

## Risk Factors Potentiating Substance Abuse among Saudi Females: A Case Control Study

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### ABSTRACT

**Introduction:** For controlling the substance use issue, it is important to have a good knowledge of risk predisposing an individual towards substance use. The risk factors potentiating substance use among Saudi women are not well defined, as well as getting the benefit of the information available about substance abuse at Al-Amal hospital. Hence, present study was undertaken, to strengthen the national efforts in substance use reduction among women in the Kingdom of Saudi Arabia through provision of an explicit scientific background for planners.

**Methodology:** The present case-control study was carried out among 207 female patients undergoing treatment and rehabilitation of substance abuse at Al-Amal hospital, Jeddah. A validated checklist was used among cases in reviewing patient' files in Al-Amal hospital and a modified self-administered questionnaire were used for the controls. Data collected, Coded and analysed using SPSS 22.0 (SPSS program). Risk factors and predictors of substance abuse were elaborated using chi-square test, Odds ratio and logistic regression and p value less than 0.05 considered as a level of significance.

**Results:** Unstable marriage, low educational states, unemployment, low family income, and unstable family conditions were significantly higher among patients' group. It was found that substance use was associated significantly with presence of family conflicts, substance abuse by husband,

substance abuse by peers, substance abuse by siblings, sexual abuse, low family income and patients with Sickle cell anemia ( $p < 0.05$ ).

**Conclusion:** Risk factors for substance use among the studied females were substance use by peers, husbands, and relatives, history of sexual abuse, low family income, unstable family conditions as well as patients with sickle cell anemia. Low educational level, unemployment, unstable marital status, history of physical and/or sexual abuse, Suicidal attempts, usage of psychiatric medications and involvement in illegal activities were significantly associated with substance use disorder in the studied sample.

**Keywords:** Drug Addiction; Saudi Arabia; Substance abuse; Women.

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### INTRODUCTION

Substance use disorders including substance abuse and dependence are one of the top twenty risk factors worldwide. According to the United Nations Office report on Drugs and Crimes (UNODC) in 2015, almost a quarter of a billion individuals with an age range of 15-64 were involved in substance use by consuming at least one drug.<sup>1,2</sup>

Focusing on Kingdom of Saudi Arabia, an integrated evaluation of the available literature in medical relevant database the MEDLINE including the WHO and the UNODC reports suggest that commonly used items for substance use among Saudis are amphetamine (4–70.7%), heroin (6.6–83.6%), alcohol (9–70.3%) and cannabis (1–60%). Overall the use of amphetamines and cannabis escalated with a marked decline in the use of volatile substances and heroin.<sup>3</sup>

In a conservative society like Saudi Arabia, women face unique challenges when it comes to substance use, whether in accessing information, finding resources for treatment or obtaining family support, one of the inherent problems in assessing this issue is the disclosure relevant to the substance use, as women are usually reluctant to reveal if they are substance users due to social stigma.<sup>4</sup> According to a study conducted by Al-Marri et al<sup>5</sup> regarding substance use and abuse in the Arab World, concludes the urgency to conduct further researches in the region. Moreover, a study presented at the National Institute on Drug Abuse (NIDA), stated that the available Saudi literature about substance use are still scarce, particularly data among women; and this shortage may partly be attributed to the norms and traditions of the community. According to the head of World Anti-Drug Day

activities in KSA in 2013, Saudi female substance users increased by 20% during the past few years.<sup>6,7</sup> For controlling the substance use issue, it is important to have a good knowledge of risk predisposing an individual towards substance use. The risk factors potentiating substance use among Saudi women are not well defined, as well as getting the benefit of the information available about substance abuse at Al-Amal hospital. Hence, present study was undertaken, to strengthen the national efforts in substance use reduction among women in the Kingdom of Saudi Arabia through provision of an explicit scientific background for planners.

