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Screening for Substance Use Patterns among Patients Referred for a Variety of Sleep Complaints

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Abstract: Virtually all psychiatric and substance use disorders are associated with sleep disruption. Studies indicate that psychiatric disorders are related closely to chronic insomnia and that psychoactive substances have acute and chronic effects on sleep architecture. Several aspects of sleep are compromised in individuals taking these substances, ranging from difficulty initiating sleep to difficulty maintaining sleep and hypersomnia. Sleep disturbances are apparent in person taking psychoactive drugs or alcohol and have been found to persist long after withdrawing from these drugs. For some, sleep disturbance can be so severe as to reverse treatment success and precipitate relapse to addiction or dependence. There is increasing evidence that primary insomnia without a concurrent psychiatric disorder is a risk factor for later developing substance use disorders. Patients were asked to complete two brief screening tools, the Michigan Alcohol Screening Test and Drug Abuse Screening Test, to examine substance use patterns among patients referred for a variety of sleep complaints in a sleep disorders clinic. We found that patients who demonstrated a variety of sleep complaints were more likely to have alcohol and drug problems than those in the general populations.

Keywords: Sleep complaints, substance use problems, psychiatric disorders

There is a growing body of evidence suggesting that there is a significant relationship between substance abuse and insomnia. For example,

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Brower et al. (1) found that the majority of alcoholic patients entering treatment reported insomnia-related symptoms, such as difficulty initiating and maintaining sleep. Similarly, Williams et al. (2) and Vitiello (3) report that with increased use of alcohol, rapid eye movement sleep and sleep-onset latency decrease and slow wave sleep and late night disturbances of sleep increase. Interestingly enough, while many factors interact with insomnia, difficulty falling asleep is reported to be the most significant factor associated with substance use (4). In addition, the use of any single substance (stimulants, depressants, narcotics, or other illicit drugs) or a combination of substances is associated with sleep problems (5). While this relationship is well documented, the underlying mechanism between sleep patterns and drug and alcohol abuse is not well understood (5, 6). Therefore, the presence of insomnia should be viewed as a red flag to physicians and health care professionals, indicating that an assessment for drug and alcohol abuse is warranted

Sleep disturbances are apparent in person taking illicit drugs and alcohol (7) and have been found to persist long after withdrawal from these substances has occurred. For example, Currie et al. (8), and Brower et al. (1) report that recovering alcoholics can experience significant sleep problems months after quitting drinking. Of significance is the fact that Currie et al. (8) found that 50% of participants reported sleep problems prior to alcohol dependence onset. In addition, Drummond et al. (6) report that in a follow-up study on alcohol-abstinent participants, some aspects of the recovering patients sleep still showed abnormal patterns after 27 months of complete abstinence. The same pattern of results is evident across different cultures.

For some, sleep disturbance can be so severe as to reverse treatment success and precipitate a relapse to addiction or dependence (9, 10). In fact, Brower et al. (1) found that the presence of insomnia was the most significant factor predicting relapse. Similar findings are reported by Vitiello (3). Furthermore, withdrawal from drug use can in itself induce a variety of disruptions involving mood, sleep, and food intake, which further impede recovery (11). Consequently, Maher (9) suggests that vigilance is required when treating insomnia in patients with drug and alcohol problems.

The relationship between drug abuse, alcohol abuse, and insomnia further may be complicated by the presence of other psychiatric issues such as mood, anxiety, and depression. Other factors including lifestyle and behavioral habits also play a part (12). According to MacKenzie et al. (13), anxiety and depression could be considered as signs for alcohol relapse, which, in return, can continue to negatively impact individuals' quality of sleep. Similarly, Foster et al. (14), Breslau et al. (15) and Foster and Peters (16) report a significant interaction between

depression and insomnia among mildly, moderately, and severely dependent drinkers. A study by Roehrs et al. (17) found that sleep and mood effects appear to be associated with the reinforcing effects of alcohol as a hypnotic for insomniacs. This means that alcohol might be used as a self-medicating substance by individuals with sleep problems. A cross-sectional study by Loyaza et al. (18) on medical students found a significant relationship between insomnia and the presence of psychiatric disorders. Interestingly, Loyaza et al. (18) also found gender differences in the type of insomnia reported. Females had more difficulties maintaining sleep and males more difficulties with falling asleep later and waking up early.

