

The Association Between Somatic Symptoms, Anxiety Disorders and Substance Use. A Literature Review

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Abstract The aim of this article is to review the association between somatic symptoms, anxiety disorders and substance use. A Pub Med based literature review was conducted using various combinations of keywords related to substance use, somatic symptoms and anxiety. In various studies somatic symptoms were found to be associated with substance use. Anxiety disorders were found to have a high co-morbidity with substance use in most studies. However, several of the reviewed studies also included depressive symptoms which might have confounded the results. None of the studies was specifically aimed to find out if somatic symptoms in substance users represent an underlying primary anxiety disorder. Somatic symptoms and anxiety disorders are commonly noticed in substance users. Further studies are needed to clarify these associations since they may have significant clinical implications.

Keywords Substance · Abuse · Dependence · Somatic · Anxiety

Introduction

Anxiety disorders are often manifested by somatic as well as emotional and cognitive symptoms. For instance, symptoms in a panic attack can be somatic or cognitive in nature and include palpitations, sweating, trembling or shaking, sensations of shortness of breath or smothering, feeling of choking, chest pain or discomfort, nausea or abdominal distress, dizziness or lightheadedness, derealization or depersonalization, fear of losing control or “going crazy,” fear of dying, paresthesias, and chills or hot flushes [1]. Many individuals with Generalized Anxiety Disorder also experience somatic symptoms (e.g., sweating, nausea or diarrhea) [1].

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It is common for substance abusers to experience symptoms of depression and anxiety as well as multiple somatic disturbances [2]. In patients abusing alcohol and/or hypnotic medications consideration must always be given to an anxiety disorder [3].

In primary care, patients with anxiety and depression usually present somatic symptoms, whereas emotional symptoms are less likely to be mentioned if they are not specifically asked by the clinician [4, 5]. Physical complaints are seldom attributed to psychological causes, and the focus for clinical examination is kept on somatic conditions [6]. Several studies of the relationship among anxiety, depression, and somatic symptoms in general have been conducted in primary care. A depressive or anxiety disorder was present in about 30% of patients presenting with physical complaints [7, 8].

It might be argued that anxiety symptoms in substance abuse or dependence arise as a direct consequence of substance use. However, according to DSM-IV TR, substance-induced anxiety disorders arise only in association with intoxication or withdrawal states, whereas primary anxiety disorders may precede the onset of substance use or occur during times of sustained abstinence [1]. On the other hand, the presence of an already existing anxiety disorder may lead one to use substances in increasing amounts. For example, panic disorder may precede substance use in some individuals and may be associated with increased substance use for purposes of self-medication [1].

Persistent somatic complaints as manifestation of an unrecognized, untreated primary anxiety disorder may contribute to relapses in substance users. Identifying and treating a primary anxiety disorder comorbid with a substance use disorder may help considerably to reduce substance relapse rates.

This review article discusses the association between somatic symptoms, anxiety disorders and substance use.

Method

A Pub Med based literature search was conducted. Various combinations of keywords were used such as: “alcohol abuse, alcohol dependence, somatic symptoms;” “alcohol abuse, alcohol dependence, somatic symptoms, anxiety symptoms;” “substance abuse, substance dependence, somatic symptoms, anxiety symptoms.”

A total of 440 abstracts were found. Out of these 414 abstracts were excluded after initial review because they were not relevant to the objective of the study. Remaining 26 abstracts were selected and their full text articles were retrieved and studied. These 26 studies were included in this review article. Twenty-one out of these 26 studies were specifically included in the results section since only these studies were clearly directed at describing associations between somatic symptoms, anxiety, and/or substance use.

Results

Association Between Somatic Symptoms and Substance Use

In a study conducted on Taiwanese adolescents, somatic complaints were found to be associated with substance use (alcohol, tobacco, betel nut and refreshing beverage). Junior high school adolescents ($N = 905$) randomly selected from Taipei in 1996 completed a questionnaire consisting of substance use experience, the Junior Eysenck Personality Questionnaire (JEPQ), and the Tridimensional Personality Questionnaire (TPQ). Students’

parents ($N = 854$) were asked to complete the Child Behavior Checklist. Logistic regression was used to assess the relationship between substance use and personality traits or behavioral problems. The most commonly used substance was liquid substance (alcohol and refreshing beverage), followed by tobacco and betel nut with an age-related trend in boys. Associated factors of substance use included higher Extroversion and lower Lie Scale (as measured in the JEPO), higher Novelty Seeking (as measured in the TPQ), poorer School Competence, and more Delinquent Behavior, Aggressive Behavior, and Somatic Complaints [9].

