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Emergency department presentations of alcohol and other substance misuse: first cross-sectional national study in Qatar

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ABSTRACT

Objectives This study attempts the first in a series of investigations into the misuse of alcohol and substances in Qatar. This study explores the emergency presentations of alcohol and substance abuse to all the state funded emergency departments (EDs) in the country which serve around 90% of the population over a 22-month period. Due to legal penalties for alcohol and substance use, and lack of subsidised community-based facilities, ED presentations are a good starting point to explore this burden.

Design and participants A retrospective population-based, cross-sectional study, analysing electronic patient records of all state funded EDs spanning a period of 22 months, from 1 January 2019 to 31 October 2020 was carried out. The study included all eligible individuals aged 18 or over. Primary reason/diagnosis for presentation containing any of the alcohol or substance use key words were included in the study using composite data capture forms by trained clinicians.

Results An overwhelming majority (95.5%) of the total 1495 cases presenting to the EDs with substance abuse were using alcohol. Only 2.1% of the cases were females. Those of Asian (non-Arab) constituted 70% of this group. Qatari citizens presented with highest proportion of substance abuse other than alcohol (23%). Overall, 2.26% of all presentations to the EDs were related to alcohol and substance abuse and this amounted to 3 ED visits per 10 000 of population per year. 56.6% of the cases presented over the weekend. Less than 1% were referred to psychiatry and no other meaningful rehabilitative interventions were offered to others.

Conclusion As Qatar moves towards establishing community-based rehabilitative resources for alcohol and substances abuse, the findings from this study will help in shaping these developments. These can include ED-based routine screening for alcohol abuse and referral to rehabilitation services without fear of legal penalties.

Strengths and limitations of this study

- First nationwide study of its kind.
- Data collected by trained physicians.
- This study used retrospective data collection form electronic patient records and substantial amounts of information was missing from these records.
- No formal clinical examination or screening tools were used by the investigators to arrive at the diagnosis of substance or alcohol abuse/misuse, rather we relied on recorded diagnosis by emergency department physicians.

The Middle Eastern and North African (MENA) region has been designated as a major source, consumer and transit point for illicit substances.[1 2] More specifically, Qatar's geographical position has enabled it to become one of the transit point for the movement of heroin from Golden Crescent countries into Europe,[3] some of which is understood to percolate into the regional illicit drug market.[4] This exits despite stringent legal penalties that are in place against drug and alcohol usage in this region[5] and despite being forbidden in Islam.[6] Significant disparities in economic success, political systems, poverty, varying employment opportunities, porous borders, poor cooperation among legislative systems and conflict have led to the maintenance of the status quo.[1] United Nations Office on Drugs and Crime has devised a programme along with the constituent countries to tackle this issue.[2]

Qatar is a small peninsular sate in the MENA region which has experienced rapid economic and infrastructural growth over the past few decades following discovery of rich offshore gas deposits.[7] It has significantly changed the economic status of the local citizens and led to massive influx of economic immigrants who seek employment generated from this economic boom.[8 9] Consequently, Qatar along with neighbouring states like Kuwait, Bahrain and UAE have a high proportion of immigrants from other countries.[10] It follows that in addition to the concerns around drug transit, Qatar additionally has a migrant majority population who come with varying substance use habits with significant differences in usage between high-income and low-income countries.[11] However, there is a paucity of actual data on the use of alcohol

and drugs in general in the MENA region and in Qatar in particular and there exit, as of now, no nationwide epidemiological studies on the use of alcohol or substances in Qatar.[12–14]

This study is the first in the series of epidemiological studies that will investigate the patterns and usage of alcohol and (Other Substances) OS, paying particular attention to Qatar's unique sociodemographic makeup.

Currently, the only community-based substance abuse programmes that exist in Qatar are not funded by the state for non-citizen residents and the State's main substance abuse rehabilitation centre does not offer emergency services.[15] Further, in view of the legislative penalties, it is presumed that non-citizen residents generally only present with complicated substance abuse problems to the healthcare emergencies.

Emergency department (ED) presentations associated with drugs and alcohol abuse are considered as good indicators of the usage of these substances in the community.[16] ED presentations of alcohol and OS, including prescription drugs abuse can be a burden on the ED staff and are often associated with significantly more psychiatric and physical health comorbidity.[17–19] In the context of Qatar and its unique legal and sociodemographic makeup, measuring ED presentations of alcohol and OS abuse is a good starting point for scoping the extent of the problem and informing public health policy in designing interventions to manage this problem. This study presents the first such comprehensive data on individuals presenting to all the major EDs of Qatar with primary diagnosis of alcohol and drug misuse.

