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Assessment of co-occurring depression and substance use in an ethnically diverse patient sample during behavioral health intake interviews

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Abstract

Background—Co-occurring disorders present a challenge for providers who often fail to diagnose them with accuracy. This study explores the assessment process of co-occurring depressive and substance use disorders in community health clinics serving ethnically diverse patients. The goals are to identify how symptoms discussed in intake, as well as patient and provider characteristics, are associated with receiving a diagnosis of co-occurring disorders or not.

Methods—Participation in the study consisted of videotaping the intake, conducting a semi-structured interview, and completing demographic and clinical measures. Quantitative analyses were conducted based on information coded from videotapes of intakes with 119 patients who screened positive for symptoms of depressive disorders and substance use. A subset of cases (28) diagnosed with co-occurring disorders were qualitatively analyzed.

Results—Results suggest that being female and any discussion of "depression" as a general term increased the likelihood of receiving a diagnosis of depression. Discussing symptoms of drug and alcohol use increased the likelihood of receiving a substance use disorder diagnosis, and discussing symptoms of substance use only increased the likelihood of receiving a dual diagnosis. Qualitative analyses indicate that providers report conducting more systematic assessments for substance use than depressive disorders, which is not supported by the quantitative findings.

Conclusions—Our results point to discrepancies in the ways providers and patients describe the assessment of dual diagnoses. Factors such as the role of nonverbal information and patient presentation were identified as contributing to complexity of the assessment.

Keywords

Dual diagnosis; Co-occurring diagnoses; Substance use; Depression; Intake; Assessment

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Contributors

Sarah Dargouth, Ph.D. contributed to conception and design, analysis and interpretation of data, drafting, and final approval. Ora Nakash, Ph.D. contributed to analysis and interpretation of data, critical revision, and final approval. Alisa Miller, Ph.D. contributed to analysis and interpretation of data, critical revision, and final approval. Margarita Alegría, Ph.D. contributed to conception and design, analysis and interpretation of data, drafting, and final approval.

Conflict of interest

No conflict declared.

1. Introduction

The National Survey on Drug Use and Health estimates that 2.7 million adults over the age of 18 have experienced a co-occurring major depressive episode and substance use disorder during the previous year in the United States (Office of Applied Studies, 2007). Low treatment utilization among such adults may be related to the fact that mental health professionals either misidentify or fail to detect co-occurring disorders among patients who suffer from both depressive and substance use disorders as compared to patients with depressive or substance use disorders only (Zimmerman and Mattia, 1999).

Limited accuracy in the recognition of co-occurring depressive and substance use disorders may result in a more chronic course of illness, more severe symptom presentation (Burns et al., 2005; Hryb et al., 2007), and a higher impairment in general functioning (Davis et al., 2008). Still, little is known about the process of assessment of these disorders by mental health practitioners. A better understanding of factors which result in a clinician diagnosis of a co-occurring disorder is necessary to develop more accurate means of identifying these disorders.

Under identification and poor accuracy in the diagnosis of co-occurring substance use and depression has been attributed to a lack of standardized clinical definitions for such disorders (Hryb et al., 2007), differences in how clinical interviews are administered (Shear et al., 2000), and long standing separations in treatment systems for substance use and mood disorders (Kilbourne et al., 2011). Further, some diagnoses may be more readily identified by clinicians than others. Alegría et al. (2008) found that diagnostic concordance between providers was more likely in diagnosis of substance related disorders in comparison to depressive disorders. It is unclear whether in the presence of both depressive and substance use problems patients are evaluated and assessed in similar ways.

This paper explores the factors that result in the diagnosis of co-occurring depressive and substance use disorders during a mental health intake interview, as compared to either a substance abuse or depression diagnosis alone. The study goals are: 1. To examine patient and provider characteristics and the types of symptoms assessed during an intake interview that result in a depressive diagnosis only, a substance disorder diagnosis only, a diagnosis of both depressive and substance disorders or none of these diagnoses in patients that have separately screened positive for symptoms of depression and substance use; 2. To learn about the challenges associated with the process of assessing co-occurring depression and substance use conditions in ethnically diverse patients.

2. Methods

This study draws on data from the Patient-Provider Encounter Study (PPES; Alegría et al., 2008). Forty-seven providers and 129 patients at eight clinics serving a diverse and socio-economically disadvantaged client population participated in the study. Eight adult outpatient mental health clinics in the Northeastern United States collaborated in the study. Data for the study was collected in three steps: (1) the diagnostic intake session between clinician and patient was videotaped and analyzed for content; (2) following the intake, patients and providers each participated in separate post-diagnostic interviews to reflect on the process of the interview; (3) survey and diagnostic measures, including the Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV (AUDADIS-IV) were administered to patients (Grant and Harford, 1995); and (4) research assistants collected the provider's diagnosis(es) following the intake. These diagnoses were listed in the patient charts and based on the intake session. Patients were not informed of the diagnoses they received before proceeding to the post-diagnostic research interview.