According to a study conducted on Finnish adolescents, among girls heavy drinking was associated with psychosomatic symptoms (such as pain, sleep disturbance, feelings of anxiety, depression, and tension) and a negative social self-image. Each of 240 pupils completed a questionnaire about alcohol use, smoking, and illicit drug use; an Offer Self-Image Questionnaire; an Inventory of Parent and Peer Attachment; and a Psychosomatic Symptoms Questionnaire. Teachers assessed each pupil according to a Social Skills Rating Scale. Academic achievement was assessed on the basis of report grades [10].

In a study comparing the clinical characteristics of opium-induced depressive disorder and opium-independent major depressive disorder; somatic symptoms were found to be more common among individuals with the former disorder than among those with the latter one. One-hundred-eighty-four MDD and one-hundred-eighty-seven Opium-Induced Depressed (OID) male patients were randomly selected. The two groups were compared with each other for the HAMD total and subscales scores. The two groups were matched regarding age, educational level and marital status. Opium-induced depressed patients were more severely depressed and motor retarded and also they had more social and occupational problems. Gastrointestinal, sexual and somatic complaints were more common among them too. MDD patients had better insight than the other group [11].

According to a study, after control for sex, age, and education, 13 self-reported somatization symptoms (e.g., headache, joint pain, chest pain, shortness of breath, weakness, etc.) showed independent cross-sectional associations to prevalent extreme alcohol use. Multivariable logistic regression models were used to analyze existing cross-sectional and one-year longitudinal survey data from the National Institute of Mental Health Epidemiologic Catchment Area Program. Main outcome measures included prevalent and incident heavy or binge drinking (“extreme alcohol use”). The greater the number of somatization symptoms, the greater the risk, up to a maximum increased odds ratio of 138 to one, of having comorbid extreme alcohol use when reporting all 13 somatization symptoms in the model. A smaller set of items was associated with the risk for subsequent new onset of extreme alcohol use [12].

Among 4,074 German adults, drinkers meeting the criteria for DSM-IV alcohol abuse and at-risk drinkers (men and women consuming >30 and >20 g ethanol/day, respectively) had significantly higher rates of somatoform, affective, and anxiety disorders than abstainers and moderate drinkers. Among females, 16.1% of moderate drinkers and abstainers were diagnosed with a lifetime somatoform disorder, as opposed to 26.3 and 33.3% of the at-risk drinkers and alcohol abusers, respectively. Among men, the rate of lifetime somatoform disorder was 7.1% for moderate drinkers, 13.8% for at-risk drinkers, and 11.6% for alcohol abusers. Finally, among Germans aged 14–24 years, substance dependence was significantly associated with conversion disorder (OR = 8.19) [2].

In contrast to the German findings, data from the US Epidemiologic Catchment Area (ECA) study, a large-scale study carried out in five sites in the US, found that somatization symptoms were correlated most weakly with substance abuse symptoms, and most strongly with symptoms of major depression and anxiety disorders. Among a subset of ECA

participants with five current somatization symptoms, the prevalence of drug abuse/dependence and alcohol abuse/dependence was 2.2 and 7.4%, respectively, compared with 45.2% for phobia, 17.8% for panic disorder, and 14.8% for major depression. However, a more recent study drawing on data from four ECA sites broadened its analyses to include somatization symptoms of lesser severity (coded as nondisruptive of daily life) and found that a greater number of somatization symptoms was associated with an increasingly elevated risk of comorbid “extreme alcohol use,” which was defined as drinking seven drinks per day for at least 2 weeks or binge-drinking 20 beers a day (or its alcoholic equivalent) more than once [2].