METHODS

Research design

A retrospective study of the electronic patient records (EPR) for every presentation of alcohol or substance use/abuse to all the state funded EDs across the country was undertaken during the identified period. In this study, we gathered data for the period starting from 1 January 2019 to 31 October 2020.

Patient and public involvement

There was no patient or public involvement in the design or recruitment of this study.

Setting and sample

Healthcare in Qatar is, for the majority (estimated to be 90%), delivered by the state funded Hamad Medical Corporation (HMC).[20] It caters to local Qataris and non-citizen resident populations and delivers routine and unscheduled care at heavily subsidised rates. Nearly all the emergency care is delivered through the HMC with only a small fraction by private healthcare providers.[20] Emergency healthcare is delivered by the HMC through its four main EDs across the country. Out of the nearly 3000 individuals accessing the EDs of the HMC each day, the ED department at the Hamad General hospital in the capital Doha caters to 70% of all emergency presentations. The ED departments at Al-Wakra Hospital, Hazm-Mabreek Hospital and at the Al-Khor hospital cater to the remaining 30%.

This study analysed data from all the individuals attending any of these four EDs who presented with emergency presentations related to alcohol or drug use.

We included all presentations which recorded primary diagnosis by the ED physician of alcohol or any substance abuse or had presentation directly linked to alcohol or substances abuse during the identified period. Key words to search included Alcohol, cannabis, cocaine, morphine. The full list of all search terms and the data collection form is available from the authors on request.

Qatar had a population of about 2.7 million at the time of this study out of which just over 89% are expatriates from several countries, and the rest are native Qataris.[21] The only exclusion was if the individuals were under 18 years of age.

Data collection

We developed a composite data collection proforma. The first section included demographic characteristics, associated physical comorbidities, other diagnoses listed at presentation, police involvement and past psychiatric history. The second section included names of the most commonly abused substances and information about symptoms that are known to be associated with alcohol and substance abuse. This was followed by details of current alcohol and substance abuse pattern. Initial draft of the data collection tool was piloted on 60 EPR by 3 researchers to assess feasibility of the data collection tool. Modifications were made to the data collection tool to account for missing or unclear information and a final version was approved after discussion with the wider team. To achieve maximum reliability among the raters, two training sessions about the rating methods and terms were carried out. As a final step, 30 of the modified data collection tools were completed again by the 3 researchers on the same 30 EPR and we achieved high inter-rater reliability.

Data analyses

We analysed the data using SPSS V.26 software. Initially, we conducted a simple frequency analysis of those presented each month with alcohol and substance use behaviour using the total presentations as the denominator. We then conducted a univariate analysis comparing alcohol and substance use with variables like gender, age and ethnic origins of the cases using and those without using *t*-tests and χ^2 tests for comparisons of continuous variables and categorical variables, respectively.

RESULTS

Overall sociodemographic data

In the period between 1 January 2019 and 31 October 2020, 1495 cases directly related to alcohol and substance

Table 1 Sociodemographic characteristics of patients presenting with alcohol and substance abuse complaints to HMC EDs, Qatar, January 2019 to October 2020

Variables N=1495	Frequencies (%)						
Gender	Male **1453 (97.2%)**	Female **32 (2.1%)**	Not recorded **10 (0.7%)**				
Age	Age (median) **35.0 years**	IQR **±15 years**					
Nationality	Qatari **179 (12.0%)**	Arabs (non-Qatari) **80 (5.4%)**	Asian **932 (62.3%)**	Other **191 (12.8%)**		Not recorded **113 (7.6%)**	
Marital status	Single **120 (8.0%)**	Married **120 (8.0%)**	Divorced **6 (0.4%)**	Widowed **3 (0.1%)**	Not recorded **1246 (83.3%)**		
Employment status	Employed **360 (24.1%)**	On sick leave **44 (2.9%)**	Un-employed **42 (2.8%)**	Retired **5 (0.3%)**	Other **8 (0.5%)**	Imprisoned **7 (0.5%)**	Not recorded **1029 (68.8%)**

