Comparisons of Patients With Comorbid Psychiatric and Substance Use Disorders: Implications for Treatment and Service Delivery

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Objective: Individuals with co-occurring psychiatric and substance use disorders are treated in mental health and substance abuse treatment systems, yet research on comorbid disorders rarely includes comparisons across systems. Knowledge about patients who share the label "comorbid" but are found in different treatment sectors should illuminate service issues and inform policy development. Differences across systems should provide support for separate treatments; similarities should indicate the value of the integration of services. The hypothesis that there are meaningful clinical differences between patients with comorbid mental health disorders and patients in drug treatment was tested.

Method: As part of a larger longitudinal study, 106 patients with comorbid illness from mental health (N=106) and drug treatment (N=120) settings were compared regarding diagnosis, drug use, and problem severity. Data were obtained by using the Diagnostic Interview Schedule for DSM-IV and the Addiction Severity Index.

Results: Few differences between groups emerged. There were no diagnostic differences except that schizophrenia spectrum disorders were more common among mental health (43%) than drug treatment (31%) patients. Although more drug abuse than mental health subjects reported drug use in the 30 days before treatment entry, the average number of days of drug use in this period was not different.

Conclusions: These findings document the high prevalence of severe mental illness in drug treatment clients and of serious drug problems in mental health patients. Only minimal differences emerged between the groups and none that indicated need for specialized treatments in separate systems of care.

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Epidemiological studies completed in the past two decades (Epidemiological Catchment Area studies [1] and the National Comorbidity Survey [2]) have documented high prevalence rates of serious mental disorders co-occurring with substance use disorders. Smaller clinical and treatment research studies have indicated that at least one-half of the patients in psychiatric and substance use treatment have been diagnosed with comorbid psychiatric and substance use disorders (3–7). Furthermore, this research has systematically demonstrated the clinical complexity of comorbidity and the challenges of trying to provide effective treatment. Patients with comorbid major mental and substance use disorders have been consistently shown to have more negative outcomes than their counterparts without comorbid disorders. These include disadvantages in terms of treatment and psychosocial outcomes (8, 9), health status (10), and in access to treatment tailored to their particular needs (11).

Although findings of the negative impact of comorbidity on treatment outcomes are compelling, much of the treatment research literature is from a restricted perspective. Most of these studies use samples drawn exclusively from either mental health treatment settings or substance abuse treatment settings. It is clear, however, that patients with co-occurring disorders are found in both systems. Empirical evidence is lacking about the similarities and differences of patients with comorbid disorders in the mental health and substance abuse treatment systems. It is frequently assumed that the substance use problems of psychiatric patients are less severe than those of patients in substance abuse treatment and, conversely, that the mental disorders of patients receiving substance abuse treatment are less severe than those of psychiatric patients.

We found only two small studies that compared comorbidity among mental health and drug treatment patients (12, 13). Both were based on relatively small samples. A study by Hien and colleagues (12) included 57 mental health treatment and 73 drug treatment patients in outpatient settings. The diagnoses were from the researcher-administered Structured Clinical Interview for DSM-III-R. Mental health patients compared to substance abuse patients were significantly less likely to be diagnosed with major depressive disorders (19% versus 42%). All of the schizophrenia diagnoses occurred among the mental

health patients (comprising 32% of this group); no drug treatment patients received this diagnosis. A study by Primm and colleagues (13) included 64 comorbid mental health treatment patients and 65 patients with comorbid disorders in drug treatment in outpatient settings. Diagnoses were obtained from the patients' charts. As in the study by Hien et al. (12), no patients in drug treatment had schizophrenia diagnoses. In addition, no mental health patients had diagnoses of anxiety or adjustment disorders. Neither study presented the prevalence of substance use disorders. The results of these studies may more accurately reflect methodological factors (e.g., recruiting from drug treatment programs that in general would not have enrolled schizophrenia patients, as in the study by Hien et al.) or design limitations (e.g., obtaining diagnoses solely from chart reviews, as in the study by Primm et al.) than actual differences in prevalence.