A Canadian general population study conducted among 1,015, 13- to 16-year-olds did not find a significant relationship between high levels of somatization symptoms and the development of alcohol or drug abuse/dependence 4 years later. However, high levels of somatization symptoms predicted greater risk of depression and panic attacks at the four-year follow-up [2].

Association Between Anxiety and Somatic Symptoms

The HUNT-II study invited all inhabitants aged 20 years and above in Nord-Trøndelag County of Norway to have their health examined and sent a questionnaire asking about physical symptoms, demographic factors, lifestyle, and somatic diseases. Anxiety and depression were recorded by the Hospital Anxiety and Depression Scale. Of those invited, 62,651 participants (71.3%) filled in the questionnaire. A total of 10,492 people were excluded due to organic diseases, and 50,377 were taken into the analyses. There was a strong association between anxiety, depression, and functional somatic symptoms. The association was equally strong for anxiety and depression, and a somewhat stronger association was observed for comorbid anxiety and depression. The association of anxiety, depression, and functional somatic symptoms was equally strong in men and women (mean number of somatic symptoms men/women in anxiety: 4.5/5.9, in depression: 4.6/5.9, in comorbid anxiety and depression: 6.1/7.6, and in no anxiety or depression: 2.6/3.6) and in all age groups [7].

A study utilized the Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PHQ) to assess current depressive and anxiety disorders and self-reported somatic symptoms among 186 women receiving prenatal care. The bivariate relationships between depressive and anxiety disorders and mean number of somatic symptoms were examined. Linear regression analyses assessed the unique association between maternal depression, anxiety and somatic symptoms, while controlling for selected demographics and maternal medical risk. Twenty-three percent ($N = 43$) of women met screening criteria for depressive and/or anxiety disorders. Women with depression and/or anxiety were significantly more likely to report somatic symptoms (mean = 7.1, SD = 2.6) compared to women without depression or anxiety (mean = 5.0, SD = 2.6) [$t(df) = 4.54(184)$, $p < 0.001$]. This association persisted in multivariate models [13].

Association Between Anxiety Disorders and Substance Use Disorders

According to an article overviewing the important aspects of the diagnosis of anxiety disorders in general medical practice, anxiety disorders have a high comorbidity with depressive disorders, and substance abuse and dependence [14].

Psychosocial stress cannot only be considered as a result of chronic alcohol abuse, but also as a cause of high alcohol consumption. According to a review study summarizing

empirical research results concerning the interrelations between psychosocial stress and alcohol consumption, it was inferred that psychosocial stress could be understood as an important psychopathological developmental process of prolonged alcoholism. Moreover, symptoms of distress may be a first relevant evidence of high and hazardous alcohol consumption [15].

Substance Use, Somatic Symptoms and Anxiety Disorders

A study investigated the association between repeated childhood and adulthood physical or sexual abuse and somatic symptom reporting, mental health care use, and substance use among women with chronic pain. Ninety consecutive women patients presenting for chronic pain management at a multidisciplinary pain management center were surveyed. The response rate among patients surveyed was 64%. The authors assessed the presence or absence of physical or sexual abuse (using the Drossman Physical-Sexual Abuse Survey), period of abuse, demographics, mental health care use, drug or alcohol use and substance abuse, and the presence or absence of physical, pain, and anxiety (somatic) symptoms. Of the 43 respondents (48%) who reported abuse, 17 (40%) cited childhood abuse, 12 (28%) cited adulthood abuse, and 14 (33%) cited repeated abuse. Women describing long-term abuse reported a significantly greater number of physical, pain, and anxiety symptoms and were more likely to report a history of substance abuse than women reporting abuse during childhood or adulthood alone [16].

Between July 9, 2001 and August 24, 2004, 640 men and 187 women were diverted through the Queensland Illicit Drug Diversion Initiative (QIDDI) for treatment at a hospital alcohol and drug service. In this cross-sectional study of their drug use history, participants also completed the Severity of Dependence Scale (SDS) for cannabis and the General Health Questionnaire-28 (GHQ-28). Almost 60% of participants were cannabis dependent (as determined by the SDS). Polysubstance use was also more prevalent amongst dependent participants. Applying the GHQ-28 threshold for psychiatric case identification (caseness), cannabis dependent participants had significantly higher level of caseness across all subscales of somatic concerns, anxiety, social dysfunction and depression. Dependent women registered the highest proportion of psychopathology, particularly anxiety and social dysfunction [17].

