Mental Health and Addiction Research

Research Article

Comorbid alcohol dependence and anxiety disorder: Effect of concurrent mood and personality disorders on treatment outcomes

Tony Toneatto[1]*, and Kim Calderwood[2]

[1]Clinical Psychologist and Psychoanalyst, Director, Buddhism, Psychology and Mental Health Minor Program New College, University of Toronto, Toronto, Ontario, Canada

[2]Assistant Professor, School of Social Work, University of Windsor,Windsor, Ontario, Canada

Abstract

Alcohol dependent individuals who also were diagnosed with an anxiety disorder were treated with one of two cognitive-behavioral treatments. Treatment ALC, consisting of 6 sessions of alcohol-specific treatment was compared to treatment ALCANX consisting of 6 sessions of alcohol-specific treatment followed by 4 anxiety-specific sessions. At the end-of-treatment, no significant differences on measures of alcohol consumption or psychiatric (including anxiety) symptomatology were found. Both groups improved to a significant degree. Post-hoc analyses, based on the high degree of other, especially mood and personality disorder, comorbidity in addition to the alcohol use/anxiety disorder indicated that individuals who had the most comorbidity did the poorest on alcohol and psychiatric measures. Implications for the cognitive-behavioral treatment of concurrent alcohol dependence and anxiety disorder are discussed.

Introduction

Rates of psychiatric comorbidity between alcohol use and anxiety disorders in both clinical and community populations is well established [1,2]. Such comorbidity may be associated with predict poorer alcohol treatment outcomes and higher rates of relapse [3]. Despite the robust association between anxiety and alcohol problems relatively little treatment research has been reported [4-8]. Recently, Toneatto and Calderwood (2015) reviewed this literature reported that alcohol dependent individuals also diagnosed with an anxiety disorder who received alcohol-specific treatment consisting of 6 sessions of was compared to individuals who received 6 sessions of alcohol-specific treatment followed by 4 anxiety-specific sessions. At the end-of-treatment no significant differences were found on both measures of alcohol consumption or psychiatric (including anxiety) symptoms. Both groups improved to a significant degree up to the 10-month follow-up. Despite the lack of clinical impact of the two treatments, the role of additional psychiatric comorbidity (in addition to alcohol and anxiety) may be an important variable in therapeutic response. In that study, almost a third of the sample also had a mood disorder; unpublished data also revealed high rates of personality disorders as well. Mood disorders [5,9-11] and personality disorders [12,13] among alcohol use disorders are also common. Whether treating concurrent psychiatric comorbidity in primary addiction problems, whether pharmacologically or psychotherapeutically, continue to be an important clinical issue. [4,5,9] have examined this issue and have concluded that much more research is required before firm conclusions can be made but that in general, treatment comorbidity among those with alcohol use disorders may improve addiction-related outcomes and quality of life.

In light of the complex comorbidity associated with alcohol use disorders, the impact of mood and personality disorders, in addition to the primary anxiety and alcohol use disorders that defined the inclusion criteria for [14], on both addiction and psychiatric outcomes, post-treatment and at a 10-month follow-up were investigated.

Method

Sample

Participants meeting DSM-IV (American Psychiatric Association, 1994) diagnostic criteria for concurrent anxiety disorder and alcohol dependence were primarily recruited from the Intake Service of the Center for Addiction and Mental Health (CAMH), a University of Toronto teaching hospital and the largest addiction and mental health facility in Canada providing both ambulatory and outpatient services for addiction and mental health. The study was approved by the CAMH Research Ethics Board.

Design

Although complete details of the study are presented in Toneatto and Calderwood 2015, the core details are presented here. Participants who met the inclusion criteria were randomly assigned to 6 sessions of alcohol-only treatment (ALC) or to an enhanced treatment consisting of 6 alcohol-only sessions followed by 4 sessions of anxiety coping skills training (ALCANX). Treatment was administered on an individual basis.

