (Urban: 45% - 62% vs. Rural: 27% - 41% before age 15 years).

In clinical samples, substance use was often found to be primary or secondary to a co-morbid psychiatric disorder. In a sample of 100 schizophrenic patients attending the outpatient facility in 2001; twenty six met the DSM-IV criteria for substance abuse (N = 7 whose substance abuse was primary) (8). Most substances abused by the patients were antiparkinsonian drugs (38.5%),
followed by cannabinoids, narcotics/opioids, and benzo-diazepines (11.51% each), and lastly alcohol, which was only detected in two patients (7.7%).

An early report on serological tests from a large and diverse population (n= 29261) grouping drug addicts, female prostitutes, international travelers, blood donors, and foreigners who resided in Egypt for more than thirty days indicated an exceedingly low prevalence (0.2%) of HIV in Egyptian drug addicts (9).

**Jordan**

In a sample of 5064 students randomly chosen (54.9% females) from six universities and four intermediate colleges (10) the prevalence of alcohol ever use was 16.6% (11.8% of the population used at least once in the previous month, 8.1% had used for less than 6 days in the previous month, and 1% had consumed alcohol for more than 20 days in the previous month). The highest prevalence of other substances ever used were sedatives (12.9%), followed by volatile substances (6.8%), hashish/marijuana (4.6%), the anti-parkinsonian benzhexol (3.3%), amphetamines/stimulants (3%), and the least substance ever used were opiates/heroin (1.5%).

Approximately similar patterns were noted for use of substances at least once in the previous month (with heroin/opiates least used); however, reports indicated that use of sedatives was equally if not more prevalent (12.5%) among the students in the previous month than alcohol use (11.8%). Rates of any substance used at least once in the past month were relatively higher among males than females. Risk factors significantly relating to substance use included peer encouragement and substance use/abuse, abuse of alcohol and psychoactive substances in the neighborhood, and/or poor family communication.

An earlier study by Abu Al-Ragheb and Hadidi (11) assessed the burden of substance use through a toxicological examination of all autopsies (N=6109) between 1978 and 1996. Postmortem cases of individuals who died between the ages of one and seventy, at the Jordan University Hospital revealed that deaths pertaining to drugs and alcohol totaled 0.98% (n = 60) of the cases, higher in males (66.6%) followed by children (21.6% under the age of five,
resulting from accidental ingestion). Alcohol was equally prevalent as drugs in causing fatal poisoning.

**Kuwait**

In Kuwait, two studies were identified on different samples \(^{(12, 13)}\). In a sample of 1058 systematic admissions to the emergency room of a general hospital and a specialist traumatology hospital only 10% of the patients tested positive (blood) for alcohol use, and a significant high alcohol-associated casualty rate (22%) characterized the clinical diagnosis of delirium/coma \(^{(12)}\). In another study drug misusers, in male army conscripts in Kuwait (N=2183), were self-administered the Arabic version of the 28-item Drug Abuse Screening Test (DAST, 14), and a urine analysis was performed \(^{(13)}\). A total of 4.4% of unprescribed psychoactive drugs was reported with cannabis constituting the lowest (0.1%), followed by morphine (0.2%), and amphetamine (0.7%). Amphetamines were significantly linked to family or social problems, physical dependence, and hospitalization.

**Lebanon**

Until recently most data in Lebanon had been collected on university students (15-19). The earliest reported studies on substance use were done on a university population (N = 429) registered between 1972 and 1973 \(^{(19)}\). Self-filled questionnaires surveyed 14% of the students about ever use of drugs. Marijuana was the most common drug used: 17% of the participants reporting to have used marijuana at least once (18% males, 14% females) with this use peaking in university years, amphetamines (8%), LSD (2%), and tranquilizers (17%). A closer look at patterns of substance use, specifically benzodiazepines, was assessed through questionnaires given to a randomized sample of the Lebanese population (N = 1000) aged 18 years and above (20). A total of 9.6% of the sample population reported the use of benzodiazepines in the previous month, with females twice more likely to do so (12.1% vs. 6.8% for males).