Benzodiazepine Use, Somatic Symptoms and Anxiety Disorders

A study investigated the impact of anxiety disorders and somatic comorbidity in a group of depressed chronic benzodiazepine users on disease status, treatment, benzodiazepine use history and discontinuation outcome. At screening for a discontinuation program, full psychiatric status was determined using the MINI-interview and psychopathology was assessed using several rating scales. Patients with comorbid anxiety disorders were 8 years younger ($p < 0.001$), more anxious ($p = 0.004$) and reported more benzodiazepine withdrawal symptoms ($p = 0.011$) than depressed patients without comorbid anxiety disorders. They also had been using more long-acting benzodiazepines ($p = 0.003$), in higher dosages ($p = 0.019$). However, this did not result in more difficulty in tapering off benzodiazepines, either at post-test, or at follow-up 2.3 years later. Somatic comorbidity was not associated with the level of psychopathology and not related to the outcome of the discontinuation program [18].

Anxiety disorders often accompany somatic correlates of anxiety such as abdominal trouble and diarrhea. A case report was published on a 34-year-old woman who abused

loperamide (an anti-diarrheal) for over 10 years, taking up to 16 mg per day. As her digestive trouble was considered a consequence of her states of anxiety, diazepam application helped against her diarrhea as well. This second strategy of self-medication gained particular importance for her, when even high doses of loperamide stopped having an effect. So she developed benzodiazepine dependence. As soon as she began treatment as an inpatient, her feelings of anxiety became less and the diarrhea disappeared [19].

Alcoholism, Somatic Symptoms and Anxiety

In a follow-up study 6 years after treatment of 44 young female alcoholics, 57% were abstainers, light, or moderate drinkers with good social functioning. The women's vocational functioning had improved compared with the situation at intake. Nevertheless, many needed public financial support, and 62% reported mental disturbances relevant to their present functioning. The symptoms most frequently reported were anxiety with or without phobias, somatoform complaints and depression. However, compared with an outpatient group seeking psychotherapy the female alcoholics had significantly lower Symptom Checklist-90 (SCL-90) scores on depression and anxiety [20].

A double-blind placebo-controlled study undertaken to assess the effectiveness of treating alcoholics after detoxification for the very commonly observed syndrome of anxiety, depression, and somatic complaints, concluded that the thioridazine group had significantly better improvement in sleep disturbance and anxiety than the placebo group. The placebo group though had significantly better work and activity than the thioridazine group. Forty-five comparably addicted male alcoholics with anxiety or mixed anxiety-depression from an inpatient alcohol treatment ward comprised the treatment group. Twenty-three patients received thioridazine treatment and 22 received placebo treatment in a double-blind fashion after acute withdrawal from alcohol. Progress over a four-week period was measured with standard rating instruments—the Hamilton Rating Scale for Depression (by physician) and the Zung and Lipman Self-Rating Scales. Both placebo and active medication groups improved symptomatically during the four-week program [21].

According to a study investigating patterns of comorbidity among the anxiety disorders in a community-based older population in Amsterdam, Holland, major depression (13 vs. 3%), benzodiazepine use (24 vs. 11%) and chronic somatic diseases (12% vs. 7%) were significantly more prevalent in respondents with an anxiety disorder than in respondents without anxiety disorders. Heavy or excessive alcohol intake (5 vs. 4%) and cognitive impairment (11 vs. 13%) were not significantly associated with any anxiety disorder. The data were derived from the Longitudinal Aging Study Amsterdam (LASA) study. A two-stage screening design was adopted to identify respondents with anxiety disorders [22].

In a study, the psychological well-being of 651 Finnish adolescents (approximately age 17) was followed to young adulthood (age 22) and examined in terms of their drinking styles at age 22. The psychological profile of the participants was comprised of seven variables: self-esteem, trait anxiety, somatic symptoms, eating concerns and mature, neurotic, and immature defense styles. The comparison of the drinking style categories (non-users, non-problem drinkers, presumptive- problem drinkers, and problem drinkers) revealed that future problem drinkers had lower states of psychological well-being already in adolescence and that the differences became more pronounced during the transition to young adulthood [23].