Percentages are in the brackets.
Over half of the cases (56.6%) visited ED during the weekend.
EDs, emergency departments; HMC, Hamad Medical Corporation.

misuse visited the 4 EDs. Majority of them attended the ED of Hamad General Hospital N=952 (63.7%), while more than third N=512 (34.2%), attended Al-Wakrah hospital ED. Only a limited number of cases N=31 (2.1%) visited Hazem-Mabreek and Al-Khor EDs as these cater to smaller populations. Of all these presentations, overwhelming majority were males N=1453 (97.2%), females were only N=32 (2.1%), statistically significant at p<0.00001 when compared with population sex ratio. Gender data were missing for N=10 (0.6%).

The biggest demographic group ethnically were the Asians N=932 (62.3%), followed by local Qataris N=179 (12.0%), Non-Qatari Arabs constituted N=80 (5.4%), other nationalities N=191 (12.8%). Ethnic data were not captured in N=113 (7.6%) cases. Median age of the individuals was 35.0 years±15. Limited information was captured in the EPR around other sociodemographic variables (table 1).

Overall alcohol and substance abuse patterns

By far the biggest primary or secondary substance of abuse was alcohol in N=1421 (95.5%) of cases. Morphine was the second most abused primary substance in N=31 (2.1%). N=60 (4%) of the individuals presented with more than one substance as their primary substance of abuse (table 2).

For 75% (N=24) females and 53.9% males (N=788), the primary reason for presentation to the ED were symptoms of acute alcohol intoxication. For females the next biggest reasons for presentation, in equal frequencies, were Self Harm (2%), symptoms of acute alcohol withdrawal (2%) and behavioural effects of other substance intoxications (2%). For males these were Injury or violence in context of alcohol intoxication in a quarter of presentations (27.3%), substance induced behavioural changes (4.2%) and road traffic accidents (3.0%). Violence, behavioural disturbances and road traffic accidents were associated with police involvement in the presentations. In total N=186, 8% of all the cases had a criminal charge/police involvement in the presentation. Of these, more than third were involved in road traffic accidents (N=69, 37.1%), and almost quarter were involved in violence (48, 25.8%) (table 3).

N=207 (14%) of the cases were recorded as having a mental disorder. Of these, nearly a quarter, N=50 (24%) had a recorded diagnosis of depression, N=20 (10%) psychosis, N=18 (8.7%) anxiety, N=11 (5.3%) mood disorder, while as N=107 (51.7%) had no formal diagnosis recorded. Interestingly, only N=31 (15%) of these were referred to the consultation liaison psychiatry team (online supplemental material).

N=478 (32%) of the cases had an associated physical health issue. Of these N=102 (21.3%) suffered from hypertension and N=88 (18.4%) from diabetes (online supplemental material).

Nearly half of all the cases N=743 (49.7%) were discharged from the ED without any active intervention needed (online supplemental material).

Table 2 Primary substance/s of abuse for all presentations with alcohol and substance abuse complaints to HMC EDs, Qatar, January 2019 to October 2020

Substance/s	No N=1555	Percentage
Alcohol	1421	91.4
Tobacco	46	3.0
Cannabis	17	1.1
Tramadol	4	0.3
Cocaine or another stimulant	18	1.2
Morphine	31	2.0
Benzodiazepines	5	0.3
Other substance	13	0.8

EDs, emergency departments; HMC, Hamad Medical Corporation.

Table 3 Primary indication for admission recorded for patients presenting with alcohol and substance abuse complaints to HMC EDs, Qatar, January 2019 to October 2020

Indication for admissions N=1495	Male (%)	Female (%)
Injury, assault, fall under acohol intoxication	400 (27.3)	0 (0.0)
Other substance intoxication	1 (0.1)	0 (0.0)
Alcohol intoxication	788 (53.9)	24 (75)
Respiratory symptoms	38 (2.6)	1 (3.1)
Road traffic accident	44 (3.0)	0 (0.0)
Self-harm	23 (1.6)	2 (6.3)
Acute alcohol withdrawal	35 (2.4)	2 (6.3)
Substance induced behavioural issues	61 (4.2)	2 (6.3)
Chronic use consequences	29 (2.0)	0 (0.0)
Other drug of abuse withdrawal	15 (1.0)	0 (0.0)
Not recorded	29 (2.0)	1 (1.3)

EDs, emergency departments; HMC, Hamad Medical Corporation.