In a study by Karam et al \(^{(16)}\) on university students using self filled questionnaires, females were more likely to use “licit” substances such as tranquilizers (13.3%) and barbiturates (10.6%) vs. (7.6%) and (6.3%) in males.
respectively, whereas males tried "illicit" substances such as cannabis (3.7 %) more than females (0.7%). Use of licit substances (tranquilizers, barbiturates, morphine, and codeine) appeared to increase with age. Problems pertaining to alcohol use in the student population mirrored in nature those reported in the western countries: traffic accidents, physical fights, etc. In addition, risk factors to alcohol use/abuse or dependence the presence of an excessive drinker in the immediate family, and friends’ and parents’ attitudes towards drinking. Practice of faith and parental control served as protective factors against alcohol use, abuse and dependence.

A survey on alcohol use among students (N=954) taking introductory English courses at the American University of Beirut during the fall semester of 1998, who completed the Control and Prevention's Youth Risk Behavior Survey that 66.5% of the students (70.9% males and 61.4% females) used alcohol at least once per day on one or more days during the past month (17.3% males, 4.6% females) \(^{(21)}\). Also university students reported lower rates of ever trying illicit substances (12%) where males were almost twice more likely to do so (14.7%) than females (8.8%).

Karam et al \(^{(22)}\) selected a total of 222 records of all inpatients consecutively admitted to Saint George Hospital University Medical Center who fulfilled the clinical entity of dual diagnosis (ever substance and ever other mental disorder). Schizophrenia was co morbid with cannabis abuse (44.8%), bipolar disorders with cocaine abuse (42.1%), anxiety disorders with tranquilizers (36.8%), depression with medicinal painkillers (including opiate preparations) and barbiturates (19.3%), and heroin abuse was highest in the pure substance abuser group (mostly antisocial personality disorder); whereas the prevalence of alcohol abuse was comparably high across all diagnostic categories.

A study on samples from two major private universities in Lebanon (an American and a French system university), used self filled questionnaires covering 25% of the entire population in both universities \(^{(18)}\). Phase I
(1991) was based on the DIS-III (23), and lifetime prevalence of alcohol use was 49.2%. 14.9% of the drinkers ever drunk as much as one bottle of liquor in one day, 5.1% ever had 7 drinks or more every day for 2 weeks, and 10.7% had 7 or more drinks per day, every week for a period of 2 months or more. However, phase II (1999), carried a decade later (and thus based on the DIS-IV), showed a sharp increase in lifetime alcohol use (70.08%) from phase I. The average number of drinks was 1.11 ±2.01 drinks/ day for the total sample. Alcohol abuse and alcohol dependence increased from phase I (2.8% and 2.9% respectively) to phase II(9.1%, 5.3% respectively). No differences were found between age groups in terms of alcohol ever use abuse, dependence and excessive use. Nevertheless, intoxication was most prevalent among the older age group (over 22 years of age), 16.97 ± 2.54 years was the mean age of intoxication in phase one (1991), and 17.04 ± 2.41 years in phase two (1999).

