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Substances use among a sample health care workers in Iran: prevalence, pattern of use and gender differences

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ABSTRACT

Background: Substance use (SU) among HCWs leads to reduced productivity and overall health and, moreover, is a negative role to promote SU reduction.
Aim: This study aimed to estimate the prevalence of SU and assess its determinants among HCWs.
Methods: The study analyzed data related to the first phase of the SHAHWAR Cohort study which included 1177 university employees.
Results: The prevalence of current tobacco use is 11.6% (2.7% in women, and 24.5% in men), and the prevalence of lifetime tobacco use was 19.8 (6.3% in women, and 39.3% in men). The ratio of hookah: cigarette use in women is about seven times that of men. The self-reported current tobacco, alcohol and opium use were 11.6% (M: F ratio > 9), 2.6% (M: F ratio > 6) and 1.4% (M: F ratio > 7) of total subjects. There was a significant difference in substance or alcohol users based on gender, job position, working schedule, employment status, marital status and education levels. There was a negative correlation between job security and stability in terms of work status among workers with substance or alcohol use.
Conclusion: Since implementation of preventive interventions knowing the high-risk groups and occupational risk factors, the results of the present study may meet this need.

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Substance use; health care workers; Iran; SHAHWAR

Introduction

Substance use (SU) is a common issue that affects all sections of the population. Wide availability and high prevalence of substance use (including tobacco, alcohol and illegal drugs) have increased its burden (Abbasi-Ghahramanloo et al., 2015). SU among health care workers (HCWs) is an important issue that has been seriously neglected. While some of the risk factors for SU for HCWs are similar to the general population, this group of workers has different characteristics, for example, exposure to stressful and unpleasant workplace and heavy workload, compared to the general population (Geuijen et al., 2023). Many studies indicated that work stress plays an important role in initiation of SU and subsequent addiction (Airagnes et al., 2021; Roche et al., 2015).

SU among employees can decrease overall productivity and health (Iqbal et al., 2023). In addition, HCWs are in their place as role models in reducing substance use and substance use among these groups is particularly worrying in low- and middle-income countries. Therefore, preventive interventions can be implemented to reduce occupational risk factors associated with drug or alcohol use (Cook & Schlenger, 2002; Richmond et al., 2000).

Most of the studies regarding substance use among HCWs show the substance use is not more common among HCWs than the general public (Merlo et al., 2019; Nilan et al., 2019). Studies in the United States have shown that 10%–15% of health professionals and employees use illegal substances during their lifetime (Baldisseri, 2007; Nilan et al., 2019). Research on health workers reported from India showed that male employees, 15.1% of medical school faculty, 13.1% of physicians and 14.1% of medical students were tobacco smokers (Mohan et al., 2006). Common use of legal substance (especially smoking) and even illegal drug or alcohol use among their peers might make it easy for health professionals in the development and continuation of drug or alcohol use (Kenna & Lewis, 2008).

Overall, there is uncertainty about the prevalence of SU among HCWs compared to the prevalence in the general population. While HCWs may be more at risk of SU due to heavy workload, irregular working hours and resulting stress (Carinci & Christo, 2009; Nilan et al., 2019), they may be lower at risk due to socio-economic status (SES) education level, income and social position in the community (Tuithof et al., 2016).

Prevalence of SU among health care workers, considering different job groups in this field, can be affected by the type of work (clinical, administrative, and service), work schedule and job security and stability.

In Iran, drug policy states that tobacco is not religiously or legally prohibited, however, the use of other illegal substances

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such as opiates, cannabis is legally prohibited but not religiously prohibited. Using alcohol is prohibited both legally and religiously (Hajebi et al., 2024).

Since the trend of substance use varies over time (Geuijen et al., 2023), it is important for health policy makers to constantly update their information about the spectrum of drug or alcohol use in their region and its changing over time to provide accurate and timely management (Awoliyi et al., 2014). In line with this important point and considering the few epidemiological studies to determine the prevalence of drug and alcohol use among health sector employees in Iran, this study was conducted. To help fill the evidence gap, we report the findings from a SHAHWAR (SHAhroud Healthcare Workers Associated Research) cohort study. The present study aimed to (1) estimate the prevalence of substance use including tobacco, alcohol and drugs; (2) assess the determinants of substance use.