## METHODOLOGY

The present case-control study was carried out among 207 female patients at Al-Amal hospital, the only specialized governmental hospital for treatment and rehabilitation of substance abuse at Jeddah. The Jeddah city is located in the western province of the Kingdom of Saudi Arabia and considered as the main seaport for the kingdom and the main entry port for the two holy mosques. According to latest statistics, the population of Jeddah accounted for 4.082 million through census. Controls were selected from PHCCs of the ministry of health in Jeddah city as two controls for one case; making a total of 416 controls. The study included all Saudi female substance users cared in Al-Amal hospital in Jeddah

from 2008 to 2017. Controls were enrolled from Saudi females attending PHCCs of the ministry of health in Jeddah city. The research was approved by the Saudi Board of Community Medicine Residency Program Scientific Committee. Informed consent was taken from participants. The consent for approval to review patients' files was taken from the hospital administration.

A validated checklist by Al-Ghamdi et al<sup>8</sup> was used among cases in reviewing patient' files in Al-Amal hospital. The modified self-administered questionnaire for the controls was translated to Arabic and tested for content and face validity to ensure appropriate clarity and fulfillment of the study objectives. Three experts (Biostatistician, Epidemiologist and Psychiatrist) reviewed the final version of the questionnaire.

In addition, it was tested among a group of 90 women in the pilot study. The results were reviewed and modifications were applied. Data collected, Coded and analysed using Statistical Package for Social Science version 22.0 (SPSS program). Mean and standard deviation were used to present the continuous normally distributed data. Risk factors and predictors of substance abuse were elaborated using chi-square test, Odds ratio and logistic regression. A confidence level of 95% (CI 95%) was adopted throughout the study, and p value less than 0.05 considered as a level of significance.

Table 1: Socio-demographic characteristics of the study groups.

Substance abuse by relatives	Group				X <sup>2</sup>	P
	Cases (N=207)		Controls (N=416)			
	No	%	No	%		
<b>Marital status</b>						
Single	77	37.2%	117	28.1%	73.051	<0.001*
Married	64	30.9%	254	61.1%		
Divorced	50	24.2%	28	6.7%		
Widowed	6	2.9%	14	3.4%		
Separated	10	4.8%	3	0.7%		
<b>Number of marriages</b>					29.763	<0.001*
Once	80	61.5%	239	79.9%		
Twice	33	25.4%	20	6.7%		
>two times	17	13.1%	40	13.4%		
<b>Age at first marriage:</b>					6.676	0.010*
<20 years	56	43.1%	90	30.2%		
≥20 years	74	56.9%	208	69.8%		
<b>Educational level:</b>					25.763	<0.001*
Illiterate	9	4.6%	10	2.4%		
Read and write	4	2.0%	9	2.2%		
Primary	25	12.7%	34	8.2%		
Preparatory	32	16.2%	56	13.6%		
Secondary	73	37.1%	111	26.9%		
University	54	27.4%	178	43.1%		
Postgraduate	0	0.0%	15	3.6%		
<b>Working status:</b>					41.697	<0.001*
Housewife	130	62.8%	197	47.9%		
Has a job	27	13.0%	155	37.7%		
Student	50	24.2%	59	14.4%		
<b>Family income:</b>					106.896	<0.001*
<1300 \$	196	94.7%	222	53.4%		
1300 - < 2600 \$	5	2.4%	91	21.9%		
≥2600\$	6	2.9%	103	24.8%		
<b>Familial status:</b>					176.850	<0.001*
United family	62	31.2%	347	84.4%		
United family with conflict	64	32.2%	33	8.0%		
divorced	33	16.6%	21	5.1%		
separated	40	20.1%	10	2.4%		

\* Statistically significant

Table 2: History of substance abuse of relatives and peers of the cases and controls.