Correspondence to: Dr. Tony Toneatto, Clinical Psychologist and Psychoanalyst, Director, Buddhism, Psychology and Mental Health Minor Program New College, University of Toronto, Toronto, 45 Willcocks St, Room M-135, Toronto, Ontario M5S 1C7, Canada, Tel: 416-875-2533; Fax: 416-875-2533; **E-mail:** tony.toneatto@utoronto.ca

Received: August 02, 2016; **Accepted:** August 17, 2016; **Published:** August 22, 2016

Assessment

Frequency and quantity of daily alcohol consumption at baseline was assessed using the 60-day Timeline Follow Back Interview [15,16]. The Symptom Checklist-90 (SCL90), a 90-item self-report rating scale that measures distress on 9 psychiatric dimensions corresponding to several DSM-IV Axis I disorders [17] assessed past-week psychiatric functioning. The Global Severity Index (GSI) of the SCL90 provides an overall index of psychiatric distress ranging from 0, 'not at all' to 4, 'extremely'. The Beck Anxiety Inventory [18], a 21-item validated [19] was used to assess the severity of anxiety symptoms in the past week on a 4-point rating scale ranging from 0, 'not at all' to 4, 'I could barely stand it'. Participants were re-administered the TLFB (past two weeks), SCL90 (past week) and the BAI (past week) at post-treatment and 10 months post-treatment. The follow-up assessment consisted of the TLFB, the BAI, and the SCL90.

Treatment

The ALC treatment consisted of 6 sessions of cognitive-behavioral treatment for alcohol problems and consisted of motivational, behavioral, cognitive and affect-based sessions designed to reduce drinking or achieve abstinence (cf. Toneatto and Calderwood, 2015 for additional details). Group ALC did not receive anxiety-specific treatment. The first 6 sessions of the ALCANX treatment were identical to those of group ALC**.** The final four sessions consisted of a functional analysis of the anxiety and the development of cognitive and behavioral coping skills to manage anxiety and reduce avoidance behavior. Both treatments included reading assignments, handouts and behavioral exercises. Treatment was administered by two doctoral-level clinical psychologists (average of 11 years post-graduate therapy experience) and 2 masters level therapists (average of 3 years post-graduate experience) experienced in treating concurrent disorders.

Data analysis

Mood disorders [MOOD] were diagnosed in 47.5% of the sample and personality disorders [PD] in 59% at assessment. Based on these patterns of psychopathology, concurrent MOOD or PD disorder were identified as independent variables in addition to the primary anxiety and alcohol use disorder defining entry into the study. Thus, four types of comorbid alcohol-dependent subjects were formed: anxiety disorder [ANX, $\underline{n}$ = 11], anxiety and personality disorder [ANX-PD, $\underline{n}$ = 18], anxiety and mood disorder [ANX-MOOD, $\underline{n}$ = 13], anxiety, mood and personality disorder [ANX-MOOD-PD, $\underline{n}$ = 13]. Separate 2 MOOD (presence, absence) X 2 PD (presence, absence) multivariate analyses of variance (MANOVA) were conducted on baseline and end-of-treatment alcohol consumption and psychiatric symptomatology. The end-of-treatment quantity and frequency data were square root-transformed to correct non-normal distributions but only untransformed values are reported. Roy-Bargman stepdown F tests were used to assess the impact of the independent variables on the dependent variables [19]. MANOVA assumptions of linearity, multicollinearity, normality and homogeneity of variance-covariance matrices were met. Within group mean comparisons were tested with one-tailed paired t-tests. Associations between categorical variables were tested with Pearson chi-square.

Results

Subjects

Fifty-five (67%) of the 82 participants who completed the baseline assessment also completed treatment (34 in group ALC and 21 in group ALCANX). Treatment completion was defined as attendance at $\geq$ 3 sessions of the ALC and $\geq$ 8 of the ALCANX treatments. Of the 27 non-completers, 21 failed to complete the required number of sessions, 5 subjects decided that treatment was unsuitable for them shortly after beginning treatment and one subject was terminated by the therapist. Significant differences were found between completers and non-completers.