2.1. Sample

2.1.1. Providers—In total, 47 providers participated in the PPES study. Twenty-six percent of clinicians were psychologists, 28% psychiatrists, 38% social workers and 6% were nurses. A majority (70%) had more than five years of clinical experience. Approximately 53% self-identified as non-Latino white, 36% as Latino, 9% as non-Latino black (African American or Afro-Caribbean), and 2% as Asian. Sixty-six percent were female, 45% were between the ages 35–49 years, and 68% were permanent staff.

2.1.2. Patients—For purposes of this analysis, a sub-sample of patients who endorsed screener items for present (past 4 weeks for depression, past 6 months for substance use) or lifetime symptoms of both depression and substance use on the AUDADIS-IV measure were selected ($n = 119$). The sub-sample consisted of 59% females; 50% self-identified as Latino, 39% as non-Latino white and 12% as African-American. Approximately half of the sample was 18–35 years old, and 58% were U.S. born. Fifty-three percent were unemployed or out of the labor force; nearly 65% reported an annual income of less than $15,000. Approximately one third did not complete high school.

2.2. Procedure

Full research procedures of the PPES are described in detail elsewhere (see Alegría et al., 2008). All post diagnostic interviews conducted in Spanish and English were audio taped and fully transcribed using a professional service. Provider interviews included questions about the patient's presenting problem, their clinical decision-making, their rapport with the patient, and the role of socio-cultural factors in informing diagnosis. Patient interviews included questions about their presenting problem, their rapport with the provider, and the role of socio-cultural factors in their presenting problem. All interviews were conducted by trained research assistants. Supervision was provided throughout the data collection process by an expert in medical ethnography.

2.3. Measures

Patients completed screening questions for current and lifetime mood disorders and substance use disorders using scales of the AUDADIS-IV, an instrument that has been found to have excellent psychometric properties (Grant et al., 2004). To identify symptomatic information collected during the intake, the videotapes were analyzed using a measure designed to code information exchange. The "information checklist" (Alegría et al., 2008), was developed by the research team and included 128 items (and over 200 sub-items) derived from the diagnostic criteria in the DSM–IV-TR (American Psychiatric Association, 2000) and the AUDADIS (Grant and Harford, 1995). Each item was coded for whether or not it was discussed during the intake. If the item was discussed, it then was coded for whether or not it was endorsed by the patient. All symptoms were coded 'present' only if the patient reported experiencing them at the time of the intake or 12 months prior. Eight mental health providers, working with the research team and blind to the provider's diagnosis, served as coders for the information checklist. Inter-rater reliability was established using five training tapes (kappa agreements ranged between 0.60 and 1.00 between coders). Items covering symptoms related to mood disorders, alcohol and substance use disorders were analyzed.

2.4. Analytic strategy

To analyze the data we conducted a mixed method design that was exploratory, to systematically compare and contrast the quantitative and qualitative findings to achieve complementarity; that is, used qualitative data to provide depth of understanding and focus on the context, and quantitative data to confirm hypotheses. The triangulation of qualitative

and quantitative information added to the overall goals of the study by helping integrate a nuanced story of how patient and provider characteristics and patient symptoms might or might not play a role in diagnostic determinations and by assisting in being able to either corroborate or question the interpretation of the quantitative findings. To achieve this, the research team determined the level of convergence or discordance across qualitative and quantitative findings (Tashakkori and Teddlie, 1998; Denzin, 1978). For example, we compared what the clinicians reported doing in evaluating patients during the post diagnostic interviews with the quantitative findings of what information they collected. Particular attention was given to instances of convergence and disagreement that could help highlight main findings.

2.5. Quantitative analyses

The sample was divided into four groups according to the diagnosis(es) given by the provider following the intake: (a) Group 1 included patients given a diagnosis of Major Depressive Disorder, Dysthymic Disorder or Mood Disorder, Not Other Specified only (n = 58); (b) Group 2 included patients given a substance use disorder diagnosis only, which included alcohol abuse, alcohol dependence, substance abuse or substance dependence (n = 16); (c) Group 3 included patients given a diagnosis of co-occurring substance use disorder and depression according to the criteria described above (n = 29); and (d) Group 4 included patients given a diagnosis other than substance use disorder or depression (n = 26). Chi-square tests determined whether significant differences existed across the four groups in terms of symptoms discussed during the intake as well as patient and provider characteristics.

Symptoms discussed during the intake that were significantly different across the four diagnostic groups ($p < 0.05$) were grouped into three clusters: mention of depression, mention of alcohol use or mention of substance use (Table 2). Three new variables were constructed based on how many symptoms were discussed for each cluster. The variables were then used as part of a multinomial regression, conducted to determine whether clusters of symptoms discussed during the intake, as well as patient and provider demographic variables, were associated with one of the four diagnostic groups. Multinomial logistic regression models were used to estimate the relationships of the three variables and diagnostic groupings as reported by the intake clinician.

2.6. Qualitative analyses

Qualitative analyses utilized post-diagnostic interviews with providers to examine themes related to the assessment of substance use disorders and depression during the intake. The analyses focused only on patients diagnosed by providers with co-occurring substance abuse and depression (n = 28) and aimed to identify common themes. The coding software, N-Vivo 7, was used for analysis. Three coders independently read and coded research interview transcripts.