Substance abuse by relatives	Group				X <sup>2</sup>	P	Odds ratio (95% CI)
	Cases (N=207)		Controls (N=416)				
	No	%	No	%			
<b>Substance abuse by the father</b>							
Yes	19	9.2%	4	1.0%	26.249	<0.001*	10.41(3.49-31.02)
No	188	90.8%	412	99.0%			
<b>Substance abuse by the mother</b>							
Yes	9	4.3%	0	0.0%	Fisher	<0.001*	3.10(2.77-3.48)
No	198	95.7%	416	100.0%			
<b>Substance abuse by the husband</b>							
Yes	53	25.6%	5	1.2%	97.482	<0.001*	28.29(11.10-72.10)
No	154	74.4%	411	98.8%			
<b>Substance abuse by the peers</b>							
Yes	125	60.4%	2	0.5%	305.635	<0.001*	315.55(76.51-1301.41)
No	82	39.6%	414	99.5%			
<b>Substance abuse by the peers</b>							
Yes	34	16.4%	9	2.2%	43.752	<0.001*	8.89(4.17-18.93)
No	173	83.6%	407	97.8%			
<b>Substance abuse by the others</b>							
Yes	19	9.2%	2	0.5%	32.105	<0.001*	20.92(4.82-90.73)
No	188	90.8%	414	99.5%			

\* Statistically significant

Table 3: History of verbal, physical and sexual abuse of the cases and controls.

History of abuse	Group				X <sup>2</sup>	P	Odds ratio (95% CI)
	Cases N=207		Controls N=416				
	No	%	No	%			
<b>History of verbal abuse:</b>							
Yes	48	23.2%	78	18.8%	1.688	0.194	1.31(0.87-1.96)
No	159	76.8%	338	81.2%			
<b>History of physical abuse:</b>							
Yes	45	21.7%	43	10.3%	14.816	<0.001*	2.41(1.53-3.81)
No	162	78.3%	373	89.7%			
<b>History of sexual abuse:</b>							
Yes	22	10.6%	18	4.3%	9.134	0.003*	2.63(1.38-5.02)
No	185	89.4%	398	95.7%			
<b>Any kind of abuse by father:</b>							
Yes	16	7.7%	15	3.6%	4.971	0.026*	2.24(1.08-4.63)
No	191	92.3%	401	96.4%			
<b>Any kind of abuse by mother:</b>							
Yes	7	3.4%	10	2.4%	0.498	0.480	1.42(0.53-3.79)
No	200	96.6%	406	97.6%			
<b>Any kind of abuse by older sibling:</b>							
Yes	8	3.9%	15	3.6%	0.026	0.872	1.08(0.45-2.58)
No	199	96.1%	401	96.4%			
<b>Any kind of abuse by husband:</b>							
Yes	22	10.6%	42	10.1%	0.042	0.837	1.06(0.61-1.83)
No	185	89.4%	374	89.9%			
<b>Any kind of abuse by peers:</b>							
Yes	3	1.4%	5	1.2%	0.067	0.796	1.21(0.29-5.11)
No	204	98.6%	411	98.8%			

\* Statistically significant

Table 4: Other Factors potentially associated with substance use.

		Group				X <sup>2</sup>	P
		Cases N=207		Controls N=416			
		n	%	n	%		
Substance (Nicotine) use history	No	55	26.6%	336	63.0%	184.096	<0.001*
	Yes	147	71.0%	68	34.6%		
Use of Psychiatric medication regularly	No	138	67.0%	404	87.8%	125.952	<0.001*
	Yes	68	33.0%	7	12.2%		
History of illegal involvement	No	175	85.4%	410	94.7%	52.425	<0.001*
	Yes	30	14.6%	3	5.3%		
History of suicide attempt	No	151	73.7%	399	89.0%	73.697	<0.001*
	Yes	54	26.3%	14	11.0%		

\* Statistically significant

Table 5: Logistic regression for potential predictors of substance use disorder.

Variables	Sig.	95% C.I.for EXP(B)	
		Lower	Upper
United family	.005		
United family with conflict	.026	1.364	138.610
Divorced Parents	.882	.102	14.311
Separated Parents	.213	.346	116.323
Husband using substances	.000	25.867	985.867
Peers using substances	.000	61.684	1398.747
Siblings using substances	.018	1.581	129.635
Sexual abuse	.045	1.063	145.675
Income	.001	2.237	19.219
Sickle cell anemia	.026	1.473	437.622
Constant	.000		