Knowledge about comorbidity that overcomes the narrow perspective of including only one treatment system remains limited. Better knowledge about patients who share the label "comorbid" but are found in different treatment sectors should illuminate treatment and service issues and inform policy. If psychiatric patients with comorbid substance abuse are meaningfully different from substance abusers with comorbid psychiatric illness, separation of the treatment of patients into two systems of care may be essential. However, if these patients are clinically similar, the division of treatment into two systems may be seen as an artificial constraint on the development of relevant treatment and policy.

The study reported here attempted to provide a comprehensive comparison of comorbid patients in the mental health and drug treatment systems. It compares comorbid mental health (N=106) to substance abuse treatment patients (N=120) on psychiatric and substance use diagnoses, indicators of the severity of psychiatric disorders and substance use, and the history of psychiatric and substance use problems and treatment.

These data are from a larger longitudinal study of outcomes of patients in drug abuse and mental health treatment over time. In addition to subject interviews over an 18-month period, service use data were collected for 24 months before and after study entry from four county public sector databases: mental health, drug treatment, jail medical and psychiatric services, and public health medical services.

The study described in this article uses data from study intake interviews at baseline only, which were administered at study entry and collected from 1998 to 2000. Future reports will include follow-up and treatment use data.

Method

Recruitment Sites

Patients were concurrently recruited from four treatment settings in the public mental health system and from three treatment settings in the substance abuse treatment system in San Francisco. The mental health treatment settings were residential units for seriously mentally ill patients diverted from psychiatric hospitalization. The substance abuse treatment settings were residential detoxification programs. The seven sites were selected because of their similarities. Each was an acute, crisis, short-term residential nonmedical facility. Their common goal was to provide short-term care in order to stabilize clients and prepare them for longer-term treatment. Referral sources were mental health or drug treatment agencies, primarily in San Francisco, including the Psychiatric Emergency Department at San Francisco General Hospital.

Both public mental health system settings and substance abuse treatment system settings provided voluntary treatment. Although treatment entry may not have been initially entirely voluntary for a portion of the clients (e.g., those brought by police or as a condition of release from inpatient commitment), all clients in these settings were free to terminate treatment and leave the setting.

Recruitment and Interviewing Procedures

Study recruiters rotated among the seven settings on a schedule that varied weekly, allowing for recruiting to occur on different days of the week at each setting. On recruitment days, recruiters attempted to enlist all patients who began their stay within the previous 24 hours. Patients who were not approachable in this initial time period (usually because of intoxication or withdrawal effects) were approached approximately 48–72 hours later. Patients were English- or Spanish-speaking adults between 18 and 50 years of age and were not HIV positive. Minors, older adults, and those with HIV were not enrolled in the study because they had access to specialized services.

After a complete description of the study to the patients, written informed consent was obtained. Patients were interviewed in a private location in the treatment setting. They received $35 for completing the baseline interview. The same interviewers conducted interviews in both public mental health system and substance abuse treatment settings. The interviewers were blind to specific study hypotheses, and because comorbidity status was determined after all interviews were completed, they were not aware of which patients had comorbid illnesses and which did not.

Measures

The measures administered relevant to this work were contained in an intake assessment battery. All of these measures were administered by research interviewers.

DSM-IV Diagnoses and Comorbidity

Diagnoses were determined with the National Institute of Mental Health Diagnostic Interview Schedule (DIS) for DSM-IV (14). We used this standardized research diagnostic instrument for several reasons, not the least of which was that an extensive diagnostic determination was not available at the public mental health settings or the substance abuse treatment sites. We used a research assessment rather than a clinician assessment to determine diagnoses for several reasons. Most important, neither setting conducted exhaustive diagnostic assessments. Patient charts in the public mental health system generally include a primary psychiatric disorder; co-occurring psychiatric or substance use disorders are not systematically included. Substance abuse treatment sites only documented substance use disorders.