Participants were recruited primarily through advertisements ($\underline{n}$ = 23/55; 41.8%), the CAMH Intake process ($\underline{n}$ = 13/55; 23.6%), from other CAMH programs ($\underline{n}$ = 10/55; 18.2%), other professionals ($\underline{n}$ = 7/55; 12.7%) and by word of mouth ($\underline{n}$ = 2/55; 3.6%).

Demographic variables

Men comprised a larger proportion of the two groups diagnosed with personality disorder [ANX-MOOD-PD (76.9%); MD-PD (77.8%)] than found in groups ANX-MOOD (30.8%) and ANX (54.5%) [χ^2 (3) = 8.76, $\underline{p}$ < .05]. Group ANX-MOOD-PD was significantly less likely to be seeking treatment for alcohol problem for the first time (23.1%) compared to ANX- MOOD (61.5%), ANX-PD (61.1%) and ANX (81.8%) [χ^2 (3) = 9.06, $\underline{p}$ < .05]. Type ANX-MOOD-PD also scored the lowest on Axis V of DSM-IV, the Global Assessment of Functioning ($\underline{M}$ = 53.3, $\underline{SD}$ = 7.4) compared to types MOOD-PD, ANX-PD and ANX ($\underline{M}$ = 62.3, $\underline{SD}$ = 5.1, $\underline{M}$ = 56.6, $\underline{SD}$ = 6.4, and $\underline{M}$ = 63.3, $\underline{SD}$ = 8.2, respectively, $\underline{F}$ (3, 53) = 5.90, $\underline{p}$ < .01).

Psychiatric and psychoactive substance use history

Table 1 shows the rates of psychiatric disorders by group. Phobic

Table 1. Current psychiatric diagnoses by treatment group.

Diagnosis	ALC[1] %	ALCANX[2] %
Major Psychiatric Disorders		
agoraphobia without panic	3	0
substance-induced anxiety	21	19
generalized anxiety	27	33
obsessive-compulsive	6	5
panic without agoraphobia	25	13
panic with agoraphobia	29	33
post-traumatic stress	9	0
social phobia	32	38
specific phobia	15	14
anxiety disorder NOS	9	10
bipolar I	3	0
dysthymic	18	45
major depressive episode	24	33
substance-induced mood	15	25
Personality Disorders		
antisocial	3	5
borderline	3	19
paranoid	15	19
narcissistic	3	0
avoidant	24	43
dependent	3	5
obsessive-compulsive	27	25

[1]ALC=alcohol only treatment (n=34); [2]ALCANX=alcohol + anxiety treatment (n=21).
[1]Completers were more educated ($\underline{M}$ = 14.3, $\underline{SD}$ = 2.3) than non-completers ($\underline{M}$ = 13.0, $\underline{SD}$ = 2.8, $\underline{t}$ (79) = 2.35, $\underline{p}$< .05). Non-completers had significantly higher GSI ,$\underline{M}$ = 1.8, $\underline{SD}$ = 0.6; $\underline{M}$ = 1.4, $\underline{SD}$ = 0.6, $\underline{t}$ (79) = -2.60, $\underline{p}$< .01 and ADS ($\underline{M}$ = 22.5, $\underline{SD}$ = 8.9, $\underline{M}$ = 16.8, $\underline{SD}$ = 7.1, $\underline{t}$ (79) = -3.14, $\underline{p}$< .005, for the non-completers and completers, respectively) scores than completers. Baseline drinking quantity was higher among the non-completers ($\underline{M}$ = 11.7, $\underline{SD}$ = 7.4) than the completers ($\underline{M}$ = 7.8, $\underline{SD}$ = 3.6, $\underline{t}$ (80) = -3.23, $\underline{p}$< .005. Non-completers were more likely to have a diagnosis of social phobia (69.2%) than non-completers (34.5; χ (1) = 8.55, $\underline{p}$< .005) and less likely to have substance-induced anxiety disorder (20% vs. 3.7%, χ (1) = 3.85, $\underline{p}$< .05).