## RESULTS

The age of the cases (mean± SD, 29.9±10.9 years) was slightly younger than controls (mean± SD, 33.7±10.9 years). Table 1 shows that almost one-quarter of the cases (24.2%) were divorced compared to only 6.7% of the controls and 4.8% were separated compared to 0.7% of the controls. Among the married participants, a significantly greater percentage of the cases (25.4%) than controls (6.7%) were married twice  $p<0.05$ , and a significantly higher percentage of cases than controls (43.1% vs 30.2%) had their first marriage before reaching 20 years old. Regarding educational level, it was obvious that controls had higher educational level than cases, either for university qualifications (43.1% vs 27.4%) or postgraduate degrees (3.6% vs 0.0%). And a significantly higher proportion of them (37.7%) had current jobs in comparison to cases (13%). Eventually, the overwhelming majority of the cases (94.7%) had monthly income <1300 \$ (US dollars) compared to 53.4% of the controls which is statistically significant  $p<0.05$ . While almost one-third of the cases (32.2%) expressed that they are living within united families with conflicts, 16.6% within divorced families and 20.1% within separated families, significantly much lower percentages were recorded in the controls (8%, 5.1% and 2.4% respectively)  $p<0.05$ . Tables 2, 3 and 4 shows factors that could be associated with substance abuse. Significantly higher proportions of cases than controls indicated that one or more of their relatives, spouses or peers were substance abusers, this notion was applicable for fathers (9.2% vs 1%) with an odds ratio (10.41; 95% CI: 3.49-31.02), mothers (4.3% vs 0.0%) with an odds ratio (3.1; 95% CI: 2.77-3.48), husbands (25.6% vs 1.2%) with an odds ratio (28.29; 95% CI: 11.10-72.10) and peers (60.4% vs 0.5%) with an odds ratio (315.55; 95% CI: 76.51-1301.41)  $p<0.05$ . Also, a significantly higher percentage of the cases than controls reported that there

were others who included aunts, uncles, cousins, siblings and neighbors who were substance abusers (9.2% vs 0.5%) with an odds ratio (20.92; 95% CI: 4.82-90.73)  $p<0.05$  [Table 2].

Regarding exposure to different types of verbal, physical and sexual abuse, it was evident that significantly higher proportions of the cases than controls were exposed to physical abuse (21.7% vs 10.3%) with an odds ratio (2.41; 95% CI: 1.53-3.81) and sexual abuse (10.6% vs 4.3%) with an odds ratio (2.63; 95% CI: 1.38-5.02)  $p<0.05$ . On the other hand, although a higher percentage of cases (23.2%) than controls (18.8%) addressed that they had been exposed to verbal abuse, this difference is not statistically significant  $p>0.05$ . The only condemned abusers who showed statistical significance were the fathers, where 7.7% of the cases compared to 3.7% of the controls claimed that they experienced any type of abuse from their fathers with an odds ratio (2.24; 95% CI: 1.08-4.63)  $p<0.05$  [Table 3].

There are many other factors potentially associated with substance use. From Table 4, it can be seen that, the case group has a huge number of patients using Nicotine (71%) in comparing to controls (34.6%) ( $p<0.001$ ). So, the two groups have significant association between them based on nicotine using history. As well as many other factors potentially associated with substance use as use of Psychiatric medication regularly, history of illegal involvement and history of suicidal attempts were significantly higher in cases than the controls ( $P<0.001$ ).

To determine significant potential predictors of substance use disorder among the cases, the results of the logistic regression [table 5] showed, living in a family with conflicts which increases the likelihood by 13 folds (Odds ratio=13.751; 95%CI:1.364-138.610), with husband using substance (Odds ratio=159.691; 95%CI: 25.867-985.867), peers using substances (Odds ratio=838.521; 95%CI: 61.684-1398.747), and siblings using

substances (Odds ratio=14.315; 95%CI: 1.581-129.635), with history of sexual abuse (Odds ratio=12.444; 95%CI: 1.063-145.675) and history of sickle cell anemia (Odds ratio=25.388; 95%CI: 1.473-437.622), while higher monthly income was found to be protective (Odds ratio=-6.556; 95%CI: -2.237- -19.219)  $p < 0.05$ .