We collapsed the major mental diagnoses into four categories: schizophrenia spectrum disorders (schizophrenia, schizoaffective, and schizophreniform), bipolar disorder (bipolar I and II), depressive disorders (major depression and dysthymia), and anxiety disorders (specific phobia, social phobia, panic disorder, gen-

eralized anxiety disorder, obsessive-compulsive disorder, and posttraumatic stress disorder). We examined drug use disorders for the most commonly used substances: alcohol, amphetamines, cocaine, opiates, and marijuana. Abuse and dependence disorders were collapsed into a single category. We defined comorbidity as having at least one current 12-month major mental disorder and one current substance use disorder.

Alcohol and Drug Use

Sections of the fifth edition of the Addiction Severity Index (15) were administered to obtain self-reported days of use of alcohol and commonly abused drugs in the 30 days before treatment entry. The Addiction Severity Index is widely used nationally and internationally for addicted persons entering treatment. The literature (16) indicates that the Addiction Severity Index has acceptable reliability when administered to seriously mentally ill and homeless populations.

Psychiatric Severity Indicators

We included several severity indicators from different sources. From the DIS, we included the number of psychiatric diagnoses and whether a suicide attempt had ever been made. The level of current psychological distress was measured with the Center for Epidemiologic Studies Depression Scale (CES-D Scale) (17). In addition, we asked the patients whether they had ever been hospitalized for psychiatric problems and, if so, their age at first psychiatric hospitalization.

Drug Use Severity Indicators

From the DIS, we included the number of substance abuse diagnoses. Severity indicators from the Addiction Severity Index included the age at which the patient first tried alcohol and drugs, the age at first regular use of substances, the age of first substance abuse treatment, the number of times in substance abuse treatment, and the amount of money spent on alcohol and drugs in the 30 days before treatment entry.

Hypotheses Testing and Analytic Procedures

We hypothesized that there would be clinically significant differences between the two groups of comorbid patients in terms of the prevalence and distribution of major mental and substance use disorders, the severity of mental disorders, and the severity of substance use. We used chi-square tests and logistic regression for dichotomous data and t tests, analyses of variance (ANOVAs), and analyses of covariance (ANCOVAs) for continuous data that were normally distributed. All tests were two-tailed.

All analyses took the ethnicity of the patients into account because of the difference in ethnic distributions across treatment settings in the overall sample. The patients recruited from public mental health system settings were 52% white, 18% black, 13% Latino, and 17% other ethnicities, whereas the patients recruited from the substance abuse treatment sites were 36% white, 46% black, 9% Latino, and 9% other ethnicities (χ^2=35.38, df=3, p<0.001). In ANOVAs and ANCOVAs, ethnicity was included as a factor, and the data were examined for interaction effects. In logistic regressions, ethnicity was entered as a control variable in the model.

We used days of community living as a covariate in ANCOVAs to examine days of drug use in the past 30 days. This covariate was included to reflect the varying opportunity subjects had to purchase or use drugs as a function of where they were living, i.e., in a controlled or restricted environment (e.g., a jail or a hospital) or in an uncontrolled environment (e.g., a private residence or on the street).

Results

Sample

A total of 1,484 patients were nominally eligible and were approached to participate in the study. Of this group, 537 (36%) were found to be ineligible, 377 (25%) refused to participate, and 570 (38%) provided informed consent. Of those providing informed consent, 476 of 570 patients (84%) completed the intake assessment battery and 420 provided useable DIS diagnostic data. These 420 patients represented the core sample for this study.

The patients who did not provide usable data (N=54) consisted of 21 patients who had no diagnoses assigned because of incomplete DIS data and 33 patients whose data were deemed unreliable because they did not endorse symptoms that were consistent with their treatment setting (e.g., patients from substance abuse treatment settings who did not endorse substance use). The excluded group of 54 patients did not differ from the included group in terms of age, gender, ethnicity, or education. However, more patients in public mental health settings (18%) were excluded than patients in substance abuse treatment settings (4%) (χ^2=28.19, df=2, p<0.0001). These differences may affect comparisons between groups.