A random sample of Kaiser Permanente patients who visited a primary care clinic was mailed a questionnaire assessing major depressive disorder (MDD), chronic pain, pain-related disability, somatic symptom severity, panic disorder, other anxiety, probable

alcohol abuse, and health-related quality of life (HRQL). Instruments included the Patient Health Questionnaire, SF-8, and Graded Chronic Pain Questionnaire. A total of 5,808 patients responded (54% of those eligible to participate). Among those with MDD, a significantly higher proportion reported chronic (i.e., nondisabling or disabling) pain than those without MDD (66 vs. 43%, respectively). Disabling chronic pain was present in 41% of those with MDD vs. 10% of those without MDD. Respondents with comorbid depression and disabling chronic pain had significantly poorer HRQL, greater somatic symptom severity, and higher prevalence of panic disorder than other respondents. The prevalence of probable alcohol abuse/dependence was significantly higher among persons with MDD compared with individuals without MDD regardless of pain or disability level. Compared with participants without MDD, the prevalence of other anxiety among those with MDD was more than sixfold greater regardless of pain or disability level [24].

In a study that included 222 ex-patients, 24 months after the end of intensive alcohol dependency treatment, those with different somatic and mental co-occurring disorders (which also included “anxious vs. non-anxious” and “benzodiazepine dependent vs. nondependent”), did not differ in abstinence rate. However, membership in aftercare 24 months after the end of intensive therapy significantly contributed to the abstinence rate. Abstinence was found to be connected with more positive self-evaluation [25].

The pooled results of 99 subjects from a Veterans Affairs population showed that naltrexone-treated subjects had a greater reduction in alcohol craving, number of drinking days, and alcoholic relapse rates when compared with placebo-treated subjects. Increased baseline levels of psychological distress and craving as well as higher levels of somatic distress, anxiety, phobic anxiety and obsessive-compulsive symptoms predicted an increased number of drinking days during the study [26].

Treatment of Comorbid Substance Use and Anxiety

In a retrospective chart review study, Quetiapine was found beneficial in the treatment of Substance Dependence Disorders in patients with nonpsychotic anxiety. Chart review consisted of nine patients who were admitted to a 28-day residential rehabilitation program designed for individuals with SDD during a three-month period and treated with Quetiapine for nonpsychotic anxiety. These patients also met the Diagnostic and Statistical Manual of Mental Disorders, fourth edition, criteria for alcohol, cocaine and/or methamphetamine dependence and substance-induced anxiety disorder. The mean decrease in Ham-D (Hamilton Rating Scale for Depression) score at discharge for the responders was 18.5 ($p < 0.005$). The biggest decreases on the Ham-D occurred on the subscales of insomnia, agitation, somatic anxiety, psychologic anxiety, hypochondriasis and obsessional symptoms. The mean decrease in the Likert 10-point alcohol or drug cravings scale was 5.9 for the responders ($p < 0.005$). These patients’ periodic Breathalyzer and urine test results suggested that they remained abstinent from alcohol and other drug use [27] (Table 1).

Discussion

Based on the above results, it might be safely stated that somatic symptoms as well as anxiety symptoms are indeed common in substance users. Whether this association represents an underlying primary anxiety disorder that has remained undiagnosed cannot be inferred at least from the results above.

Table 1 Summary of studies describing associations between somatic symptoms, anxiety, and/or substance use