Materials and methods

Participants and procedure

In a cross-sectional study, on data from the first phase of the SHAHWAR Cohort study which was conducted from October 2 2019 to September 21 2020 in Shahroud, located in the northeast of Iran, we studied the prevalence and current pattern of drug and alcohol use amongst university employees who worked in Shahroud University of Medical Sciences (SHMU). The research ethics committee of SHMU approved the study (IR.SHMU.REC.1397.033). Eligible participants were selected by a convenient sampling method. A written informed consent was received from the participants which contained a well-explained process and objectives of the research. More details are given elsewhere (Zare et al., 2022).

Measures

Trained research assistants interviewed individuals and collected the data. In order to assess drug and alcohol use among HCWs, we used a questionnaire contained the basic demographic characteristics like sex, age, job position, working hours, education and detailed information of pattern of drug and alcohol use. The subjects were asked whether they had used the substances during their lifetime, age of starting and stopping, type of substance, route of consumption, having a user family member, use rate in 24 hours, etc. In this report, use of any type of tobacco – smoked and or smokeless (hookah, cigarette, chewing tobacco) – is defined as tobacco use (Center for Disease Control and prevention [CDC], 1997). Use of products that do not contain tobacco, such as electronic nicotine delivery systems, is excluded.

Data analysis

Collected data were coded, analyzed and computed using SPSS version 20. Descriptive statistics were reported by frequency and percentages, mean and standard deviation were calculated for the different variables. Data are presented as the N (%) and mean ± SD. Detailed data on pattern of use in the subgroups (age, gender, educational and marital status) were assessed using T-test and Chi square, appropriately. $p < 0.05$ was considered statistically significant. To test the correlation between substance, use pattern and other variables, correlational analysis was performed using Pearson correlation method.

Results

Out of 1177 participants in the study, 696 (59.1%) were females. The mean (±SD) age of participants was 41.16 (±7.74) years (age range 25–69 years). Data on self-reported smoke and tobacco use pattern in total sample and gender groups summarized in Table 1.

The prevalence of current tobacco use is 11.6% (2.7% and 24.5% in women and men, respectively), and the prevalence of

Table 1. Pattern of self-reported tobacco use in total sample and gender groups ($n = 1177$).

Variable N (%),(Mean±SD)	Total	Female ($n = 696$)	Male ($n = 481$)	P-value
Tobacco* use (life time**)	233(19.8)	44(18.9)	189(81.1)	**P < .01**
Cigarette smoking	69(5.9)	3(4.3)	66(95.7)	**P < .01**
Pipe/hookah/chewing tobacco use	164(13.9)	41(25)	123(75)	
Tobacco use by type (current ***)	137(11.6)	19(14)	118(86)	**P < .01**
Cigarette smoking	55(4.7)	2(3.6)	53(96.4)	**P < .01**
Hookah	75(6.4)	16(21.3)	59(78.7)	
Pipe	5(3)	0	5(100)	
Chewing tobacco	2(1.2)	1(50)	1(50)	
Age of starting cigarette smoking	20.12 ± 10.9	27 ± 2.6	20.2 ± 2.8	**P = .01**
Age of starting regularly cigarette smoking	22.19 ± 6.47	28.33 ± 2.88	21.9 ± 6.3	**P = .01**
Age of stopping cigarette smoking	37.93 ± 10.7	37.12 ± 10.7	39.33 ± 11.6	NS
No. cigarette smoking times/24 hrs.	7.83 ± 8.89	1 ± 1	8.14 ± 8.9	**P <.05**
Age of starting tobacco use	27 ± 8.1	31.4 ± 7.9	25.5 ± 7.6	**<.001**
Age of stopping tobacco use	33.16 ± 7.9	33.6 ± 7.9	33 ± 8	NS
No. Tobacco use per day	7.9 ± 8.8	5.6 ± 7.7	8.7 ± 9.1	NS
Having a smoker family member (Yes)	32(46.4)	2(6.3)	30(93.8)	NS
Passive smoking at home (Yes)	23(33.3)	1(4.3)	22(95.7)	NS
Passive smoking at work (Yes)	6(8.7)	0	6(100)	NS

* Any of cigarettes/pipe/hookah/chewing tobacco use.

** Have you smoked at least 100 cigarettes or smoked a pipe/hookah at least 50 times or you used chewing tobacco at least 20 times in your entire life?

*** Do you smoke cigarettes/pipe/hookah/chewing tobacco now?

Table 2. Pattern of self-reported alcohol and opium use in total sample and gender groups ($n = 1177$).