In a comprehensive assessment of substance use in Lebanon, and published in the Rapid Situation Assessment report (17) rates of ever use were reported for high school students (2001) and university students (1999): cocaine (1.7% high school vs. 1.2% university students), ecstasy was used by 2.8% of the high school student population (this assessment was limited to the high school sample); university students reported more ever use of hashish/marijuana (8.8%), tranquilizers (13.1%), amphetamines/ stimulants (4.3%), and medicinal opiates/barbiturates (5.2%) vs. 6.8%, 3.3%, 1.2%, & 1.2% in the high school sample. Heroin use was equivalent in both populations (0.8% each). 33.33% of the clinical (hospital and rehab) and “street” samples had been arrested by the legal authorities previously, and equally a third of those arrested had had previous treatment for use. Through focus group discussions and key informant interviews, street users felt that peer pressure was a primary factor associated with substance use; while shoplifting, prostitution, and gambling constituted only distant secondary factors. Recently, IDRAAC undertook the L.E.B.A.N.O.N study (Lebanese Evaluation of the Burden of Ailments and Needs Of the...
Nation), which is the first national study in Lebanon and the Arab region in coordination with Harvard University (USA) and the World Health Organization (Geneva) \(^{(24)}\). 2857 Lebanese adults (≥18 years) representing the adult population in Lebanon were administered the Composite International Diagnostic Interview Arabic version. The 12-month prevalence of alcohol abuse in Lebanon was 1.2% and 0.2% abused drugs (DSM IV). Socio-demographic correlates of substance use disorders were younger age (18–34 yrs) and never been married. More results are under analysis \(^{(25)}\). The lifetime prevalence of alcohol abuse was 1.5% and drug abuse 0.5%, with males reporting significantly higher rates than females \(^{(26)}\). Cross-national findings from the WHO World Mental Health Surveys have shown that lifetime tobacco use was most common in the US (74%), followed by Lebanon (67%), Mexico (60%), and some European countries. The median age of onset for cannabis was between 18–19 years, and for Lebanon 21 years \(^{(27)}\).

**Morocco**

High school students (N=678) enrolled in their first semester in 1984 in the regions of Taza and Tetouan were the target of an epidemiological study on drug use \(^{(28)}\). A considerably larger amount of students at Tetouan ever used cannabis (15.56% vs. 2.7% in Taza) and alcohol (1.55%), separately or in combination with other substances (cannabis and alcohol combined constituting the highest prevalence: 7.56%), with the duration of use ranging from two to four years.

Kjiri et al., \(^{(29)}\) conducted a cross-sectional study to assess drug use among 1208 university students (744 women, 466 men) using an anonymous self-administered questionnaire. Results showed that 12.5% of students reported alcohol use, 11.7% cannabis, 3.6% psychotropic drugs, 1.0% cocaine and 0.8% heroine. Women (42.9%) used psychotropic drugs more than men (11.9%), p<0.001.

**Oman**

Jaffer et al., \(^{(30)}\) investigated risky health behaviors among Omani adolescents in a nationally representative sample of secondary school students (N=3114, 48% boys) who were given a self administered questionnaire.
Results showed that 46% of students were current smokers, 4.3% current alcohol consumers, and 4.6% had been persuaded to take drugs by peers.

**Palestine**
Most retrieved studies in Palestine target both Arab and Jewish populations, in an attempt to highlight patterns and differences in substance abuse (especially alcohol abuse) between the two different groups. Between 1992 and 1995, a study examining the problems associated with substance abuse, assessed 292 battered women above eighteen years of age (69.9% were Jewish) in Kfar Saba. Results revealed that in contrast with Jewish batterers, Arab batterers had a significantly higher substance abuse score \(^{(31)}\).

A National Household Survey on Drug Abuse was carried, based on interviews of a national multistage probability sample from the North, Haifa, Central and Tel Aviv \(^{(32)}\), with women comprising the majority of the sample (60%). “Current” drinking rates were highest among female secular Jews (43.4%), and more than double of that of secular Arab women (19.6%). Arab men (39.6%) and women (34.9%) engaged in more ‘heavy drinking’ (defined as five or more drinks within a few hours) in the month prior to the study than did Jewish men (21.8%) and women (8.1%). Higher levels of education (≥ 13 years) were associated with higher rates of drinking among Arab women (but not men) and both genders among Jews. Religiosity, income, and occupation also seem to be linked to the patterns of drinking, Arab men and women with below average income, and some degree of religiosity were less likely to submit to binge drinking. Significantly less drinking occurred in married Arab women (3.7%), yet, professional Arab women and men were more apt to report higher levels of drinking as opposed to Arabs from other occupations \(^{(32)}\).