anxiety disorders (*i.e.,* social phobia, panic disorder with agoraphobia, generalized anxiety disorder) were the most common anxiety disorders diagnosed. Avoidant and obsessive-compulsive (*i.e.,* Cluster C) personality disorders were the most frequently diagnosed personality disorders. There were no statistically significant differences in the number of: personality disorders (M = 1.0, SD = 0.9 and M= 0.7, SD = 1.1); anxiety disorders (M = 1.8, SD = 0.9 and M = 1.5, SD = 0.6); psychoactive drugs ever used (M = 4.3, SD = 2.4 and M= 5.3, SD= 2.2); or alcohol-related consequences (M = 5.8, SD = 0.4 and M = 5.9, SD = 0.3) nor on the ADS score (M = 17.1, SD = 7.4 and M = 18.5, SD = 8.1) for groups ALC and ALCANX, respectively. However, on the DSM-IV Global Assessment of Functioning scale group ALCANX was found to score lower, M = 55.6, SD = 8.7, than group ALC, M = 60.1, SD = 6.7, t (52) = 2.16, p < .05. Of group ALC, 70% (n = 28) and of group ALCANX 80% (n = 17) were concurrently treated with an anxiolytic and/or antidepressant.

Alcohol Consumption

A significant PD main effect on baseline alcohol consumption was found, Wilk's $\Lambda = 0.84$, $F(2, 50) = 4.79$, $p < .05$. Stepdown F-tests revealed that this difference only occurred for quantity of alcohol consumption, $F(1, 51) = 6.84$, $p < .05$. Subjects with a PD diagnosis consumed more alcohol on drinking days, M = 8.8, SD = 3.9, than those without a concurrent PD diagnosis, M = 6.5, SD = 2.6, prior to treatment (see Table 4).

A significant MOOD X PD interaction on alcohol consumption was found at end-of-treatment, Wilk's $\Lambda = 0.84$, $F(2, 50) = 4.86$, $p < .05$. Stepdown F-tests revealed that a significant difference was found for the quantity $F(1, 51) = 9.70$, $p < .005$, but not frequency, of alcohol consumption. An analysis of the means reveal that group ANX-MOOD-PD were drinking more at the end-of-treatment, M = 7.2, SD = 4.7, while ANX-MOOD reported the fewest drinks/ drinking day at post-treatment, M = 2.7, SD = 2.0. Table 2

Only groups ANX-MOOD and ANX-PD showed significant reductions in quantity, [$t(12) = -5.99$, $p < .0005$; $t(17) = -4.41$, $p < .0005$, respectively] and frequency of drinking [$t(12) = 4.03$, $p < .001$; $t(17) = -4.83$, $p < .0005$, respectively] over the course of treatment. No significant changes in frequency or quantity were observed for groups ANX-MOOD-PD or ANX.

Psychometric measures

A significant PD main effect on measures of baseline psychiatric symptomatology and urges to drink was found, Wilk's $\Lambda = 0.84$, $F(3, 49) = 3.07$, $p < .05$. Only baseline Global Severity Index (GSI) scores significantly different between groups as evaluated by the stepdown F-test, $F(1, 49) = 7.42$, $p < .01$. Participants diagnosed with a personality disorder had a higher GSI, M = 1.5, SD = 0.7, compared to those without an Axis II diagnosis, M = 1.3, SD = 0.5. Groups ANX-MD and ANX-PD showed significant reductions in BAI scores over treatment, $t(12) = 6.38$, $p < .001$; $t(16) = -4.15$, $p < .001$, respectively. Groups ANX-MD, ANX-PD and ANX also showed significant reductions on the GSI, $t(9) = 4.83$, $p < .001$; $t(15) = 4.88$, $p < .0005$, and $t(9) = 2.95$, $p < .01$, respectively. Table 3