Variable N (%),(Mean±SD)	Total	Female ($n = 696$)	Male ($n = 481$)	P-value
Alcohol Use (current)	31(2.6)	4(12.9)	27(87.1)	***P* < .01**
Age of starting alcohol	22.58 ± 6.1	25.7 ± 3.1	23.3 ± 6.3	NS
Age of stopping alcohol	31.14 ± 9.4	30.2 ± 11.11	29.9 ± 8.7	NS
Type of alcoholic drink				
5–7% alcohol	8(25.8)	3(37.5)	5(62.5)	NS
>40% alcohol	7(22.6)	0	7(100)	
Homemade drink	16(51.6)	1(6.3)	15(93.8)	
Opium Use (current)	17(1.4)	2(11.8)	15(88.2)	***P* < .01**
Age of starting opium	27 ± 7.65	35.5 ± 16.3	27.53 ± 7.5	NS
Age of stopping opium	35.6 ± 6.9	37 ± 18.3	34.8 ± 8.2	NS
Type of substance (Opium)	17(100)	2(12.5)	15(87.5)	NS
Route Opium Use				
Inhalation	16(94.1)	2(12.5)	14(87.5)	NS
Oral	1(5.9)	0	1(100)	

lifetime tobacco use was 19.8 (6.3% and 39.3% in women and men, respectively). Also the prevalence of current and lifetime cigarette smoking in the whole sample is 4.7% and 5.9%. The ratio of hookah: cigarette use in women is about 7:1 in that of men. Chi-square test results showed a significant difference in the prevalence of smoking by gender groups ($p < 0.001$). The

Table 3. Patterns of substance use based on demographic profiles of users ($n = 1177$).

Variable N (%)	No Use	Smoke/Tobacco use	Alcohol use	Opium use	Multi-drug use	P-value
Age (year)*	40.9 ± 7.75	39.17 ± 7.7	41.1 ± 8.1	45.11 ± 7.77	42.2 ± 9.1	***P* < .01**
<40	578(94)	83(13.5)	3(0.5)	3(0.5)	26(4.2)	NS
≥40	506(88.3)	38(6.6)	2(0.3)	2(0.3)	25(4.5)	
Gender						
Female	679 (97.7)	36(5.2)	0	2(0.3)	5(0.7)	***P* < .01**
Male	400 (82.7)	85(17.7)	5(1)	3(0.6)	46(9.6)	
Education Status						
Up to Diploma	222(75.0)	62(20.9)	1(0.3)	3(1.1)	8(2.7)	***P* < .05**
Up to Bachelors	559(83.6)	89(13.3)	4(0.6)	1(0.1)	16(2.4)	
Masters & Ph.D.	183(85.9)	27(12.7)	0	1(0.5)	2(0.9)	
Marital Status						
Single	75(76.5)	17(17.3)	2(2)	0	4(4.1)	NS
Married	841(82.7)	149(14.7)	3(0.3)	4(0.4)	20(2)	
Widow	44(74.6)	12(20.3)	0	1(1.7)	2(3.4)	

* Mean±SD.

Table 4. Frequency of substance use based on demographic and employment profiles of users ($n = 1177$).

Variable N (%),(Mean±SD)	N0 Substance Use	Substance Use**	p-value
Age*	39.44 ± 7.53	39.28 ± 8.74	NS
Education Status			
Up to Diploma	231(78.3)	64(21.7)	***P* < .05**
Up to Bachelors	565(84.7)	102(15.3)	
Masters, GP & Ph.D.	183(86.3)	29(13.7)	
Gender			
Female	652(68.1)	44(20.6)	***P* < .01**
Male	306(31.9)	170(79.4)	
Marital Status			
Married	859(84.5)	158(15.5)	***P* < .05**
Single	76(77.6)	22(22.4)	
Widow	44(74.6)	15(25.4)	
Employment Status			
Fixed term employment	481(87.6)	68(12.4)	***P* < .01**
Contract employment	127(83.6)	25(16.4)	
• Temporary employment	369(78.3)	102(21.7)	
Current Job Group			
Administrative officer	281(88.1)	38(11.9)	***P* < .01**
Clinical services	501(86.8)	76(13.2)	
Technical staff	52(82.5)	11(17.50)	
Cleaner services	116(73)	43(27)	
Physical protection	29(51.8)	27(47.2)	
Working schedule			
Fixed work schedule	589(86.4)	93(13.6)	***P* < .01**
Rotating shift work schedule	389(79.40)	101(20.6)	

* Mean±SD, ** It refers to any tobacco, drug and alcohol use.

correlated factor was passive smoking at home ($p < 0.001$). Moreover, there were significant positive correlations between age of initiation and termination of substance including cigarette smoking ($R = 0.6$, $p < 0.001$), tobacco (hookah) ($R = 0.68$, $p < 0.001$), alcohol ($R = 0.63$, $p < 0.001$), and opium ($R = 0.65$, $p < 0.005$) in users. The mean age of starting smoking in men is significantly lower than in women.