Comorbidity

Of the 420 patients, 226 (54%) met our criteria for comorbidity: 106 from the public mental health system and 120 from the substance abuse treatment system. A significantly larger percentage of the patients from the public mental health system met the criteria for comorbidity than did the patients from the substance abuse treatment settings (60% versus 49%) (χ^2=5.02, df=1, p<0.03). These 226 comorbid patients were used for the remainder of the analyses.

Demographic Characteristics

The demographic characteristics of the patients from the public mental health system and substance abuse treatment system settings are shown in Table 1. As with the larger sample, there were more blacks in the substance abuse treatment group than the public mental health system group. The patients in substance abuse treatment system settings were more likely to be homeless before treatment entry than the public mental health system sample. There were no differences between the groups in terms of gender, age, or years of education.

Prevalence of Major Mental Disorders

We predicted that the patients in substance abuse treatment settings would be less likely than the patients in the public mental health settings to have what are generally considered the most severe psychiatric diagnoses: schizophrenia spectrum and bipolar disorders. Table 2 shows the prevalence of disorders for the comorbid sample by group. The odds ratios comparing the patients in substance abuse treatment settings to those in public mental health set-

TABLE 1. Demographic Characteristics of Patients With Comorbid Psychiatric and Substance Use Disorders, by Treatment Setting

Characteristic	Public Mental Health System Settings (N=106)		Substance Abuse Treatment Settings (N=120)		Analysis		
	N	%	N	%	χ^2	df	p
Women	47	44	47	39	0.6	1	0.43
Ethnicity					10.2	3	<0.02
White	59	56	46	38			
Black	24	23	50	42			
Latino	8	8	10	8			
Other	15	14	14	12			
Homeless	34	32	66	55	12.0	1	0.001
	Mean	SD	Mean	SD	t	df	p
Age (years)	35.7	7.9	37.1	7.3	1.4	224	0.16
Education (years)	12.4	2.5	12.4	2.3	0.1	223	0.95

TABLE 2. Prevalence of Major Mental and Substance Use Disorders in Patients With Comorbid Disorders, by Treatment Setting

Disorder[a]	Total (N=226)		Public Mental Health System Settings (N=106)		Substance Abuse Treatment Settings (N=120)		Odds Ratio[b]	95% CI
	N	%	N	%	N	%		
Major mental disorders								
Schizophrenia spectrum	83	37	46	43	37	31	0.57	0.32–0.99
Bipolar	57	25	33	31	24	20	0.57	0.31–1.06
Depressive	83	37	38	36	45	37	1.02	0.58–1.78
Anxiety	133	59	60	57	72	61	1.20	0.69–2.08
Substance use disorders								
Alcohol	143	63	66	62	77	64	1.06	0.61–1.84
Amphetamines	46	20	28	26	18	15	0.60	0.30–1.19
Cocaine	143	63	59	56	84	70	1.53	0.86–2.71
Marijuana	50	22	28	26	22	18	0.66	0.35–1.27
Opiates	55	24	27	25	28	23	1.11	0.59–2.09

[a] Diagnostic categories are not mutually exclusive.
[b] Adjusted for ethnicity.

tings, determined by logistic regressions adjusted for ethnicity, are shown in the last column. As can be seen, the hypothesis was partially supported. The patients in substance abuse treatment were less likely to have schizophrenia spectrum disorders. However, it should be noted that nearly one-third of the sample in the substance abuse treatment settings met the criteria for this diagnosis. There was no difference in the prevalence of bipolar disorders.

Prevalence of Substance Use Disorders

We predicted that the patients in substance abuse treatment settings would be more likely than the patients in the public mental health system to have what are generally considered the most serious drug use disorders: cocaine and opiate abuse or dependence. This hypothesis was not supported. As shown in Table 2, there was no significant difference between groups on any of the five substance use diagnostic categories.

History and Severity of Problems

Because diagnoses are imperfect indicators of severity, in addition to examining the prevalence of disorders, we examined variables that might indicate the extent to which patients were troubled by psychiatric or drug problems. We expected that these variables would amplify the understanding of diagnostic differences and similarities. We hypothesized that there would be differences between groups related to the severity of psychiatric and substance use problems, that patients in the public mental health system would have more severe psychiatric problems, starting at an earlier age, and that patients in the substance abuse treatment system would have more severe drug problems, starting at an earlier age.