Attention was paid to the ways providers recognized and assessed symptoms of depressive and substance use disorders. Coders met frequently to discuss their codes; ongoing discussion allowed for consensus to be reached if disagreements in the coding scheme arose (Braun and Clarke, 2006).

3. Results

3.1. Quantitative analyses

When demographic characteristics of providers are broken down by provider diagnosis, some differences emerge across groups (Table 1a). Providers giving co-occurring diagnoses

were fairly evenly split across gender lines (55% male, 45% female). In contrast, the majority of providers giving a diagnosis of depression only were mostly female (79%), while those giving a diagnosis of substance abuse only were mostly males (62%). Providers giving co-occurring diagnoses as well as those giving a diagnosis of substance abuse only tended to be non-Latino white (76% for co-occurring group, 81% for substance abuse only); in contrast, those giving a diagnosis of depression were more ethnically diverse (36% non-Latino white, 52% Latino, 12% African-American). Similarly, providers giving co-occurring diagnoses or substance abuse diagnosis were mostly U.S. born (79% for co-occurring group, 94% for substance abuse only), while slightly more than half of the providers giving a diagnosis of depression were immigrants (55%). A majority of providers giving diagnoses of substance abuse were social workers (94%), while those giving a diagnosis of depression only were represented more evenly across disciplines (38% psychiatrists, 33% psychologists, 24% social workers, 5% nurses). No notable differences can be seen in terms of patient's age and income or provider's years of clinical practice.

Contrasts also emerge when patient characteristics are examined across the four diagnostic groups. Patients diagnosed with substance use only were generally younger (69% in 18–34 years) in comparison to patients with co-occurring diagnoses or a diagnosis of depression only. Among patients receiving co-occurring diagnoses of depression and substance use, there was slight over-representation of males (59% male, 41% female). In contrast, the majority of patients receiving a diagnosis of depression only were female (85%) and those receiving a diagnosis of substance use only were mostly male (75%). A majority of patients with co-occurring diagnoses or a substance abuse only diagnosis were non-Latino white (62% and 75%, respectively) and U.S. born (83% and 88%, respectively), while those with a depression only diagnosis were, for the most part, Latinos (76%) and immigrants (69%; Tables 1a and 1b).

Table 2 presents data on the types of symptoms discussed across the four diagnostic groups. Specific diagnostic criteria for substance abuse and substance dependence were more frequently discussed in intakes of patients diagnosed with substance use disorders (Group 2) and those diagnosed with both substance use disorders and depression (Group 3) in comparison to patients diagnosed with depression only (Group 1) or neither diagnosis (Group 4). Intakes of patients receiving a diagnosis of both depression and substance use (Group 3) or a diagnosis of depression only (Group 1) were more likely to discuss "depression" as a general term than patients receiving a diagnosis of substance use (Group 2). Specific diagnostic criteria for depression were discussed with similar frequencies across all four groups, though both symptoms of depressive and substance use disorders were discussed by patients and providers at very low frequencies.

Results of multinomial logistic regression showed three main findings. First, being female, immigrant, and discussing "depression" as a general term increased the likelihood of receiving a diagnosis of depression; second, discussing symptoms of substance use or alcohol increased the likelihood of receiving a diagnosis of substance use and; third, discussing symptoms of substance use increased the likelihood of receiving dual diagnosis (see Table 3).

3.2. Qualitative analyses

Most providers described assessing substance use disorders in an explicit and structured way, with specific focus on the history of the disorder rather than current symptomatology:

> "I have kind of a routine. I have a pattern that I follow. I usually start with an addiction history and depending on what I learn from that I kind of chart all that." (320 CN)

Another provider discussed using a structured substance use history that allowed for the ability to determine episodes of patient sobriety:

> "Substance is a very specific history that's taken where you ask lots of questions of the patient about when they first started using…and then basically working up a whole history of where she has been up to the present." (330 CN)

Using a structured interview allowed providers to collect information, with attention paid to the patient's entire narrative including psychosocial context and family history:

> "Well, we have new intake forms now, so that we get all the information that we're supposed to get in each individual section such as family history, educational background, work history, legal history, and most especially our context addiction history." (301 CN)

In contrast, providers described using non-verbal cues from the patient's presentation to assess depression:

> "I was taking clues from the patient's reporting, but also clues from the patient's non-verbal, the mood disorder was more like, this guy is depressed, he was not saying 'I'm feeling depressed'… his mood was depressed and his demeanor was depressed, so I decided, 'let's talk a little bit about the depressive symptomatology."' (101 CN)

Providers also found that they often had more access to patient's body language, expressions and gestures in assessing for mood disorders than a verbal report of symptoms:

> "… I mean he kind of slouched more into the chair a little bit, didn't make a lot of eye contact. He did at times, but he just seemed depressed. He had-kind of a flat affect and I was also gathering from what he was saying, something like that there was a sense of guilt and kind of beating himself up. And I was getting some information between the lines and also from his body language…his non-verbal stuff, and from his tone of voice that he was dealing with some kind of depressive symptomatology." (431 CN)

Providers frequently mentioned feeling more confident in assigning a substance use diagnosis than a mood disorder for dually diagnosed patients:

> "I feel most certain about the substance piece of it, which is often times more clear cut, especially in this case, and I feel less certain about the major depression until I have a chance to speak to the other providers, see him in an on-going way, see him with more clean time and look at past admissions." (324 CN)

Another provider elaborated on the difficulty of differentiating between symptoms of depression and the guilt and shame often accompanying addiction:

> "…having to differentiate that between a mental health diagnosis can be tricky and can't easily really be pulled out as two separate entities during the sobriety, he turned to substance abuse, so was that guilt and shame and depressive episode versus an on-going depression?" (324 CN)

4. Discussion

This study provides insight into the ways in which co-occurring depressive and substance use disorders are assessed by providers during an intake session, and how this process is understood by providers. Our quantitative results point to discrepancies in the exchange of clinical information and the ways providers describe their assessment of dual diagnoses. A majority of patients in our sample endorsed screener items for both depressive and substance

use disorders. More often than not, however, specific symptoms of depressive and substance use disorders were not discussed. Although a general assessment of "depression" or "alcohol/drug use" was conducted during many of the intakes, most providers did not conduct detailed follow-up assessments into specific, symptomatic criteria of either disorder, a finding consistent with earlier studies (Alegría et al., 2008). In the context of substance use, the percentage of symptoms assessed is strikingly limited. Specific DSM-IV-TR criteria for substance use disorders were rarely assessed, particularly for non-white patients. This is consistent with evidence of clinician biases in that what symptoms get discussed may vary by the race/ethnicity of the patient (Das et al., 2006). Das and colleagues found, for example, that African Americans patients confront serious obstacles in the recognition and treatment of major depression.

In comparison with providers who gave a diagnosis of depression only, the majority of providers who gave co-occurring diagnoses were non-Latino white and U.S. born. Similarly, patients diagnosed with co-occurring diagnoses tended to be non-Latino white and U.S. born. The finding that provider and patient characteristics also play a role in diagnostic assessments is consistent with work by Sleath et al. (1998). However, less is known about why certain characteristics of the provider influence differential diagnostic dispositions, as in this case. For example, why are non-Latino white clinicians more likely to give a substance use disorder than ethnic/racial minority providers? Future work should evaluate differential reactions or expectations in minority versus non-minority providers that may trigger differential diagnostic assessment.

Results from the multinomial logistic regression show that certain patient demographic indicators are associated with an increased chance of receiving a diagnosis of depression (being female and immigrant or non-U.S. born), but not with a diagnosis of substance use only or a co-occurring diagnosis of depression and substance use. This suggests that some sociodemographic indicators may predispose providers to some diagnoses but not others (depression vs. substance use). Our findings contradict earlier work by Simpson et al. (2007) suggesting lower rates of treatment for African Americans and Hispanics than for Caucasians might be due to lower rates of diagnoses of these conditions. Although there might be less likelihood of treatment for these ethnic/racial minorities, our data suggests that they are more likely to be diagnosed with depression. Also, discussing symptoms of substance use seems to increase the chances of receiving a co-occurring diagnosis; interestingly, discussing symptoms of depression does not appear to have an impact on receiving a co-occurring diagnosis. This may be accounted for in part, by the ways in which providers use both verbal and non-verbal information to arrive at a diagnosis, as shown by the qualitative findings. This is in alignment with what Todd et al. (2004) described as a "grey area," when giving a diagnosis of a co-occurring disorder with clinicians often using idiosyncratic definitions and frameworks to identify them. Studies have shown that diagnostic biases, often based on patient ethnicity or race play a role in the diagnoses ascribed (Havassy et al., 2004). However, other studies have also found differences in provider characteristics in mental health versus substance use clinics which might lead to differential assessment processes.

Our findings suggest that first, discussion of symptom criteria for substance use, depression or co-occurring diagnoses does not reliably predict diagnosis, a finding consistent with earlier studies that show overall lack of rigor in the evaluation of diagnostic criteria during the intake, and inconsistent determinations of co-occurring diagnoses (Alegría et al., 2008; Todd et al., 2004). Given the absence of clearly defined guidelines, providers often use diagnostic criteria in pragmatic ways, perhaps influenced by the institutions in which they work (Hryb et al., 2007). It may be that providers use clinical heuristics and short-cuts, resulting in a diagnosis without full symptomatic assessment (Alegría et al., 2008). It is

important to acknowledge, however, the practical constraints clinicians face during and intake session. Systematic detailed symptom screening for Axis 1 conditions in the context of a one hour interview is not possible for most clinicians, given the competing challenge of developing rapport with patients. It is possible that follow-up assessments were conducted in subsequent visits, though such data is beyond the bounds of the present study.

The qualitative analyses reveal interesting discrepancies that contrast with the quantitative findings. Providers generally described the assessment process of substance use as following a structured format with explicit questions regarding current and past use, whereas indirect, non-verbal and contextual cues were used to assess for the presence of depressive disorders. Though providers felt more confident about a diagnosis of substance use over depression, perceptions of the assessment for either disorder do not align with the way these disorders were evaluated. Overall, symptoms of substance use disorders were no more thoroughly assessed than those of depression.