However, in a later study by Neumark et al. \(^{(33)}\), in a methodology similar to the previous study (2001 see above), frequent binge drinking (defined as having five or more drinks within a ‘couple of hours’ in the previous month) was predominant in the Jewish sample, with an overall binge-drinking rate of 9.2%. In 2003, Abu Qamar and colleagues \(^{(34)}\) assessed the
the prevalence of substance abuse among 1007 students in 1st and 4th year of study at Art and Science colleges in Gaza Strip. Four universities (mean age 20.4 years) participated in the cross-sectional study (Al Azhar 29.6%, Islamic 30.58%, Open Alquds 11.62%, and Al Aqsa University 28.2%). The results showed that 17% of student had ever used substance over the past year, 11.7% abused tobacco (71.6% cigarettes, 23% hubble-bubble, 4.4% smoke cigars, and 0.9% pipe), 1.2% abused alcohol, 1.09% abused sedatives, < 1% abused any of other substances (opiates, cannabis, inhalants, hallucinogenic, stimulants). Tobacco abuse was more common among single students (11.74%) and males (21.4%) but did not differ across the places of residency (cities 10.4%, camps 11.9%, 14.2% village, 17.8% housing project). Other factors found to be related to higher substance abuse included: larger family size (11 + members) especially in using hallucinogenic substances. For males factors included psychological stress, curiosity, and sexual desire, while for females: treating physical problems, getting rid of emotions of weakness, facing academic challenge, and treating mental disorders.

**Saudi Arabia**

Three of the retrieved studies covered clinical samples of patients admitted to various hospitals across Saudi Arabia (35-38). Given that the studies were limited to clinical populations, this review will be mainly concerned with the burden associated with substance abuse, co morbidity with other psychiatric disorders, and an assessment of treatments of substance abuse.

Patients (N = 485) attending outpatient clinics in Jeddah in 1989 with an initial diagnosis of a psychiatric disorder (37) stated while being interviewed that they initiated substance use to alleviate psychiatric disturbances (3%), or turned to alcohol to cope with insomnia, social phobia and/or an anxiety state (52.6%). Out of 170 patients, 35% were referred by the police, some of whom had criminal records (4.9%).

In a study by Abdel-Mawgoud et al. (35), various treatment modalities were assessed in terms of average length of stay, average daily census, use of psychotropic controlled medications and
dropout rates. A review of treatments adopted at different time periods were divided into three consecutive phases: Phase I (1986-1991): in which drug therapy was adopted, and was judged by the investigators to be least effective, with a “high” average daily census (128.3), and average length of stay in the center (37.5 days), as patients apparently amplified their complaints to receive free drugs for a longer period of time. Phase II (1991-1993) constituted an attempt to implement a “bio-psycho-social” model and prescription restriction, by seeking international expertise to improve and enhance the treatment program, and was marked by a drop in the average length of stay and average daily census. Nevertheless, the cultural and language barriers apparently rendered the program “ineffective”. Phase III (1993-1994) was characterized by a modification of the phase II treatment program, as problems were assessed and changes were investigated: (such as the reinforcement of hospital hierarchy, reviewing the hospital structure, training needs reassessed, quality assurance officer appointed, etc) to parallel and be sensitive to the Saudi culture. Staffs’ and patient’s attitudes were clearly altered by the changes; increases in performance and cooperation levels were noted, as well as an increase in average length of stay (35.8 days vs. 25.8 in Phase II ) and a decline in dropout rates (2.8% vs. 24% in phase II).

The prevalence of HIV among intravenous drug users was investigated by Njoh and Zimmo (36) through testing a sample of Saudi males (n = 2628) at Al-Amal Hospital who met the DSM-IV criteria for drug dependence. The third generation qualitative Enzyme Immunoassay was used to detect antibodies to HIV type 1 and/or type 2, and the Western blot test was used as a confirmatory test. Only four intravenous users (0.15%) tested positive for HIV by the Western blot test.