Furthermore, Johnson and Breslau (5) carried out a longtitudinal study to obtain data gathered from 13,831 adolescents with psychiatric problems. The researchers found that the use of cigarettes, alcohol, and illicit drugs each were associated with reported sleep problems, internalization (e.g., depression and anxiety), and externalization tendencies such as deviance and aggression. A similar study by Wong et al. (19) found that early sleep problems and early onset of alcohol use, which are mediated by early presence of attention problems, anxiety, depression, and aggression in early childhood, are markers for later alcohol and drug use disorders. Therefore, sleep disturbance can provide the treating professional with information to better plan treatment for alcohol and drug abusers in the context of psychiatric issues. According to Pary et al. (20), the treating health professional needs to get to the root of sleeping problems by screening for medical, psychiatric, and sleep disorders, as well as chemical dependency. The interaction of insomnia with substance use and psychiatric illnesses may further pose a treatment challenge when dealing with medications. A survey of 311 physicians in the United States revealed that many are reluctant to prescribe medication to insomniacs in the early recovery phase for fear of a negative interaction between medication and drugs or alcohol, which might be present in their system (21).

Screening for alcohol and drug related problems in primary care settings sleep disorders clinics is extremely important. For some, this setting might be the only place where early detection can occur. According to National Institute on Alcohol Abuse and Alcoholism (22), structured interviews and self-report measures are useful, inexpensive, noninvasive, and relatively accurate tools. These screening tools should be selected based on staff experience and training, time constraints, and population characteristics; they also need to be used on a consistent basis. While many studies suggest that primary health settings potentially can play a significant role in the early detection and intervention process (by using measures such as Michigan Alcohol Screening Test [MAST] and Drug

Abuse Screening Test [DAST] screening tools), few doctors screen for substance and alcohol use (23, 24).

According to Statistics Canada (25–27), the overall percentage of individuals 15 years or older reporting illicit dependence was 0.7%, of which men reported 1% use and women 0.4% use. The reports from Statistics Canada identify that alcohol dependence among Canadian population was even higher (9%), of which 6.2% were categorized as slightly probable cases of alcohol dependence and 2.6% highly probable cases of alcohol dependence. Statistics Canada also reported that males overall had a higher alcohol dependency than women (9.5% of males vs. 3% females categorized as "slightly probable cases of alcohol dependence" and 3.8% males vs. 1.3% females categorized as "highly probable case of alcohol dependence").

This particular study sought to examine substance use patterns among patients referred for a variety of sleep complaints. Based on the findings that sleep disorders with or without a concurrent psychiatric disorder are closely associated with substance disorders, higher rates of substance use patterns among patients with various sleep complaints were to be expected.

METHOD

Participants ($N = 46$) were outpatients in a sleep disorders center in Ontario, Canada; 44% were male and 30% were female, gender was unknown for 26%, mean age was 46 years. All participants were referred to the center for a variety of sleep-related complaints. Typically, in this sleep center patients sought consultation for around various sleep complaints including sleep apnea, continuous positive airway pressure (CPAP) consultation for sleep apnea, restless legs syndrome, insomnia, daytime sleepiness/fatigue, narcolepsy, sleep-wake schedule, parasomnias, or seizures. It should be noted however, that in this study participants did not specify the nature of their sleep complaints. These complaints, however, are most likely representative of our own clinical sample. Thirteen cases were excluded from this study due to incomplete answers on the DAST and MAST.

Materials used in this particular study included two brief screening tools for alcohol and drug use, namely the MAST and the DAST. All participants gave written informed consent to participate in this study. A sleep medicine physician met with all the participants for a sleep consultation.

The MAST is a widely used measure for assessing alcohol abuse. This test consists of 25-item questionnaire designed to provide rapid and

effective screening for long-term alcohol-related problems. The MAST can be used in either a paper-and-pencil or interview format Selzer (51). The MAST scores are divided into 3 categories, a score of 0–3 for ''nonalcoholic,'' a score of 4 for ''suggestive of alcoholism,'' and a score of 5 and above for ''indicates alcoholism.'' According to Conley (28), the MAST measure is reliable and correlates highly with *DSM-IV* (29) diagnostic criteria. Other studies arrived at similar conclusions regarding the acceptable reliability and validity of the MAST (30–32). Various versions of the MAST have been adapted to various populations and also have been found to be reliable and valid measures (33, 34).