Providers may be unaware of their diagnostic assessment strategies when ascribing a diagnosis. This finding is consistent with previous research showing that diagnoses are often established by providers without a structured assessment of symptoms (Alegría et al., 2008). They also appear to rely on sources of information other than specific symptom criteria, particularly for depressive disorders. In particular, they may use clinical heuristics (Kahneman and Klein, 2009) rather than strict diagnostic criteria to arrive at diagnoses; as such, they seem to miss some disorders in patients with co-occurring disorders.

Some general clinical recommendations may be made on the basis of these findings. First, providers should become familiarized with tendencies to use clinical heuristics as a means of establishing diagnoses of depressive or substance use disorders and how this may result in clinical bias. Second, more systematic, formalized assessments for both depressive and substance use disorders should be conducted for all patients attending community health clinics. Time is a potential constraint, but checklists with screener items for each disorder could flag the necessity of assessing for more specific criteria. Indeed, while it seems that some providers used more structured means of assessing for substance use (standardized forms distributed by the clinics), these may have included elements around substance use history but not specific symptoms relating to DSM-IV-TR criteria for either depressive or substance use disorders. Finally, if providers feel that they cannot rely on patients' verbal reports of symptoms, then it may be important to use external sources to triangulate the information. Collaboration with family members, in addition to biological markers, may increase providers' confidence in giving a dual diagnosis.

A number of limitations to the findings need to be acknowledged. First, the study did not include a standardized diagnostic interview to assess for psychological disorders in the patients selected to cross-reference the diagnoses ascribed by the clinicians. Second, the qualitative results are based on a sample of 28 patients, which limit the ability to generalize to larger patient populations, and mean that we were unable to take provider discipline into account. Third, nativity and ethnic status were the only socio-cultural variables considered in evaluating diagnostic outcome. Finally, the study assesses for diagnostic information collected only within the first interview, and it is possible that more information was collected in future meetings.

Nonetheless, this study presents important findings regarding the assessment of dually diagnosed patients. Accurate diagnosis is the foundation for the proper treatment of psychiatric disorders. While providers tended to report that they conduct more structured and systematic assessments for substance use disorders than depression, the quantitative results suggest that specific diagnostic criteria for both of these disorders were not

systematically evaluated. Providers may need to more thoroughly assess for specific criteria across both depressive and substance use disorders.

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Table 1a

Patient characteristics across four diagnostic groups.

	Depression, *n* = 58		Substance, *n* = 16		Both, *n* = 29		None, *n* = 26		*p*-value
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	
Age[a]									
18–34 years	19	32.8%	11	68.8%	9	31.0%	11	42.3%	0.330
34–49 years	26	44.8%	2	12.5%	13	44.8%	11	42.3%	
50–65 years	11	19.0%	2	12.5%	6	20.7%	3	11.5%	
>65 years	2	3.4%	0	0.0%	1	3.4%	1	3.8%	
Gender									
1. Male	9	15.5%	12	75.0%	17	58.6%	14	53.8%	<0.001
2. Female	49	84.5%	4	25.0%	12	41.4%	12	46.2%	
Race									
1. White	10	17.2%	12	75.0%	18	62.1%	10	38.5%	<0.001
2. Latino	44	75.9%	2	12.5%	7	24.1%	11	42.3%	
4. Black	4	6.9%	2	12.5%	4	13.8%	5	19.2%	
Nativity[a]									
0. Immigrant	40	69.0%	1	6.3%	5	17.2%	10	38.5%	<0.001
1. US born	18	31.0%	14	87.5%	24	82.8%	16	61.5%	
Education[b]									
1. ≤11 years	24	41.4%	5	31.3%	8	27.6%	7	26.9%	0.153
2. =12 years	10	17.2%	7	43.8%	9	31.0%	4	15.4%	
3. 13–15 years	15	25.9%	2	12.5%	8	27.6%	11	42.3%	
4. ≥16 years	9	15.5%	0	0.0%	4	13.8%	4	15.4%	
Employment status[a]									
1. Employment	25	43.1%	9	56.3%	9	31.0%	15	57.7%	0.007
2. Unemployment	9	15.5%	5	31.3%	13	44.8%	3	11.5%	
3. Other/out of labor force	24	41.4%	1	6.3%	7	24.1%	8	30.8%	
Household income[c]									
1. <15k	38	65.5%	7	43.8%	20	69.0%	16	61.5%	0.106

	Depression, *n* = 58		Substance, *n* = 16		Both, *n* = 29		None, *n* = 26		*p*-value
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	
2. 15k–35k	9	15.5%	7	43.8%	3	10.3%	6	23.1%	
3. 35k–75k	10	17.2%	1	6.3%	3	10.3%	1	3.8%	
4. ≥75k	1	1.7%	0	0.0%	2	6.9%	2	7.7%	
Insurance[a]									
No insurance	2	3.4%	1	6.3%	1	3.4%	2	7.7%	0.188
Private	8	13.8%	0	0.0%	3	10.3%	6	23.1%	
Medicare	10	17.2%	1	6.3%	4	13.8%	3	11.5%	
Medicaid	32	55.2%	11	68.8%	11	37.9%	10	38.5%	
Other	6	10.3%	2	12.5%	10	34.5%	5	19.2%	

Table 1b Provider characteristics across four diagnostic groups.