Author	Study type	Sample size; population type	Substances included	Anxiety disorders and/or symptoms assessed (A)	Somatic symptoms assessed (S), somatoform disorders or symptoms assessed (SO)	Depression also included (D)	Findings
Arnow et al. [1]	Cross-sectional	Large; random	Alcoholism only	Yes	Yes (S)	Yes	MDD directly related to substance use and panic disorder
Haver [20]	Long-term follow-up	Large; female alcoholics vs. females in outpatient psychotherapy	Alcoholism only	Yes	Yes (S)	Yes	Positive association of alcoholism, with A, S, and D
Cou�ee et al. [18]	Long-term prospective	Depressed chronic benzodiazepine users	Benzodiazepines only	Yes	Yes (S)	Yes	Positive association of BZ use with A but not with S
G�nther [14]	Retrospective	General medical practice outpatients	Substance addiction in general	Yes	Yes (S)	Yes	Positive association of substance use with A, S, and D
Feeney et al. [17]	Cross-sectional	Cannabis-dependent young people	Cannabis only	Yes	Yes (S)	Yes	Positive association of cannabis dependence with A, S, and D
Green et al. [16]	Cross-sectional	Women with chronic pain who have a hx of abuse	Substance use in general	Yes	Yes (S)	No	Positive association of hx of long term physical abuse with A, S, and substance abuse
Hague et al. [21]	Double-blind placebo-controlled	Alcoholics after detox	Alcohol only	Yes	Yes (S)	Yes	Thioridazine group had significantly better improvement in sleep disturbance and anxiety

Table 1 continued

Author	Study type	Sample size; population type	Substances included	Anxiety disorders and/or symptoms assessed (A)	Somatic symptoms assessed (S), somatoform disorders or symptoms assessed (SO)	Depression also included (D)	Findings
Hasin and Katz [2]	Literature review	Large; general population, adults and adolescents	Substance use disorders (SUD) in general	No	Yes (SO)	No	German studies suggested a significant association between SUD and somatoform disorders; those in US and Canada produced mixed results; family studies suggested associations between SO and SUD
Haug et al. [7]	Cross-sectional	Large, community sample	None	Yes	Yes	Yes	Statistically significant relationship between A, D, and S
Kelly et al. [13]	Cross-sectional	186 women receiving prenatal care	None	Yes	Yes	Yes	Women with D and/or A were significantly more likely to report S
Langlitz et al. [19]	Case report	A 34-year-old woman who abused loperamide for diarrhea	Benzodiaz-epine	Yes	Yes	No	When loperamide lost its effect, she became BZ dependent; when she began impatient t/m, her anxiety decreased and diarrhea disappeared
Laukkanen et al. [10]	Cross-sectional	240 school adolescents	Alcohol only	No	Yes	No	In girls, heavy drinking was associated with psycho-somatic symptoms and a negative social self-image

Table 1 continued

Author	Study type	Sample size; population type	Substances included	Anxiety disorders and/or symptoms assessed (A)	Somatic symptoms assessed (S), somatoform disorders or symptoms assessed (SO)	Depression also included (D)	Findings
Mowla et al. [11]	Cross-sectional; HAM-D	Comparison between 184 independent MDD and 187 opium-induced (OID) depressed males; the two groups were matched regarding age, educational level and marital status	Opium only	No	Yes	Yes	OID patients were more severely depressed; S were more common among them too
Kuo and Yang [9]	Cross-sectional; a questionnaire consisting of substance use experience, JPEQ, TPQ, Child Behavior Checklist	Junior high school adolescents ($N = 905$), randomly selected	Substance use in general	No	Yes	No	S were found to be associated with substance use
Rus-Makovec and Cebasek-Travnik [25]	Retrospective	222 ex-patients, 24 months after the end of intensive alcohol dependency treatment	Alcohol only	Yes	Yes	Yes	Those with different somatic and mental co-occurring disorders (which also included A vs. non-dependent vs. non-dependent), did not differ in abstinence rate

Table 1 continued

Author	Study type	Sample size; population type	Substances included	Anxiety disorders and/or symptoms assessed (A)	Somatic symptoms assessed (S), somatoform disorders or symptoms assessed (SO)	Depression also included (D)	Findings
Sattar et al. [27]	Retrospective; Ham-D, a 10-point Likert scale to measure alcohol or drug cravings, and random Breathalyzer and urine drug screens	Nine patients admitted to a 28-day residential rehabilitation program for individuals with SDD, and treated with quetiapine for substance-induced anxiety disorder	Substance dependence in general	Yes	Yes	Yes	Biggest improvements occurred (among others) on subscales of insomnia, agitation, somatic anxiety, psychologic anxiety; quetiapine was beneficial in the treatment of SDD in patients with nonpsychotic anxiety
Pitkänen [23]	Prospective	651 Finnish adolescents (approx. age 17) were followed to young adulthood (age 22)	Alcohol only	Yes	Yes	No	Psychological profile of the participants was comprised of seven variables (which also included A and S); the comparison of the drinking style categories revealed that future problem drinkers had lower states of psychological well-being already in adolescence
Tien and Schlaepfer [12]	Prospective	Community households, probability sample	Alcohol only	No	Yes	No	After control for sex, age, and education, 13 self-reported somatization symptoms showed independent cross-sectional associations to prevalent extreme alcohol use