Discussion

Treatment outcome was correlated with the severity of psychopathology. Although participants with alcohol and anxiety disorders were explicitly recruited for this study, a significant proportion (44/55 or 80%) of the sample was diagnosed with an additional concurrent mood or personality disorder, is consistent with other research. For example [19-21] found Cluster C personality disorders and mood disorders, especially major depressive episodes and dysthymic disorder, to be commonly diagnosed in anxiety patients. [22] Presenting data from a cross-sectional sample of treatment-seeking anxious patients, found 50% to have an additional mood or anxiety disorder. Axis II disorders have also been shown to be consistently prevalent in alcohol abusers and to predict poorer treatment response [21,23,24]. however, suggest that the mere presence of a personality disorder is not an indication that it has a causal role in negatively influencing treatment since such individuals may differ on several other clinically relevant variables which can also impact on treatment response and outcome. For [24] reported that anxiety and personality disorder are often associated with greater severity of depression than those without a personality disorder and that depression may mediate treatment outcomes. Similarly, [25] found that patients with both mood and anxiety disorders were associated with greater psychosocial impairment than participants with either mood or anxiety disorders. [26] found that depression was the primary reason treated anxious alcoholics relapsed following treatment. [27] have shown that the aggregation of comorbid alcoholism, anxiety and depression in families may reflect the influence of genetic variables.

Other evidence suggests, however, that personality disorders may also predict positive therapeutic outcomes. [28] found that personality disorders were associated with poorer outcomes following

Table 2. Alcohol consumption and anxiety symptoms by group.

Variable		MOOD-ANX-PD	MOOD-ANX	ANX-PD	ANX
Alcohol Consumption	n	13	13	18	11
drinks/ drinking day at baseline	M	9.70	6.17	8.13	6.89
	SD	4.26	2.23	3.65	3.04
days drinking at baseline	M	63.15	61.17	55.39	46.36
	SD	35.49	27.13	25.42	34.26
drinks/drinking day end of treatment	M	7.17	2.62	3.48	5.02
	SD	4.69	2.06	3.21	4.57
drinks/ drinking day at 10-M Follow-Up	M	7.27	3.12	5.65	4.78
	SD	5.04	1.95	4.45	3.56
days drinking at 10-M Follow-Up	M	45.25	47.33	37.14	40.60
	SD	32.06	34.71	29.08	31.03
Alcohol Dependence Scale	M	18.67	17.58	15.17	16.82
	SD	9.83	5.12	6.68	6.62
Number of Drugs Ever Used	M	5.00	6.09	3.78	4.45
	SD	2.19	2.47	2.24	2.02

Table 3: Psychiatric scores by group.

		MOOD-ANX-PD	MOOD-ANX	ANX-PD	ANX
PSYCHIATRIC MEASURES					
Beck Anxiety Inventory- baseline	M	26.54	28.42	21.94	24.69
	SD	14.16	11.89	15.50	13.60
Beck Anxiety Inventory-end of treatment	M	17.85	9.00	13.94	13.45
	SD	13.41	8.16	12.90	14.23
Beck Anxiety Inventory-10 M Follow-Up	M	21.92	11.75	11.00	16.40
	SD	12.58	10.10	8.12	13.46
Global severity index- baseline	M	1.86	1.46	1.31	1.10
	SD	0.65	0.47	0.56	0.60
Global severity index- end of treatment	M	1.45	0.75	0.74	0.58
	SD	0.81	0.46	0.50	0.35
Global severity index- 10 M Follow-Up	M	1.42	0.57	0.64	0.87
	SD	0.93	0.47	0.52	0.76
Number of DSM-IV anxiety disorders	M	2.15	1.58	1.72	1.55
	SD	0.99	0.90	0.83	0.69

interpersonal therapy but not cognitive therapy (e.g., dependency traits may aid in the commitment of the client to treatment). [29] argue that structured treatments, such as cognitive-behavioral therapy, may be preferred to insight-oriented therapy in treating Axis II because of the goal-centered and coping-skill focus of such treatments. In that study, [29] found cocaine abusers with borderline characteristics did worse on drug-related outcome measures following behavior therapy than did those with dependent personality features.