Pattern of self-reported alcohol and opium use in total sample and gender groups is summarized in Table 2.

The prevalence of alcohol use among smokers is 20.3%. Also, the prevalence of alcohol consumption in substance users is 19.7% (men) and 33.3% (women) ($p > 0.05$). Out of total sample 4.33% were multiple drug use (users of more than one substance). There is a statistically significant differences in multi-substance users based on gender and the mean age of groups ($p < 0.0001$, Table 3).

Frequency of substance use based on demographic and employment profiles of users including employment status, job group and working hours act are summarized in Table 4.

Discussion

The current research aimed to assess the prevalence and pattern of substance use among SHMU employees. The major findings obtained from the present study are as follows: 1) This study estimated that self-reported current tobacco, alcohol and opium use were 11.6% (M:F ratio 9:1), 2.6% (M:F ratio 6:1) and 1.4% (M:F ratio 7:1) of total subjects, respectively; 2) The prevalence of alcohol use among smokers is 20.3%; 3) There was a significant difference in substance and alcohol users based on gender, job position, working schedule, employment status, marital status and education levels.

A recent meta-analysis conducted by Nilan et al. (2019) showed that 20%, 25% and 19% (on average 21%) HCWs were tobacco users in high-income countries (HIC), upper-middle-income countries (UMIC) and in lower-middle-income countries (LMIC), respectively, that the results of the present study are obviously lower than the prevalence in the UMIC that Iran belongs to Nilan et al. (2019). It suggests that this may be due to the health promotion policies and programs in the Iranian healthcare workers, such as providing smoking cessation services and education campaigns, as well as the cultural and religious beliefs of the predominantly Muslim population in Iran that discourage smoking. Prevalence of tobacco use among adults of general population were reported 25.4% in Iran (Moosazadeh et al., 2013) and 23.8% globally (World Health Organization [WHO], 2019), which is higher than the prevalence rate obtained from our study. The high level of education among university employees and their different socio-economic status may have acted as a factor of protective factors. For example, other studies have been reported a negative correlation between education level and smoking in the past (Gunter et al., 2020). Also, higher income communities tend to have lower prevalence rates of nicotine use.

Our results indicated that substance use decreased with higher levels of education and which is consistent with previous studies (Moradinazar et al., 2020a; Scott et al., 2010). A study in Fars province of Iran, by Sarikhani, et al. demonstrated that narcotics usage is associated with lower education level (Sarikhani et al., 2019). In addition, other study among Iranian Kurds indicates a higher level of illicit drug use and cigarette smoking among less-educated individuals (Damari et al., 2020). It seems the ability to use effective coping strategies against stressful situations among higher educated health staff can be a reason to justify their lower risk of substance use disorders than less educated individuals (Ramos et al., 2018). The results of the present study show that the drug use prevention program should focus on less-educated adults in Iran.

Our findings are in accordance with the past to present literature which showed that male gender has a strong association with drug and alcohol use. Evidence indicates the epidemiological patterns, social consequences, and factors related substance use among women differ from those of men (Becker & Hu, 2008). The results of our study are consistent with many other studies that female cigarette smokers are rare compared with male smokers (4.3% versus 95.7%) (AlMulla et al., 2021; Janssen et al., 2021; Kim et al., 2020), however Nilan et al. (2019) showed that smoking prevalence was almost twice as high in HCWs males than females (Nilan et al., 2019). In our sample, about a quarter of hookah smokers were female. The very low rate of smoking by women compared to 25% of hookah smoking is noteworthy. Hookah and cigarettes have a similar active ingredient (nicotine), while preparing hookah takes longer than cigarettes (Castañeda et al., 2016; Rezk-Hanna & Benowitz, 2019). These points raise the question of why women are more interested in hookah smoking than cigarette smoking. Overall, substance use and addiction is more stigmatized in women than in men (Melchior et al., 2019; F. Mohseni & Rafaiee, 2018; F. Mohseni et al., 2021). However, hookah smoking is not as embarrassing, which has led to this behavior being more common among women (Dadipoor et al., 2019). In some studies, it has been reported that a high percentage of hookah smokers view hookah smoking as socially acceptable and believe that other people also view it positively (Cobb et al., 2010; Erbaydar et al., 2010; Griffiths et al., 2011). Another factor related to hookah use among women is that it is seen as a cultural norm (Dadipoor et al., 2019). Therefore, health policy makers need to act in such a way that they convince female employees of the University of Medical Sciences and other women that hookah smoking is an inappropriate behavior like cigarette smoking. Also, a prevention program for smoker women with free specific individual counseling sessions seems to be necessary to address the problems of health professionals and university employees.