As shown in Table 3, for the variables of age of first psychiatric hospitalization, the number of diagnoses, and scores on the CES-D Scale, there were no differences between groups. The patients in substance abuse treatment were less likely to have had a psychiatric hospitalization and to have made a suicide attempt. Thus, the hypothesis that the patients in public mental health settings would rate higher on indicators of psychiatric severity was partially supported.

We first compared the percentage of patients in each group who reported substance use in the 30 days before treatment entry and, among those who used substances, the average days of use in that 30-day period. Table 4 shows the percentages in each group reporting use of alcohol and drugs and the results of logistic regressions comparing the two groups, adjusted for ethnicity. These

TABLE 3. Severity of Illness of Patients With Comorbid Psychiatric and Substance Use Disorders, by Treatment Setting

Characteristic	Public Mental Health System Settings (N=106)		Substance Abuse Treatment Settings (N=120)		Analysis		
	Mean	SD	Mean	SD	F	df	p
Severity of psychiatric problem							
Age at first psychiatric hospitalization (years)	25.1	1.2	26.1	1.3	0.26	1, 168	0.62
Number of psychiatric diagnoses	2.0	0.2	1.9	0.2	0.09	1, 225	0.77
Score on the CES-D Scale	34.4	1.5	38.1	1.4	3.38	1, 225	<0.07
	N	%	N	%	Odds Ratio[a]		95% CI
Ever hospitalized for psychiatric problems	95	90	68	57	0.14		0.07–0.30
Ever attempted suicide	83	81	64	54	0.27		0.14–0.50
	Mean	SD	Mean	SD	F	df	p
Severity of substance use problem							
Age at first substance use (years)	14.3	0.7	15.1	0.6	0.81	1, 221	0.37
Age at first regular substance use (years)	16.9	0.7	17.8	0.7	0.72	1, 210	0.40
Age at first treatment for substance use problem (years)	25.1	1.1	26.1	0.9	0.56	1, 191	0.46
Number of times in substance abuse treatments	8.1	2.9	8.1	2.6	0.00	1, 222	0.99
Number of substance use diagnoses	2.2	1.4	2.1	1.1	0.40	1, 225	0.53
	Mean[b]	Median	Mean[b]	Median	F	df	p
Amount spent on alcohol in past 30 days (dollars)	1.5	30.0	1.7	50.0	1.46	1, 141	0.23
Amount spent on drugs in past 30 days (dollars)	1.9	200.0	2.3	200.0	6.64	1, 145	<0.02

[a] Adjusted for ethnicity.
[b] Log-transformed and adjusted for days of community living.

TABLE 4. Prevalence of Substance Use 30 Days Before Treatment Entry of Patients With Comorbid Psychiatric and Substance Use Disorders, by Treatment Setting

Substance or Use Pattern	Patients Reporting Use: Public Mental Health System Settings N	%	Substance Abuse Treatment Settings N	%	Odds Ratio[a]	95% CI
Alcohol	58	55	104	87	5.15	2.64–10.0
Drinking to intoxication	48	45	89	75	3.64	2.03–6.51
Amphetamines	10	10	19	16	2.24	0.97–5.21
Cocaine	44	42	90	76	4.08	2.26–7.36
Marijuana	40	38	53	44	1.41	0.81–2.43
Opiates	28	26	50	42	2.41	1.34–4.38
Multiple drugs	57	54	98	82	3.85	2.10–7.15

[a] Adjusted for ethnicity.

results show that more patients in substance abuse treatment settings than public mental health system settings reported alcohol use, drinking to intoxication, cocaine use, opiate use, and use of multiple drugs. There were no group differences regarding amphetamine and marijuana use. For those who reported drug use, there were no differences on average days of use. We found that there were high levels of use in the combined comorbid group (not included in the table): alcohol, 13.7 days; drinking to intoxication, 13.0 days; amphetamines, 8.0 days; cocaine, 10.9 days; marijuana, 6.8 days; opiates, 11.7 days; and multiple drugs, 11.9 days.