The present research found that alcohol-dependent anxious subjects with additional mood and Axis II comorbidity were drinking more heavily at baseline and achieved poorer drinking outcomes at posttreatment. Participants who had either, or neither, a mood or Axis II disorder in addition to the alcohol and anxiety problem, showed comparable rates of improvement. Thus, specific psychiatric disorders, per se, were not predictors of negative outcomes. These results support the hypothesis that severity of psychopathology may be more important than type of psychopathology [30,31]. In this study, the presence of multiple psychiatric disorders in type MD-ANX-PD was correlated with a significantly lower GAF score, heavier drinking, and higher GSI score at baseline suggesting that this subgroup indeed had more severe psychopathology. Participants who had either, or neither, a mood or Axis II disorder in addition to the alcohol and anxiety problem, had relatively higher GAF scores, less heavy drinking and lower GSI.

Individuals who are depressed may lack effective behavioral (e.g., withdrawn), cognitive (e.g., helpless) and affective (e.g., anhedonic) regulation skills [32]. The comorbid presence of personality dysfunction, characterized by severe cognitive-perceptual aberrations which may distort responses to interpersonal events, emotions and cognitions [33] and proneness to impulsive actions which can produce, or exacerbate, psychiatric distress [34], may further accentuate deficits in coping effectiveness. The presence of these symptoms, in individuals who are also anxious and alcohol dependent, may interfere with the optimal response to the brief intervention provided in this study.

The small sample sizes in the post-hoc analyses prevented examination of differences in treatment response by each of the four types as a function of the ALC or ALCANX treatment. Participants with the most severe psychopathology (*i.e.,* type ANX-MD-PD) demonstrated little change over the course of treatment (combining results from the ALC and ALCANX treatments). Thus, it is not clear whether the inclusion of a longer anxiety-specific component [35,36-38] or interventions directed at other concurrent Axis I (*i.e.,* depression, [26]) or Axis II (*i.e.,* development of client-therapist relationship, interpersonal dysfunction, poor insight, therapeutic ambivalence; [28]) psychopathology would produce better outcomes. The results from this study do suggest that a primarily alcohol-focused treatment may be inadequate for more severe comorbid disorders but may be relatively effective for less severe comorbid psychopathology as found for types ANX, ANX-PD, and ANX-MD.

The results of the current study are weakened by the small sample size, the lack of sensitive measures of the mediators of change, and the lack of control over the use of other psychoactive substances (including prescribed medications) [39-41]. The longer term effects of the treatment needs to be assessed in order to determine whether the benefits of ALCANX treatment, for example, are delayed. The determination of psychiatric diagnoses very early in treatment, although made by experienced clinicians using a structured psychiatric interview, occurred in the context of ongoing alcohol use. Consequently, the risk of confusing organic effects of alcohol ingestion for true psychiatric symptoms is considerable. The diagnostic assessment should ideally occur when the individual is substance-free, a difficult goal when the participants are attending an outpatient treatment program which permits non-abstinence.

In addition, more reliable measure of adherence to the treatment protocol would be desirable through the rating of randomly audiotaped therapy sessions. Future research should include theoretically meaningful measures of therapeutic change (e.g., anxiety sensitivity, impulse control) and the measurement of a wider variety of clinically-relevant variables reflective of the psychiatric heterogeneity of comorbid substance abusers.

References

1. Alegría AA, Hasin DS, Nunes EV, Liu SM, Davies C, et al. (2010) Comorbidity of generalized anxiety disorder and substance use disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry* 7: 1187-1195.
2. Boschloo L,Vogelzangs N, Smit JH, van den Brink W, Veltman DJ, et al. (2011) Comorbidity and risk indicators for alcohol use disorders among persons with anxiety and/or depressive disorders: findings from the Netherlands Study of Depression and Anxiety (NESDA). *J Affect Disord* 131: 233-242. [Crossref]
3. Willinger U,Lenzinger E, Hornik K, Fischer G, Schönbeck G, et al. (2002) Anxiety as a predictor of relapse in detoxified alcohol-dependent patients. *Alcohol* 37: 609-612. [Crossref]
4. Hesse M (2009) Integrated psychological treatment for substance use and comorbid

anxiety or depression vs. treatment for substance use alone: A systematic review of the published relationship. *BMC Psychiatry* 9: 6-14.