Overdose, another significant aspect of substance abuse was assessed through toxicological examinations and autopsies of deaths resulting from overdose between 1990 and 1997 (39), and the conclusion of the investigator was that Saudis experienced higher overdose fatalities (77%) than other Arabs (3.5%).
In a study examining the comorbidity of substance use and other psychiatric disorders (40), 9% of the in-patients (N = 799) at a voluntary detoxification unit were found to have a relatively low prevalence of mental disorders such as personality disorders (4%, especially antisocial personality disorder 3.5%), drug induced psychosis (2%), mood disorders (0.37%), anxiety disorders (0.37%) and other disorders like substance induced dementia (0.38%) and schizophrenia (1%). Antisocial personality disorder was commonly associated with alcohol use (9%), heroin (4%) and volatiles (2.5%). Traffic accidents (12%) resulting from alcohol and/or heroin use were observed in patients attending an outpatient facility in 1995. 21% of heroin users had injection related problems (Abscess, Cellulites, Septicemia, Deep vein thrombosis, Digital gangrene, Limb atrophy, Abscess away from injection site) and 69% had hepatitis C virus.

The burden of substance abuse was evaluated through reports from inpatients admitted at two hospitals in Saudi Arabia (n = 423) and interviews using the Brief Psychiatric Scale (DSM-IIIR and ICD -10). Results showed that the major problems encountered by the subjects were violence (99.3%), imprisonment (50.9%), health problems (32.4%), and financial problems (30.5%), loss of job (13.5%), drug overdose (9.5%), and divorce (6.9%) (38). A majority of the patients (74.2%) stated that their prayers were irregular, 6.4% were not praying at all, with a smaller percentage (19.4%) praying regularly.

In a smaller clinical sample of one hundred and twenty Saudi males in a hospital in Dammam, poly-substance abusers displayed significantly more cognitive deficiencies, and were as a result less likely to be employed, and maintain employment (although results lacked statistical significance, p<0.37); however, length of abuse did not appear to be a contributing factor. Poly abusers were predominantly reported use heroin, hashish, and alcohol (41).

**Sudan**

There was a lack of published data on substance abuse among females in Sudan, with only one study assessing substance use among them. In an early study,
Rahim (42) interviewed a sample of both males (n = 108) and females (n = 96) randomly selected from a population consensus (including an indigenous sample studied previously), and found that the prevalence of substance abuse is relatively low (0.4%), with a smaller amount of participants reporting substance abuse, as opposed to complaints pertaining to other psychiatric illnesses and symptoms (such as Depressive illness, generalized anxiety disorder, somatoform disorder, conversional reactions, and psychotic pain syndrome). Although the author states, “alcoholism among females is very rare”, no data from the community sample could support or refute this claim, since gender differences were not statistically significant. Nevertheless, the clinical sample’s homogeneity in terms of gender may be indicative of possible gender differences in substance abuse in the Sudanese population. Noteworthy, is the burden associated with substance abuse in the clinical sample. Marital conflicts (63%), legal problems resulting from offenses (40%), traffic accidents and head injuries (29%), financial offences (13%) and social scandals (11%) were among the dilemmas emanating from substance abuse. The study also reflects on relapse, with 61% of the patients having previously been admitted to a hospital.

**Tunisia**

The available published research is limited to a random sample of Tunisian school students (n = 353) between twelve and twenty-four years of age, registered during the academic year of 1998-1999, and whose knowledge, attitudes and practices were assessed through self-administered questionnaires (43). Alcohol consumption was noted by 26% of the students, the majority of whom were males (43.9% vs. 7.6% females), and 12.7% of the students reported drug use, mainly cannabis (68.8%), while comparatively fewer students reported medicinal substance use (31%). Again, males maintained higher rates of substance use than females (22.6% vs. 7.6%). Conflicts with parents, violence, and theft were among the burdens and risk factors associated with drug use. Another study assessing a small sample of patients with HIV (n = 60), hospitalized and/or in
consultation in June 1995 \(^{(44)}\) found that 48% have been contaminated by intravenous drug use (predominantly males n=28, only one female with HIV attributed her disease to intravenous drug use).