Another variable that affects substance and alcohol use is age. Mean age of smoking initiation was lower than that in other substances, which are in agreement with results of similar studies (Richmond-Rakerd et al., 2017). Also, our findings showed the second most common substance in young men was alcohol. A nation-wide survey in Iran reported the prevalence of using alcohol in recent year among general population aged above 15, was 2.31%, and frequency among young men (18–30 year) was 7% (Nikfarjam et al., 2017). It is necessary for Iran to develop culturally acceptable best prevention program to reduce alcohol consumption and its associated harms among

its population. Given the homemade alcohol usage in our sample and its life-threatening consequences (Iranpour & Nakhaee, 2019), appropriate approaches to prevention and treatment should be considered for university employees. Monitoring and paying attention to the health of medical employees improves the quality of health services in the community (Jaskiewicz & Tulenko, 2012).The present study shows the highest percentage of non-substance users has been among married individuals. According to cross-sectional family surveys in fifteen countries of the World Health Organization (WHO), marriage was associated with a reduced risk of substance use disorder and its undesirable effects (Meysamie et al., 2009).

The high number of married non-substance users in the present study and similar studies can be due to their high life motivation and family-related responsibilities acceptance. Also, that reflects the positive effects of family formation on drug prevention. Contrary to our results, Heydari et al. (2016) reported that the prevalence of substance use was higher in married people (Heydari et al., 2016). Interestingly, another survey on drug use among Iranian industrial workers indicates widowed or divorced people had greater odds of substance use compared with single and married people (Najafi et al., 2020).

Our findings indicated that the job security and stability related to work status of employees affect their substance and alcohol use. Considering the three types of employment status with differences in job security and stability in our study, the results implicitly show that stable employees who have financial security are less likely to use substances than those who are insecure about their future careers. In agreement with our findings, other investigations reported that job-secured employees have sufficient incomes, less stress, and consequently less tendency to use alcohol and illicit drugs than unemployed or low-security employees (Assunção et al., 2022; Bufquin et al., 2021). So far, it should be noted that, in the present study, since all of employees of the health sector had the chance to participate in the study, some of the study participants do not have clinical duties. Therefore, the present study has an effective comparison between clinical and non-clinical staff in terms of substance use. The results showed that drugs and alcohol use among administrative and clinical personnel are less than technical staff, cleaners and guards. These findings can be explained by the fact that cleaning technical and services staff and security guard staff are usually low-educated and low-income employees, and as we emphasized earlier, less education and low financial security are recognized as risk factors for substance use. In addition, it seems clinical personnel are less likely to use alcohol and drugs due to high information about the psychological and physical side effects of drugs. The lowest percentage of drug users belonged to administrative workers, which could be due to low job stress and regular work shifts. Based on job position, our study found that fixed day workers had the lowest substance consumption compared to rotating shift work staff, which consistent with previous studies (Dunn, 2005; Richter et al., 2021; Saleh et al., 2023). There are some possible explanations for the highest percentage of substance use in rotating shift work groups compared to the fixed schedule workers group. Substance use might be one possible coping strategy, for the job-related stress, also, as a self-medication for sleep disturbance and impaired sleep quality associated with non-standard schedule of work (Zhao et al., 2019).

Strengths and limitations

Our study has several strengths, including valid questionnaires, data extraction through interviews versus self-reports, and a rigorous quality control process. In addition to the best of our knowledge, this is the first study to characterize the prevalence, associated factors of substance use among HCWs in Iran. Several potential limitations of our study should be considered while interpreting the results. Firstly, for various reasons, the obtained prevalence may be associated with underestimating. For example, health sector workers may be less willing to report substance use due to their position. Also, legal regulations and religious restrictions have an effect on the clarification of drug and alcohol consumption by the participants. Secondly, recall bias in prevalence and patterns of substance use could exist.

Conclusion

Our study has important public health implications for health policy makers to monitor the trend of substance use patterns among HCWs and focus more on more high risk groups and occupations.

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Data availability statement

Data supporting the findings of this study are available upon request, subject to SHMU policy.

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