	Depression, *n* = 58		Substance, *n* = 16		Both, *n* = 29		None, *n* = 26		*p*-value
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	
Age									
18–34 years	21	36.2%	5	31.3%	7	24.1%	9	34.6%	0.955
34–49 years	30	51.7%	7	43.8%	16	55.2%	13	50.0%	
50–65 years	5	8.6%	3	18.8%	5	17.2%	3	11.5%	
>65 years	2	3.4%	1	6.3%	1	3.4%	1	3.8%	
Gender									
1. Male	12	20.7%	10	62.5%	16	55.2%	12	46.2%	0.001
2. Female	46	79.3%	6	37.5%	13	44.8%	14	53.8%	
Race									
1. White	21	36.2%	13	81.3%	22	75.9%	15	57.7%	<0.001
2. Latino	30	51.7%	1	6.3%	5	17.2%	6	23.1%	
3. Asian	0	0.0%	0	0.0%	2	6.9%	2	7.7%	
4. Black	7	12.1%	2	12.5%	0	0.0%	3	11.5%	
Nativity									
0. Immigrant	32	55.2%	1	6.3%	6	20.7%	7	26.9%	<0.001
1. US born	26	44.8%	15	93.8%	23	79.3%	19	73.1%	

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Table 1b Provider characteristics across four diagnostic groups.

	Depression, *n* = 58		Substance, *n* = 16		Both, *n* = 29		None, *n* = 26		*p*-value
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	
Household income[a]									
1. <15k	43	74.1%	8	50.0%	21	72.4%	17	65.4%	0.078
2. 15k–35k	7	12.1%	7	43.8%	3	10.3%	6	23.1%	
3. 35k–75k	7	12.1%	0	0.0%	3	10.3%	1	3.8%	
4. ≥75k	0	0.0%	0	0.0%	1	3.4%	1	3.8%	
Length of experience									
0–5 years	21	36.2%	5	31.3%	6	20.7%	11	42.3%	0.348
6–10 years	10	17.2%	5	31.3%	4	13.8%	5	19.2%	
11–15 years	11	19.0%	4	25.0%	11	37.9%	3	11.5%	
16 years or more	16	27.6%	2	12.5%	8	27.6%	7	26.9%	
Discipline									
Psychiatrist	22	37.9%	0	0.0%	9	31.0%	7	26.9%	<0.001
Psychologist	19	32.8%	1	6.3%	1	3.4%	5	19.2%	
Social worker	14	24.1%	15	93.8%	15	51.7%	12	46.2%	
Nurse	3	5.2%	0	0.0%	4	13.8%	1	3.8%	
Other	0	0.0%	0	0.0%	0	0.0%	1	3.8%	

[a] Data missing on 1 client.

[b] Date missing on 2 clients.

[c] Date missing on 3 clients.

[a] Data missing on 4 clients.

Table 2

Information discussed during the mental health intake across the four diagnostic groups: Depression Only, Substance Only, Both Depression and Substance Use and none of the two Disorders.

	Depression, *n* = 58		Substance, *n* = 16		Both, *n* = 29		None, *n* = 26		*p*-value
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	
General screener items									
Any mention of “depression”	47	81.0%	6	37.5%	20	69.0%	8	30.8%	0.001
Any mention of “drug” use	40	69.0%	14	87.5%	23	79.3%	9	34.6%	0.070
Any mention of “alcohol” use; drinking	44	75.9%	11	68.8%	25	86.2%	12	46.2%	0.395
Symptoms of depression									
Depressed mood	20	34.5%	8	50.0%	18	62.1%	10	38.5%	0.076
Time frame for depressed mood	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0.000
2 weeks	7	12.1%	1	6.3%	1	3.4%	1	3.8%	0.521
2 years	3	5.2%	0	0.0%	1	3.4%	1	3.8%	0.807
Diminished interest or pleasure in activities (not care about things, not enjoy)	36	62.1%	6	37.5%	12	41.4%	8	30.8%	0.145
Weight change	2	3.4%	2	12.5%	7	24.1%	1	3.8%	0.020
Sleep disturbance	30	51.7%	10	62.5%	15	51.7%	13	50.0%	0.416
Psychomotor disturbance	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0.000
Fatigue or loss of energy	31	53.4%	6	37.5%	11	37.9%	9	34.6%	0.463
Feelings of worthlessness, low self esteem	17	29.3%	5	31.3%	6	20.7%	3	11.5%	0.613
Excessive guilt	19	32.8%	4	25.0%	6	20.7%	3	11.5%	0.460
Impaired concentration	27	46.6%	5	31.3%	14	48.3%	5	19.2%	0.360
Indecisiveness	0	0.0%	2	12.5%	1	3.4%	0	0.0%	0.034
Suicidal ideation	39	67.2%	8	50.0%	21	72.4%	10	38.5%	0.379
Previous suicide attempt	25	43.1%	7	43.8%	15	51.7%	3	11.5%	0.115
Hopelessness	16	27.6%	4	25.0%	11	37.9%	4	15.4%	0.635
Marked dysfunction as a result of depression	2	3.4%	0	0.0%	1	3.4%	0	0.0%	0.752
Symptoms of alcohol use									
Recurrent alcohol use									
Wine	6	10.3%	0	0.0%	1	3.4%	2	7.7%	0.388
Beer	7	12.1%	4	25.0%	9	31.0%	3	11.5%	0.174