Nationality and general trends of substance abuse

Qatari citizens had the highest relative percentage of presentation with non-alcoholic substances at N=41 (23.3%) with the p value at <0.00001 when compared with other nationalities. Notably, Qatari citizens formed 64.06% of the total number of individuals presenting with substance abuse other than alcohol despite being only 10% of the population. This was followed by 8.7% of Arab-non-Qataris. Asians and other nationalities presented overwhelmingly with alcohol abuse at 98.7% and 98%, respectively (online supplemental material).

Next, in view of the unique population make up of Qatar and its impact on service planning, we explored these four major ethnic groups separately against the main substance abuse groups.

Alcohol

Qataris constituted just over 10% of this group compared with 70% of Asians and just 5.5% Non-Qatari Arabs. Qatari males had the highest percentage of comorbid physical health issues at 67% and highest percentage of repeat similar presentations within last year of this presentation at 75%. Qatari males and females had the highest relative percentages of comorbid mental health conditions at 31% and 40%, respectively. Asian males had the highest percentage of being involved in a violent incident at the time of assessment at 36%. Asian males were over-represented in this group compared with their proportion in the population. Females across all ethnic groups presented with high percentages of acute intoxication (table 4).

Table 4 Relationship of group variables to ethnic extraction in patients presenting with alcohol abuse complaints to HMC EDs, Qatar, January 2019 to October 2020

	Existing physical health condition	Existing mental health condition	Criminal charges present at this admission	Reason for admission acute intoxication	Reason for admission injury, fall, assault	Reason for admission other	Previous similar presentation within 1 year
Qatari Nationalsnationals N=135							
Male N=130	88 (67.7%)	41 (31.5%)	24 (18.4%)	84 (64.6%)	8 (6.2%)	37 (28.5%)	93 (75.4%)
Female n=5	1 (20%)	2 (40%)	3 (60.0%)	3 (60.0%)	0 (0.0%)	2 (40%)	2 (40%)
Arab-non-Qatari nationals N=73 (Sudan, Syria, Lebanon, Egypt, Jordan, Tunisia)							
Male N=70	16 (22.9%)	15 (21.4%)	21 (30%)	35 (50%)	13 (18.6%)	21 (30%)	37 (52.9%)
Female N=3	0 (0.0%)	1 (33.3%)	0 (0.0%)	2 (66.6%)	0 (0.0%)	0 (0.0%)	1 (33.3%)
Asian nationals N=919 (India, Bangladesh, Nepal, Pakistan, Sri Lanka)							
Male N=916	158 (17.2%)	104 (11.4%)	115 (12.5%)	471 (51.4%)	326 (35.6%)	100 (10.9%)	428 (46.7%)
Female N=6	2 (33.3%)	1 (16.6%)	0 (0.0%)	6 (100%)	0 (0.0%)	1 (16.6%)	1 (16.6%)
Other nationalities N=187							
Male N=174	31 (17.8%)	6 (3.4%)	7 (4.1%)	121 (69.5%)	34 (19.5%)	14 (8.1%)	71 (40.8%)
Female N=13	4 (30.7%)	2 (15.4%)	0 (0.0%)	13 (100%)	0 (0.0%)	2 (15.4%)	2 (15.4%)

EDs, emergency departments; HMC, Hamad Medical Corporation.

Heroin and other depressive drugs

Qataris constituted in total 35 (81.4%) of this group of all nationalities. Additionally, both males and females had high incidence of co-morbid mental health conditions, needed admission for reasons other than immediate effects of the drugs, high percentage attracted a criminal charge and had presented similarly within last 12 months. The only other group over-representing compared with their population was non-Qatari Arabs and had similar characteristics in terms of mental health conditions, criminal charges and repeat presentations. Asian and other nationalities were significantly under-represented in this group when compared with their populations in the community (online supplemental material).

Cocaine and other stimulant drugs

This cohort presented with similar findings to that of the depressant drug group with a significant over-representation by Qatari nationals at 76.5%. Cases were associated with high frequencies of co-morbid mental health problems, repeat presentations within last 12 months and criminal charges. Other nationalities were significantly under-represented when compared with their populations in the community.

DISCUSSION

This study is the largest and the first of its kind that explores the ED attendance of alcohol and other substance abuse in the state of Qatar.