5. Hobbs JDJ, Kushner MG, Lee SS, Reardon SM, Maurer EW, et al. (2011) Meta-analysis of Supplemental Treatment for Depressive and Anxiety Disorders in Patients Being Treated for Alcohol Dependence. *American Journal on Addictions* 20: 319–329.
6. Stewart, S. & Conrod, P. (eds.) Anxiety Disorder – Substance Use Disorder Co-Morbidity.
7. Kushner MG, Abrams K, Borchardt C (2000) The relationship between anxiety disorders and alcohol use disorder: a review of major perspectives and findings. *Clinical Psychology Review* 20: 149–171.
8. American Psychiatric Association (1994) Committee on Nomenclature and Statistics. Diagnostic and statistical manual of mental disorders, fourth edition. Washington, DC. American Psychiatric Association.
9. Baker AL, Thornton LK, Hiles S, Hides L, Lubman DI (2012) Psychological interventions for alcohol misuse among people with co-occurring depression or anxiety disorders: a systematic review. *J Affect Disord* 139: 217-229. [Crossref]
10. Colpaert K, De Maeyer J, Broekaert E, Vanderplasschen W (2013) Impact of addiction severity and psychiatric comorbidity on the quality of life of alcohol-, drug- and dual-dependent persons in residential treatment. *European Addiction Research* 19: 173-83.
11. Chen LY, Crum RM, Martins SS, Kaufmann CN, Strain EC, et al. (2013) Service use and barriers to mental health care among adults with major depression and comorbid substance dependence. *Psychiatric Services* 6: 863-870.
12. Gonzalez C (2014) Screening for personality disorder in drug and alcohol dependence. *Psychiatry Res* 217: 121-123. [Crossref]
13. Colpaert K,Vanderplasschen W, De Maeyer J, Broekaert E, De Fruyt F (2012) Prevalence and determinants of personality disorders in a clinical sample of alcohol-, drug-, and dual-dependent patients. *Subst Use Misuse* 47: 649-661. [Crossref]
14. Toneatto T (2005) Cognitive versus behavioral treatment of concurrent alcohol dependence and agoraphobia: a pilot study. *Addict Behav* 30: 115-125. [Crossref]
15. Sobell LC, Sobell MB (1992) Timeline follow-back: A technique for assessing self-reported alcohol consumption. In R. Litten and J. Allen (Eds.), Measuring alcohol consumption: Psychosocial and biological methods. Totowa, NJ: The Humana Press, Inc.
16. Sobell LC, Sobell MB (1995) Alcohol timeline followback (TFLB) user's manual. Toronto, Canada: Addiction Research Foundation.
17. Derogatis LR (1983) SCL-90: Administration, scoring and procedures manual for the Revised version and other instruments of the psychopathology rating scale series. Baltimore, MD: Clinical psychometrics research unit, Johns Hopkins University School of Medicine.
18. Beck AT, Epstein N, Brown G, Steer RA (1988) An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology* 5: 893-897.
19. Klass ET, DiNardo PA, Barlow DH (1989) DSM-III-R personality diagnoses in anxiety disorder patients. *Compr Psychiatry* 30: 251-258. [Crossref]
20. Hoffart A,Thornes K, Hedley LM, Strand J (1994) DSM-III-R Axis I and II disorders in agoraphobic patients with and without panic disorder. *Acta Psychiatr Scand* 89: 186-191. [Crossref]
21. Renneberg B, Chambless DL, Gracely EJ (1992) Prevalence of SCID-diagnosed personality disorders in agoraphobic outpatients. *Journal of Anxiety Disorders*: 111-118.