Table 1 continued

Author	Study type	Sample size; population type	Substances included	Anxiety disorders and/or symptoms assessed (A)	Somatic symptoms assessed (S), somatoform disorders or symptoms assessed (SO)	Depression also included (D)	Findings
van Balkom et al. [22]	Prospective; data were derived from the Longitudinal Aging Study Amsterdam (LASA) study	Community-based elderly population with anxiety disorders	Alcohol and BZ	Yes	Yes	Yes	D, BZ use, and chronic somatic diseases were significantly more prevalent in respondents with A; heavy or excessive alcohol intake was not significantly associated with A
Volpicelli and Clay [26]	Double-blind placebo-controlled prospective	Pooled results of 99 subjects from a Veterans Affairs population	Alcohol only	Yes	Yes	No	Higher levels of somatic distress and A (among other symptoms) predicted an increased number of drinking days during the study; naltrexone may be useful for subjects with high levels of craving and somatic symptoms
Walter et al. [15]	Review study	Summarizing empirical research results concerning the interrelations between psychosocial stress and alcohol consumption	Alcohol only	Yes	Yes	Yes	Following alcohol dependence severe somatic and psychosocial consequences are anticipated; associated frequent comorbidities during the progression of alcohol use are other substance-related disorders, A, and affective disorders

A anxiety disorders and/or symptoms assessed, S somatic symptoms assessed, SO somatoform disorders or symptoms assessed, D depression also included

It is clear that this topic has not been studied much yet. There are only a few studies which address this issue per se. Even among the relevant studies, either the issue has not been clearly dealt with or there are other factors which may have confounded the results. Even if the above two factors were adequately satisfied, the results have been rather inconclusive. Consequently, one is unable to make very reliable inference based on the studies available to date.

This topic might be of great importance in several ways. In case there is strong evidence that somatic symptoms in substance users might represent an underlying primary anxiety disorder, then all substance users with somatic symptoms need to be screened for the presence of primary anxiety disorders. The purpose of doing such a screening will be manifold. Any possible underlying primary anxiety disorder independent of the coexisting substance use disorder will then need to be treated in its own right which might in turn decrease the intensity and/or frequency of substance use, or may even decrease relapse rates of substance use in patients who have achieved abstinence. It is not known however if the underlying primary anxiety disorder comorbid with the substance use disorder could be adequately treated with the same treatment regimens including medications and/or psychotherapy which are usually considered standard treatments for the specific primary anxiety disorders in general.

Further studies are definitely needed to deal with the so many crucial aspects of this issue.

Conflict of interest The authors have no potential conflict of interest pertaining to this Psychiatric Quarterly submission.

References

1. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, 3rd edn., Text Revision. Washington, American Psychiatric Association, 2000
2. Hasin D, Katz H: [Somatoform and substance use disorders]. *Psychosomatic Medicine* 69:870–875, 2007
3. Wedekind D, Engel K: Early detection of anxiety disorders. *MMW Fortschritte der Medizin* 149:32–35, 2007
4. Kirmayer LJ, Young A: Culture and somatization: Clinical, epidemiological, and ethnographic perspectives. *Psychosomatic Medicine* 60:420–430, 1998
5. Simon GE, VonKorff M, Piccinelli M, et al.: An international study of the relation between somatic symptoms and depression. *New England Journal of Medicine* 341:1329–1335, 1999
6. Marple RL, Kroenke K, Lucey CR, et al.: Concerns and expectations in patients presenting with physical complaints. Frequency, physician perceptions and actions, and 2-week outcome. *Archives of Internal Medicine* 157:1482–1488, 1997
7. Haug TT, Mykletun A, Dahl AA: The association between anxiety, depression, and somatic symptoms in a large population: The HUNT-II study. *Psychosomatic Medicine* 66:845–851, 2004
8. Kroenke K, Jackson JL, Chamberlin J: Depressive and anxiety disorders in patients presenting with physical complaints: Clinical predictors and outcome. *American Journal of Medicine* 103:339–347, 1997
9. P Kuo, H Yang: Substance use among adolescents in Taiwan: Associated personality traits, incompetence, and behavioral/emotional problems. *Drug and Alcohol Dependence* 67:27–39, 2002
10. Laukkanen ER, Shemeikka SL, Viinamaki HT, et al.: Heavy drinking is associated with more severe psychosocial dysfunction among girls than boys in Finland. *Journal of Adolescent Health* 28:270–277, 2001
11. Mowla A, Kianpor M, Bahtoe M, et al.: Comparison of clinical characteristics of opium-induced and independent major depressive disorder. *American Journal of Drug and Alcohol Abuse* 34:415–421, 2008