	Depression, *n* = 58		Substance, *n* = 16		Both, *n* = 29		None, *n* = 26		*p*-value
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	
Liquor	3	5.2%	2	12.5%	5	17.2%	2	7.7%	0.341
Recurrent alcohol use related legal problems	0	0.0%	3	18.8%	4	13.8%	1	3.8%	0.016
Continued alcohol use despite having persistent or recurrent social or interpersonal problems caused by the effects of the alcohol use.	0	0.0%	1	6.3%	3	10.3%	0	0.0%	0.057
Tolerance as defined by a need for markedly increased amounts of alcohol to achieve intoxication or desired effect, or markedly diminished effect with continued use of the same amount of the substance	1	1.7%	1	6.3%	2	6.9%	0	0.0%	0.445
Withdrawal manifested by either characteristic withdrawal syndrome or consuming more alcohol to relieve or avoid withdrawal symptoms	0	0.0%	4	25.0%	5	17.2%	0	0.0%	0.001
Experiences that may appear as a result of drinking OR as a result of trying to stop or cut down (e.g., headaches, insomnia, tremor, sweating, etc.)									
Sweating, heart palpitation	0	0.0%	2	12.5%	1	3.4%	0	0.0%	0.034
Increased hand tremor, shaking	0	0.0%	3	18.8%	4	13.8%	0	0.0%	0.005
Insomnia	0	0.0%	1	6.3%	1	3.4%	0	0.0%	0.269
Nausea or vomiting	1	1.7%	1	6.3%	2	6.9%	1	3.8%	0.641
Transient visual tactile or auditory hallucinations or illusions	0	0.0%	0	0.0%	2	6.9%	0	0.0%	0.092
Psychomotor agitation, restlessness	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Feel anxious or nervous	0	0.0%	2	12.5%	1	3.4%	0	0.0%	0.034
Seizures	0	0.0%	0	0.0%	3	10.3%	0	0.0%	0.021
Bad headaches	0	0.0%	0	0.0%	1	3.4%	0	0.0%	0.362
Feel weak or tired	0	0.0%	1	6.3%	1	3.4%	0	0.0%	0.269
Feel depressed	0	0.0%	0	0.0%	1	3.4%	0	0.0%	0.362
Runny eyes or nose	0	0.0%	0	0.0%	1	3.4%	0	0.0%	0.362
Gain weight	0	0.0%	0	0.0%	1	3.4%	0	0.0%	0.362
Muscle aches, cramps	0	0.0%	0	0.0%	2	6.9%	0	0.0%	0.092
Have fever	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Move/talk more slowly	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Unpleasant dreams that seem real	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Blackouts	1	1.7%	3	18.8%	3	10.3%	1	3.8%	0.080
Alcohol is taken in large amounts or over a longer period than was intended.	1	1.7%	1	6.3%	5	17.2%	0	0.0%	0.020
Inability to cut down or control alcohol intake	0	0.0%	4	25.0%	7	24.1%	1	3.8%	<0.001
A great deal of time is spent on activities necessary to obtain the alcohol	0	0.0%	0	0.0%	1	3.4%	0	0.0%	0.362
Important social, occupational, or recreational activities are given up because of the alcohol	0	0.0%	1	6.3%	1	3.4%	0	0.0%	0.269

	Depression, *n* = 58		Substance, *n* = 16		Both, *n* = 29		None, *n* = 26		*p*-value
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	
Continued use of alcohol despite knowledge of having physical or psychological problem resulting from alcohol use	0	0.0%	3	18.8%	3	10.3%	0	0.0%	0.007
Symptoms of substance use									
Recurrent substance use (specifying each drug)									
Sedatives	0	0.0%	1	6.3%	0	0.0%	0	0.0%	0.085
Tranquilizers	0	0.0%	3	18.8%	1	3.4%	0	0.0%	0.002
Painkillers	1	1.7%	4	25.0%	7	24.1%	0	0.0%	<0.001
Stimulants	0	0.0%	0	0.0%	3	10.3%	0	0.0%	0.021
Marijuana	10	17.2%	5	31.3%	11	37.9%	4	15.4%	0.181
Cocaine or crack	7	12.1%	6	37.5%	13	44.8%	3	11.5%	0.004
Hallucinogens	2	3.4%	1	6.3%	2	6.9%	1	3.8%	0.901
Inhalants	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Heroin	4	6.9%	9	56.3%	5	17.2%	2	7.7%	<0.001
Pills	2	3.4%	4	25.0%	6	20.7%	1	3.8%	0.018
Recurrent substance use resulting in a failure to fulfill major role obligations at work, school or home (e.g., missing school, work)	1	1.7%	5	31.3%	8	27.6%	0	0.0%	<0.001
Recurrent substance use in situations in which it is physically hazardous	0	0.0%	3	18.8%	2	6.9%	0	0.0%	0.006
Recurrent substance use related legal problems	1	1.7%	7	43.8%	4	13.8%	0	0.0%	<0.001
Continued substance use despite having persistent or recurrent social or interpersonal problems caused by the effects of the substance use	0	0.0%	8	50.0%	7	24.1%	0	0.0%	<0.001
Tolerance as defined by a need for markedly increased amounts of the substance to achieve intoxication or desired effect, or markedly diminished effect with continued use of the same amount of the substance	1	1.7%	5	31.3%	7	24.1%	1	3.8%	<0.001
Withdrawal manifested by either characteristic withdrawal syndrome or consuming more substance to relieve or avoid withdrawal symptoms.	0	0.0%	11	68.8%	8	27.6%	1	3.8%	<0.001
Experiences that may appear as a result of substance use OR as a result of trying to stop or cut down (e.g., headaches, insomnia, tremor, sweating, etc.)									
Sweating, heart palpitation	0	0.0%	4	25.0%	1	3.4%	1	3.8%	<0.001
Increased hand tremor, shaking	0	0.0%	2	12.5%	1	3.4%	0	0.0%	0.034
Insomnia	1	1.7%	3	18.8%	0	0.0%	0	0.0%	0.003
Nausea or vomiting	0	0.0%	0	0.0%	1	3.4%	0	0.0%	0.362
Transient visual tactile or auditory hallucinations or illusions	0	0.0%	0	0.0%	2	6.9%	0	0.0%	0.092
Psychomotor agitation, restlessness	1	1.7%	3	18.8%	1	3.4%	0	0.0%	0.016
Feel anxious or nervous	1	1.7%	4	25.0%	4	13.8%	1	3.8%	0.015