The DAST test measures drug use and related problems. This 20-item instrument may be given as either self-report or in a structured interview. The DAST score is divided into 5 categories including (nonreported drug use), 1–5 (low level drug use), 6–10 (moderate level drug use), 11–15 (substantial level drug use) and 16–20 (severe level drug use). It is constructed similarly to the earlier MAST and has been shown to have good validity, test-retest reliability, and high internal consistency (35–41). In addition, the DAST has been used in a variety of settings including the workplace (40), psychiatric settings (39), community health settings (36), as well as by general practice physicians (42). Furthermore, the DAST has shown to be effective in screening for drug abuse across diagnostic groups such as individuals with dually diagnosed mental health problems (43) and adults with attention-deficit/hyperactivity disorders (38). According to Tassiopoulos et al. (44), though, confirmation of self-report disclosure on subjective tests (such as the MAST and DAST measures) that rely on individuals' honest account of drug/alcohol use should be corroborated with biochemical analysis (such as using urine samples).

RESULTS

Results of the MAST found that, overall, 76% of participants fell into ''nonalcoholic'' category, 11% fell into the ''suggestive of alcoholism'' category, and 13% of participants fell into the ''indicates alcoholism'' category. Out of a total of 20 male participants, 80% fell into the ''nonalcoholic'' category, 5% fell into the ''suggestive of alcoholism'' category, and 15% fell into the ''indicates alcoholism'' category. Out of 14 female participants, 86% fell into the ''nonalcoholic'' category, 7% fell into ''suggestive of alcoholism'' category, and 7% fell into the ''indicates alcoholism'' category.

Results of the DAST found that, overall, 65% fell into the ''none reported'' category, 33% of participants fell into the ''low level'' category, and 2% fell into the ''substantial level'' category. Out of a total

of 20 male participants, 60% fell into the "none reported" category, 35% fell into the "low level" category, and 5% fell into the "substantial level" category. Out of a total of 14 female participants, 71% fell into the "non-reported" category and 29% fell into the "low level" category. Our study also found that 2% of participants fell into both the "indicates alcoholism" category on the MAST and "substantial level" category on the DAST.

Chi-square analyses were performed to compare the distribution of males and females across substance use categories on the MAST and the DAST. No significant differences were observed.

DISCUSSION

Consistent with the literature, our study found considerably higher drug and alcohol use patterns among patients with a variety of sleep complaints than in the general population. Related to this, our study found that overall, 24% had alcohol problems, of which 13% of participants had alcohol dependence, compared with 2.6% from Statistics Canada; our study found that 2.2% of participants had drug dependence, compared with 0.7% from Statistics Canada (25–27). These findings support our hypothesis that persons with various sleep-related problems are more likely to have substance use issues because alcohol and drug use is likely to negatively impact sleep quality. Given these significant findings, sleep medicine physicians and primary care physicians should consider routinely using brief screening tools such as the MAST and the DAST for assessing alcohol and drug patterns among their patients.

With respect to gender differences, and consistent with Statistics Canada (25–27) reports, our study found higher drug and alcohol use patterns among males than females. A limitation of our study was that the sample size was small, limiting the ability to apply the findings to the general sleep disorders population. Related to the small sample size, the number of males and females limited our ability to make meaningful comparisons. One might consider for future reference how findings differ along gender lines.

Another limitation is the use of self-report questionnaires. The issue of social desirability always needs to be considered in self-report questionnaires that do not contain validity scales (impression management) as some individuals downplay their symptom picture. This might be especially relevant when asking sensitive questions about alcohol and illicit drug use because of its attached social stigma and the fact that illicit drug use is illegal in Canada.

Thus, individuals may have vested interests in concealing their drug use. In addition, persons who are in denial of their substance use problems may also not provide an accurate account of their substance use patterns. These same factors also may account for the rather high percentage of individuals who did not fully complete the questionnaires.

Another limitation of this study is that this study did not examine the possible role that psychiatric factors might play in mediating between substance use and sleep related problems. The role of psychiatric issues warrants further investigation.

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