**United Arab Emirates (UAE)**

In 1996, in the city of Al-Ain in UAE, an extensive psychiatric survey was undertaken on a systematic sample (N = 1394) of adults over 18 years of age, focusing on households of Emirates nationals \(^{(45)}\). 5.2% of all the households had one or more members with substance use problems. A modified version of the Composite International Diagnostic Interview (CIDI) instrument was used, and the ICD-10 diagnoses were formulated. The overall lifetime prevalence of substance “misuse” was low (0.4%), yet, once more, males’ were found to have higher rates (0.7%) of substance “misuse” than females (0.1%).

A clinical assessment and structured interview of male substance abusers (N = 79) at a corrective institution for drug abusers in Dubai (UAE), did not find any significant association between unemployment and drug abuse or with its duration \(^{(41)}\).

**Yemen**

Prevalence rates and gender differences were assessed in two studies on Yemenites. The first study by Litman et al. \(^{(46)}\), randomly selected a small sample of participants from each household in two Yemenite villages in Israel. Participants were between the ages of fifteen and sixty five, and were administered structured questionnaires. Thirty-nine percent of participants used Khat, with higher rates in males (50%) compared to females (27%). In addition, use of Khat was more prevalent among Yemeni born participants (34%) above forty years of age, while lower rates were recorded by Israeli born participants who were less than twenty years old (27%).

In Yemen, *Catha edulis*, (locally known as Khat), is traditionally chewed, and is a cultural practice. Its stimulant properties have motivated many studies to explore its potential side effects. Accordingly, most research on substance abuse in Yemen, focused on Khat-chewing. In 1984, mothers in delivery units in all hospitals in Yemen (N =1181consecutive deliveries) were administered a questionnaire
by the midwife delivering them about their baby’s birth-weight, and their chewing habits. A significant birth-weight difference of 120g between Khat users and non-users was documented, with 35% of khat users delivering lower birth-weight babies. The authors state that this difference may be attributable to malnutrition, because of Khat’s anorectic effect (47).

The third study was a cross-sectional survey using the Symptom Checklist-90 (SCL-90), completed by 792 participants in rural and urban areas in Yemen (48), and supported previous data on gender differences in Khat use: males higher ever use (81.6%) vs. females (43.3%). Patterns of Khat use were predominantly heavy use (at least every day) for males, and were more “occasional” use (at least once a week) for females. Expectedly, male users started at an earlier age and use it longer (16-67 years) than females (18-55 years).

**Discussion**

Although studies in various countries differed in their selection of the substances to be assessed in the population, it would nevertheless be interesting to draw comparisons from the reviewed epidemiologic literature from the Arab region between prevalence rates of various substances, and examine consistent risk factors (such as age of onset and age as a risk factor), burden associated with substance use, and co morbidity of substance use with other psychiatric disorders. However, no valid comparisons could be achieved, not the least being the enormous differences in sample design and the methods used to retrieve information (instruments, etc.). However some general conclusions can be drawn on the following topics:

**Prevalence of substance use.** Alcohol is consistently shown to be one of the most common substance used across most Arab countries with harmful related consequences (4, 16, 17, 28, 49-51). There is a diversity of substances being highly used among community samples in the Arab world such as Egypt, Jordan and Lebanon (4, 6, 10, and 17). Cannabis and tranquilizers (and in some specific subgroups medicinal products) top the lists and narcotics are much lower. Low rates of sub stance use were published in research about Sudan and the UAE (45).
Gender differences. Data collected from the Arab world seems to reinforce the international data on gender differences (27), with males having higher prevalence rates of substance use than females in almost every country (Egypt, Jordan, Lebanon, Palestine, United Arab Emirates, and Yemen). Yet, tranquilizers and barbiturates seem to be particularly popular among females, an aspect that is consistent in the published research across the Arab region.