## DISCUSSION

The results of the present study as regards the risk factors of substance use disorder were in line with the results reported from previous literature. The most commonly reported risk factors were economic deprivation; a family history of substance abuse, poor social support, family conflict; low bonding to family; academic failure, as well as unstable marital status seemed to have a major impact on the initiation of substance abuse. Many studies in the literature agreed with those results. Those studied had also gave some evidence that certain factors including personal attributes and a social bond to family and society may protect against drug abuse, and this goes in line with the results of this research.<sup>9-12</sup>

Similarly, a retrospective study conducted in the Dammam city reported several factors linked to an inclination of women towards substance use. Importantly, educational level, early marriage or having an addict friend were the prominent factors linked with substance use in these women. The contribution of the husband was significant in introducing substance use among married couples.<sup>8</sup>

In the present study, about one fifth of the patients were exposed to physical abuse in comparison to only 10% of subjects ( $p < 0.001$ ). Physical abuse had doubled the risk for substance abuse. As regards the sexual abuse, 10 % of patients versus 4% of controls were subjected to sexual abuse ( $p < 0.05$ ). Females exposed to sexual abuse were 2.6 times riskier to substance abuse than their fellows. In agreement with this study, a study conducted on 146 homeless women suffering from substance use disorder and who had engaged in in-patient treatment program revealed that almost 70 percent of them had experienced physical, emotional or sexual abuse. Similarly, a world health organization (WHO) multi-country study showed that exposure to physical or sexual partner violence, or both, is significantly associated with substance abuse. Another study revealed that the severity of physical partner violence is proportionately associated with substance use. Additionally, reports from previous literature stated that husbands of women with drinking problems were unsympathetic, had stereotypical beliefs about women's roles, and shared minimally in solving their wives problems. Sexual abuse was also reported to be significantly associated with substance abuse among females in many studies.<sup>13-18</sup>

Knowledge about these risk and protective factor is of utmost importance. It is the nucleus for creating and adopting an on-hands approach to prevent and manage substance abuse among females. The comprehensive understanding of the risk factors that trigger substance use among the women in the community and social setting rather than the healthcare facilities would help, significantly, in formulating the required interventions for protecting women against substance abuse.<sup>19</sup>

Many factors had significant association with substance use among the patients studied as Nicotine use. Patients were two times more likely to have current used or past history of smoking than control, with values of 71% and 34% for patients and controls

respectively. In agreement with this result, a study conducted in USA in 2009 reported that history of nicotine use increase the risk of substance use two or three times more than the general population.<sup>20</sup>

As well as a significant difference was noted between patients and controls as regards the regular use of Psychiatric medications; about 33% of patients recruited to this study reported regular use of psychiatric drugs compared to only 12% of the control group.

Over a quarter of the patients recruited in the present study had attempted suicide, whereas only 11% of controls had done so. Substance use seemed to be significantly associated with high rates of suicidal attempts. In agreement with this study, a survey conducted in Serbia in 2005 stated that substance use is a risk factor for suicide attempt. About 69% of individuals were reported to attempt suicide in this survey.<sup>21</sup>

Further longitudinal studies are recommended to examine the causality between substance use and different associated risk factors. Developing preventive programs and enabling the community participation at the level of planning are recommended to target and manage the established risk factors for substance use disorder. More research is recommended to fill the existing gaps on mental disorders, sexual and physical abuse prevalence, causes and consequences in Saudi Arabia .Raise the awareness about the substance use disorder through coordination between schools, Ministry of interior and the Non-Governmental Organizations to plan and produce short movies through the media showing the adverse health impacts of substance use and its unfavorable consequences.

## CONCLUSION

Risk factors for substance use among the studied females were substance use by peers, husbands, and relatives, history of sexual abuse, low family income, unstable family conditions as well as patients with sickle cell anemia. Low educational level, unemployment, unstable marital status, history of physical and/or sexual abuse, Suicidal attempts, usage of psychiatric medications and involvement in illegal activities were significantly associated with substance use disorder in the studied sample.

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