	Depression, *n* = 58		Substance, *n* = 16		Both, *n* = 29		None, *n* = 26		*p*-value
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	
Seizures	0	0.0%	1	6.3%	0	0.0%	0	0.0%	0.085
Bad headaches	0	0.0%	1	6.3%	0	0.0%	1	3.8%	0.156
Feel weak or tired	0	0.0%	1	6.3%	0	0.0%	1	3.8%	0.156
Feel depressed	1	1.7%	0	0.0%	0	0.0%	0	0.0%	0.778
Runny eyes or nose	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Gain weight	0	0.0%	0	0.0%	1	3.4%	0	0.0%	0.362
Muscle aches, cramps	1	1.7%	1	6.3%	1	3.4%	0	0.0%	0.649
Have fever	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Move/talk more slowly	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Unpleasant dreams that seem real	0	0.0%	0	0.0%	0	0.0%	1	3.8%	0.123
Blackouts	0	0.0%	4	25.0%	3	10.3%	0	0.0%	<0.001
Substance is taken in large amounts or over a longer period than was intended.	0	0.0%	6	37.5%	4	13.8%	0	0.0%	<0.001
Inability to cut down or control substance intake	1	1.7%	9	56.3%	9	31.0%	0	0.0%	<0.001
A great deal of time is spent on activities necessary to obtain the substance	0	0.0%	2	12.5%	2	6.9%	0	0.0%	0.046
Important social, occupational, or recreational activities are given up because of the substance	0	0.0%	5	31.3%	2	6.9%	0	0.0%	<0.001
Continued use of substance despite knowledge of having physical or psychological problem resulting from substance use	1	1.7%	9	56.3%	5	17.2%	0	0.0%	<0.001

Table 3

Multinomial logistic regressions.

DISORDERCAT	Co-efficient	*p* > *z*	[95% conf. interval]
Depression only			
Female (male as reference)	1.8	0.017	0.3–3.2
Patient race (non-white as reference)	0.7	0.415	−1.0–2.5
Patient nativity (immigrant as reference)	−1.7	0.036	−3.3 to −0.1
Provider race (non-white as reference)	0.0	0.969	−1.4 to 1.5
Any mention of depression	1.8	0.006	0.5–3.1
Symptoms of alcohol use	−0.8	0.523	−3.2 to 1.6
Symptoms of substance use	0.5	0.247	−0.3 to 1.3
Constant	−1.0	0.318	−2.9 to 0.9
Substance only			
Female (male as reference)	−1.2	0.382	−3.8 to 1.5
Patient race (non-white as reference)	2.3	0.111	−0.5 to 5.0
Patient nativity (Immigrant as reference)	1.0	0.583	−2.7 to 4.8
Provider race (non-white as reference)	−2.7	0.083	−5.8 to 0.4
Any mention of depression	−1.8	0.178	−4.4 to 0.8
Symptoms of alcohol use	2.4	0.004	0.8–4.0
Symptoms of substance use	1.5	0.001	0.6–2.4
Constant	−4.0	0.014	−7.3 to −0.8
Both			
Female (male as reference)	0.3	0.755	−1.4 to 1.9
Patient race (non-white as reference)	1.0	0.287	−0.9 to 3.0
Patient nativity (Immigrant as reference)	−0.3	0.806	−2.2 to 1.7
Provider race (non-white as reference)	0.0	0.975	−1.8 to 1.8
Any mention of depression	0.9	0.261	−0.7 to 2.4
Symptoms of alcohol use	1.3	0.066	−0.1 to 2.7
Symptoms of substance use	1.1	0.009	0.3–2.0
Constant	−2.3	0.041	−4.6 to −0.1

None as reference group.