Co-morbidity: Frequently and especially in clinical samples, substance use was found to be co morbid with other psychiatric disorders, and presented as either primary or secondary to the diagnosis. Results vary, while a study in Egypt highlights the correlation between anti-parkinsonian medication use and schizophrenia (8); in Lebanon, schizophrenia was most often associated to cannabis abuse (22). Cocaine use (Lebanon) when studied was mostly associated with Bipolar disorders.

Burden. Burden pertaining to substance use is vast and appears in diverse forms and parallels reports from the western world, ranging from social impairment, and head injury up to HIV or death (9, 11, 36, 39, 44, 52-54). Although problems vary immensely across the Arab region, a common ground could be formulated across the countries. Common problems linked to substance use included social and familial problems, legal offences, arrests, and imprisonment, traffic accidents, health problems, violence and physical fights, financial problems, drug overdose, and divorce (13, 18, 37-40, 42). Studies on HIV have been on the rise in the Arab world in the recent years, as the detrimental effects of intravenous drug use have gained greater public concern and mental health care workers have become curious about the prevalence rates and magnitude of this disease in the population. Relatively low incidences of HIV in drug addicts were reported in published studies from Egypt (0.2%) (9) and in Saudi Arabia (0.15%) (36); the only published research in Tunisia revealed that 47% of the males contracted HIV from intravenous drug use. These low incidences of HIV could be partly explained by the fact that most available published studies are early on in the history of the
epidemic. In addition, a study in Saudi Arabia (40) reported 0.4% deaths resulting from substance use, and 69% of heroin users were diagnosed with hepatitis C virus.

Risk factors. Studies in Morocco and Egypt addressed whether cigarette smokers were more likely to abuse other substances than non-smokers. Both studies (55, 56) supported the assumption that smoking was a potential risk factor for subsequent substance use (25% of smokers use substances) and significantly increases the prospect of ever drinking alcohol (39.70%), trying narcotics (32%), and/or psychotropic drugs (22.13%) (55). Family and friend’s attitudes towards substance use, the presence of a user in the immediate family, strictness towards time spent on homework, peer pressure, and/or poor family communication were found to be risk factors (16, 17, 10). In most Arab countries there are very stiff laws on drug abusers, and alcohol use is forbidden by the Islamic religion, except in Lebanon where there is a diversity of religions including Christianity. Practice of faith and implementation of parental control served as protective factors against alcohol use, abuse and dependence (16, 17). As reported by international studies (27), drug use was more common among younger age groups. The ages of onset and ages as risk factors for substance use are consistent across the Arab studies, with the bulk ranging between twelve years and nineteen years. On the other hand, international studies suggested a longer period of risk extending to adulthood among recent cohorts (27). Alcohol use maintained the lowest age of onset (12 years), and males reported earlier initiation of substance use than females; however, there is new evidence suggesting a higher risk among females in initiating substance use in more recent cohorts (27).

Conclusion. The disparity between US, European and Arab data on substance abuse cannot be conclusive, and neither can be used as basis for comparison, but points in general to lower rates of substance abuse and dependence in the Arab region when compared to the USA. Due to the diversity of sample selections in the Arab countries, no match could be made between the methodologies used in the
National Survey on Drug Use and Health (NSDUH) studies from the USA and those of the Arab world. With regards to the European data, figures in the published research in the Arab world tend to fall in the lower to mid range categories (from 1% to 20%) of the European data. National studies encompassing the wide array of substances is needed in the Arab countries, to identify the magnitude of the problem, provide more representative information, characterizing the population at large; this would probably enhance the availability of prevention campaigns, services and adequacy of therapeutic interventions, all directed towards alleviating the burdens associated with substance use.. In Lebanon, IDRAAC, has taken a step towards building a national mental health database through conducting the LEBANON study (24-27). This national study is providing data using sampling methodology and analysis similar to a large number of countries worldwide which is providing for international comparisons not only of base rates but also for risk factors, co-morbidities, burden, treatments from and across a variety of settings and could help in the efforts to understand, treat and possibly prevent better this complex and highly serious group of disorders.