22. Brown TA, Barlow DH (1992) Comorbidity among anxiety disorders: implications for treatment and DSM-IV. *J Consult Clin Psychol* 60: 835-844. [Crossref]
23. Reich JH, Green AI (1991) Effect of personality disorders on outcome of treatment. *J Nerv Ment Dis* 179: 74-82. [Crossref]
24. Van Velzen CJ,Emmelkamp PM (1996) The assessment of personality disorders: implications for cognitive and behavior therapy. *Behav Res Ther* 34: 655-668. [Crossref]
25. Wittchen HU,Essau CA, Krieg JC (1991) Anxiety disorders: similarities and differences of comorbidity in treated and untreated groups. *Br J Psychiatry Suppl*: 23-33. [Crossref]
26. LaBounty LP,Hatsukami D, Morgan SF, Nelson L (1992) Relapse among alcoholics with phobic and panic symptoms. *Addict Behav* 17: 9-15. [Crossref]
27. Merikangas KR,Risch NJ, Weissman MM (1994) Comorbidity and co-transmission of alcoholism, anxiety and depression. *Psychol Med* 24: 69-80. [Crossref]
28. Shea MT, Widiger TA, Klein MH (1992) Comorbidity of personality disorders and depression. Implications for treatment. *Journal of Consulting and Clinical Psychology* 6: 522-534.
29. Marlowe DB, Kirby KC, Festinger DS, Husband SD, Platt JJ (1997) Impact of comorbid personality disorders and personality disorder symptoms on outcomes of behavioral treatment for cocaine dependence. *Journal of Nervous and Mental Disease* 18: 483-490.
30. McLellan AT, Luborsky L, Woody GE, O'Brien CP, Druley KA (1983) Predicting response to alcohol and drug abuse treatments. Role of psychiatric severity. *Arch Gen Psychiatry* 40: 620-625. [Crossref]
31. Stoffelmayr BE, Benishek LA, Humphreys K, Lee JA, Mavis BE, et al. (1989) Substance abuse prognosis with an additional psychiatric diagnosis: understanding the relationship. *Journal of Psychoactive Drugs* 2: 145-152.
32. Beck AT, Rush AJ, Shaw BF, Emery G (1979) Cognitive therapy of depression. New York: Guilford.
33. Beck AT, Freeman A, Associates (1990) Cognitive therapy of personality disorders. New York: Guilford Press.
34. Siever LJ,Davis KL (1991) A psychobiological perspective on the personality disorders. *Am J Psychiatry* 148: 1647-1658. [Crossref]
35. Brown GK,Beck AT, Newman CF, Beck JS, Tran GQ (1997) A comparison of focused and standard cognitive therapy for panic disorder. *J Anxiety Disord* 11: 329-345. [Crossref]
36. Brown RA,Evans DM, Miller IW, Burgess ES, Mueller TI (1997) Cognitive-behavioral treatment for depression in alcoholism. *J Consult Clin Psychol* 65: 715-726. [Crossref]
37. Schade A, Marquenie LA, van Balkom AJLM, de Beurs E, van Dyck R, et al. (2003) Do comorbid anxiety disorders in alcohol-dependent patients need specific treatment to prevent relapse? *Alcohol and Alcoholism* 38: 255-262.
38. Schade A, Marquenie LA, van Balkom AJLM, Koeter M, De Beurs E, et al. (2005) The effectiveness of anxiety treatment on alcohol dependent patients with a comorbid phobic disorder: a randomized controlled trial. *Alcoholism: Clinical and Experimental Research* 29: 794–800.
39. Toneatto T, Rector N (2007) Treating Co-morbid Panic Disorder and Substance Use Disorder.
40. Skinner HA, Horn JL (1984) Alcohol Dependence Scale (ADS) User's Guide. Toronto: Addiction Research Foundation.
41. Tabachnik BG, Fidell LS (1989) Using multivariate statistics (2nd ed.). New York: Harper & Row.