The main finding of this study is that, by far the biggest single substance of abuse in Qatar is alcohol and it was involved in over 95% of all the cases that presented to the ED during the study period. All the 4 EDs receive on average 3000 unique visits each day (HMC Corporate data). So, of the 36 000 ED presentations each year, 2.26% (N=815) visits are related to alcohol and substance abuse. Qatar's population during this period was around 2.7 million inhabitants (Qatar Planning and Statistical Authority, 2021), thereby giving a number of 3 visits to the ED per 10 000 population per year related to alcohol and substance abuse.

Due to its unique demographic makeup, men outnumber females in a ratio of 3:1 (204 6000 males to 679 000 females) in Qatar as most of the low-income workers do not come to Qatar with their families[21] (Qatar, Planning and Statistical Authority, 2021). Despite this, being a male was significantly associated with attending the ED because of alcohol and substance abuse.

Local Qataris were significantly more likely to present with drugs of abuse other than alcohol when compared with any other nationalities. Presentations with substances other than alcohol were significantly more likely to be associated with mental health issues and repeat presentations within the last 12 months.

As far as we are aware, there are no ED-based surveys of alcohol and substance abuse presentations in this region. The only ED based study exploring Blood Alcohol Concentrations (BAC) was carried out in Qatar.[22] Their study reported a BAC positive rate of 1.6–2.4 per 1000 visits which is significantly less than what we found. This is possibly for a number of reasons including using BAC instead of clinical assessment of substance use, BAC carried out without any formal clinical protocol and only alcohol being considered. Taken together with the findings from this study, a case for using routine BAC in all suspected cases alongside a formal clinical protocol to screen for alcohol abuse presentations to ED can be made. Similar studies exploring ED based alcohol and substance abuse presentations in other regions show a much higher percentage of ED visits when compared with our data.[19 23 24] This could be because of the unique social, cultural, and legal environment in Qatar. The authors acknowledge that these findings should be taken in the context of the limitations of the study design itself. This study used retrospective data collection form EPRs and often some information pertaining to alcohol and substance abuse was missing from these records. Also, we did not use formal clinical examinations, investigations or screening tools to arrive at the diagnosis of substance or alcohol abuse/misuse, rather we relied on the recorded diagnosis by ED physicians.

Despite higher than population-based proportions of mental illness in those presenting, only a small number were referred to psychiatry or offered brief counselling services. This is because at present, no state provided community-based alcohol or substance abuse rehabilitation facilities exist for non-citizens. However, Qatar has been steadily moving away from criminal justice managed punitive drug control measures towards a more integrated management of alcohol and substance abuse burden.[25] This has led to the development of a healthcare focused alcohol and substance abuse centre for Qatari citizens. This study and similar planned research studies around alcohol and drug abuse in the wider community hope to inform development of community-based screening, referral and rehabilitation resources for all residents in line with Qatar's National Vision 2030 document which provides a framework to transform Qatar into an advanced country by 2030. It is a developmental roadmap focusing on development of human, social, economic and environmental capital (Qatar Government Communications Office).[26]

CONCLUSION

Alcohol and substance abuse presentations to the emergency care in Qatar at present not only put an extra burden on the emergency resources but individuals are offered little by way of meaningful interventions. It is hoped that the findings form this, and similar studies will help inform the transformation of care around the alcohol and substance use in Qatar as the state experiences a shift in its policy towards drug abuse and moved on from a purely criminal matter to health, social and human rights issue.

Contributors MA, SR and NSKC conceptualised the study. SR, MOA and NSKC helped to the design and planning of the study. NME, DS, STS, MOA and MA helped in data acquisition and study data management. SR and MOA wrote the manuscript. NME and SR analysed the data. All authors contributed in the review and revision of the manuscript.MA was responsible for the overall content as guarantor. MA accepts full responsibility for the finished work and/or the conduct of the study, had access to the data, and controlled the decision to publish.

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Patient consent for publication Not applicable.

Ethics approval Formal ethics approval for this study was obtained from the organisational Ethics Committee of Hamad Medical Corporation, Qatar where this study was undertaken. Approval number- (MRC-01-20-920). Personal identifying data were anonymised, and patients were assigned numbers when data were recorded on the data extraction sheets. The key linking the personal identifiers to the assigned numbers was stored on an encrypted, password protected device by the principal investigator and will be deleted after 2 years.

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