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References


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Disorders & Their Treatment 2003; 2: 147-50.


<table>
<thead>
<tr>
<th>Country</th>
<th>Reference</th>
<th>Date of Study</th>
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<tr>
<td>Egypt</td>
<td>Asaad et al., 2003</td>
<td>2001</td>
<td>Schizophrenic patients attending the outpatient department of Ain Shams University Psychiatric Institute (n=100)</td>
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<td>Soueif et al., 1986</td>
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<td>Egyptian male students attending Cairo and Ein-Shams Universities (n=2711)</td>
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<td>Soueif et al., 1987</td>
<td>1983-1984</td>
<td>Female Egyptian university students (n=2366)</td>
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<td>Soueif et al., 1990</td>
<td>1985-1986</td>
<td>Secondary school pupils (n=14656)</td>
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<td>Watts et al., 1993</td>
<td>1986-1990</td>
<td>Drug addicts, female prostitutes, international travelers, blood donors, and foreigners who resided in Egypt for more than thirty days (n=29261)</td>
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<td>Jordan</td>
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<td>1978-1996</td>
<td>Postmortem cases of autopsies at the Jordan University Hospital (n=6109)</td>
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<td>Suleiman et al., 2003</td>
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<td>Students from 6 universities and 4 intermediate colleges (n=5064)</td>
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<td>1986-1994</td>
<td>Patients admitted to Al Amal Hospital, Dammam</td>
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<td>Amir, 2001</td>
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<td>Saudi male poly-substance abusers in a hospital in Dammam (n=120)</td>
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<td>1990-1997</td>
<td>Cases of death resulting from substance overdose (n=249)</td>
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<td>Nayyer, 2000</td>
<td>1995-1996</td>
<td>In-patients at a voluntary detoxification unit (n=799)</td>
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<td>Njoh et al., 1997</td>
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<td>Osman, 1992</td>
<td>1988-1989</td>
<td>Patients attending outpatient clinics in Jeddah (n=485)</td>
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<td>Systematic admissions to the emergency room of a general hospital and a specialist traumatology hospital (n=1058)</td>
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<td>Drug misusers in male army conscripts in Kuwait (n=2183)</td>
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<td>University students (1851)</td>
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<td>Students from 2 major private universities (n=1980 Phase I, n=2328 Phase II)</td>
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<td>Uninstitutionalized Lebanese adults (n=2857)</td>
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<td>Randomized sample of Lebanese adults (n=1000), current benzodiazepine users (n=496)</td>
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<td>Nassar et al., 1973</td>
<td>1972-1973</td>
<td>University students (n=427)</td>
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<td>Shediac-Rizkallah et al., 2001</td>
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<td>Tamim et al., 2003</td>
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<td>University students (1964)</td>
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<td>High school students enrolled in their first semester in the regions of Taza and Tetouan (n=678)</td>
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<td>Neumark et al., 2001; 2003</td>
<td>1995</td>
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<td>Tiouiri et al., 1999</td>
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<td>Yemen</td>
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<td>Litman et al., 1986</td>
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<td>Participants from each household in two Yemenite villages (n=136)</td>
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<td>Numan, 2004</td>
<td>2000-2001</td>
<td>Yemeni adults representing mostly urban population of students, state employees and housewives (n=792)</td>
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Table 1. Characteristics of epidemiologic studies on substance use in the Arab world summarized in this review*

* Other studies included in the Discussion: Derbas et al., 2001 (Bahrain); Maghazaji et al., 1982 (Iraq); Njoh et al., 1995 (KSA); Bartal et al., 1988, (Morocco); Nadim et al., 1984 (Sudan); Othman et al., 2002 (Syria)

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