12. Tien AY, Schlaepfer TE: Self-reported somatization symptoms associated with risk for extreme alcohol use. *Archives of Family Medicine* 7:33–37, 1998
13. Kelly RH, Russo J, Katon W: Somatic complaints among pregnant women cared for in obstetrics: Normal pregnancy or depressive and anxiety symptom amplification revisited? *General Hospital Psychiatry* 23:107–113, 2001
14. Günther E: [Diagnosis and assessment of anxiety disorders]. *Praxis*. (Bern 1994) 87:731–734, 1998
15. Walter M, Dammann G, Wiesbeck GA, et al.: [Psychosocial stress and alcohol consumption: Interrelations, consequences and interventions]. *Fortschritte der Neurologie-Psychiatrie* 73:517–525, 2005
16. Green CR, Flowe-Valencia H, Rosenblum L, et al.: The role of childhood and adulthood abuse among women presenting for chronic pain management. *Clinical Journal of Pain* 17:359–364, 2001
17. Feeney GF, Connor JP, Young RM, et al.: Cannabis dependence and mental health perception amongst people diverted by police after arrest for cannabis-related offending behaviour in Australia. *Criminal Behaviour and Mental Health* 15:249–260, 2005
18. Couvée JE, Bakker A, Zitman FG: The relevance of psychiatric and somatic comorbidity in depressed chronic benzodiazepine users. *Psychotherapy and Psychosomatics* 71:263–268, 2002
19. Langlitz N, Schotte K, Bschor, T: Loperamide abuse in anxiety disorder. *Der Nervenarzt* 72:562–564, 2001
20. Haver B: Female alcoholics. I. Psycho-social outcome six years after treatment. *Acta Psychiatrica Scandinavica* 74:102–111, 1986
21. Hague WH, Wilson LG: Post-detoxification drug treatment of anxiety and depression in alcohol addicts. *Journal of Nervous and Mental Disease* 162:354–359, 1976
22. van Balkom AJ, Beekman AT, de Beurs E, et al.: Comorbidity of the anxiety disorders in a community-based older population in The Netherlands. *Acta Psychiatrica Scandinavica* 111:401–402, 2005
23. T Pitkänen: Problem drinking and psychological well-being: A five-year follow-up study from adolescence to young adulthood. *Scandinavian Journal of Psychology* 40:197–207, 1999
24. Arnow BA, Hunkeler EM, Blasey CM, et al.: Comorbid depression, chronic pain, and disability in primary care. *Psychosomatic Medicine* 68:262–268, 2006
25. Rus-Makovec M, Cebasek-Travnik Z: Co-occurring mental and somatic diagnoses of alcohol dependent patients in relation to long-term aftercare alcohol abstinence and well-being. *Psychiatria Danubina* 20:194–207, 2008
26. Volpicelli JR, Clay KL: Naltrexone in the treatment of alcoholism: Predicting response to naltrexone. *Journal of Clinical Psychiatry* 56(Suppl 7):39–44, 1995
27. Sattar SP, Bhatia SC, Petty F: Potential benefits of quetiapine in the treatment of substance dependence disorders. *Journal of Psychiatry and Neuroscience* 29:452–457, 2004

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