The additional variables reflecting the severity of substance use problems are shown in the lower half of Table 3. For analyses regarding the amount of money spent on alcohol and drugs, because of a handful of patients who had extremely high expenditures relative to the rest of the sample, log-transformed dollars were used as the outcome variable. The only difference on these severity variables was that patients in substance abuse treatment settings spent more for drugs than the patients in the public mental health system in the 30 days before treatment entry. Overall, the hypothesis that patients in substance abuse treatment would rate higher on indicators of drug use severity was partially supported.

Discussion

In this inquiry that attempted to investigate comorbidity as presented in two systems of care, we hypothesized that the patients with comorbid disorders who participated in a mental health and drug treatment study would be significantly different in terms of the relative prevalence of serious mental and substance use disorders and the history and severity of psychiatric and substance use problems. The mental disorders included such diagnoses

as schizophrenia spectrum, bipolar, opiate use, and cocaine use disorders (DSM-IV). The hypothesis was only partially supported. Except for a few important exceptions, the results of comparisons indicated a consistent pattern of diagnostic and severity similarities across groups.

Unlike the two studies reported earlier (12, 13), we did find that almost one-third of drug treatment patients received schizophrenia spectrum diagnoses. Drug treatment patients had a lower prevalence of schizophrenia spectrum disorders and a lower likelihood of past suicide attempts and psychiatric hospitalizations than the mental health patients. However, other serious mental disorders, including bipolar disorders, were just as prevalent as in comorbid patients in mental health treatment. Correspondingly, the patients in mental health treatment had a lower likelihood of use of most of the major drugs of abuse (cocaine, amphetamines, and opiates) and spent less money on drugs in the past month than the drug treatment patients. Nevertheless, substance use disorders for all of the major drugs of abuse were as prevalent as in the drug treatment patients. Also, the days of drug use did not differ between the groups.

Results of this study provide a complex picture of patients with comorbid substance abuse and mental health disorders. These findings provide comprehensive empirical evidence of similarities and differences between these two groups. It is important to evaluate the patterns of the findings and the relative weight to assign the similarities and the differences. Our assessment is that the similarities merit greater weight. The similarities show that substance abuse treatment providers should expect and be prepared to treat patients with severe mental illness and, likewise, mental health treatment providers should be prepared for patients with severe drug problems and long histories of abuse. These results suggest that providers and programs, independent of the treatment system, should be equally available to provide interventions for both mental health and drug problems. Of concern is that providers and the systems within which they function may not be sensitive to the serious and profound level of comorbidity among their patients and consider one problem secondary to another. Of further concern is that providers will not be able to provide access to treatments that are a part of another system or that entry into one system will limit access to another.

Despite having overcome a number of limitations found in the literature, there are four issues that may influence our findings. One of these is that, aside from the CES-D Scale, we had no global measure of psychiatric severity. Additional data on psychiatric history and status may have afforded more detailed comparisons of mental health patients and drug treatment patients. The lack of these data may have precluded the observation of meaningful distinctions between these patients.

Another potential limitation is the accuracy of the research diagnoses. The DIS was administered under difficult circumstances that could not be avoided. We administered the DIS relatively soon after treatment entry (between 24 and 96 hours) at all sites in order to minimize the number of patients who left treatment before we completed their intake assessments. A consequence of this procedure was that some patients at the time of DIS administration were experiencing relative discomfort associated with treatment entry, such as adjusting to new surroundings; separation from friends, family, and acquaintances; and the effects of substance withdrawal. All of these may have contributed to inaccurate diagnoses at the time of the DIS administration. Of particular concern is that in preparing the DIS data for analyses, we found that we had excluded more mental health than drug treatment patients for lacking useable data. Had they been able to be included, perhaps there would have been greater differences between the groups treated in public mental health settings and substance abuse treatment settings.

There is also the issue of whether these results can be generalized to other treatment settings or geographic regions outside San Francisco. We found no studies simultaneously examining comorbidity in acute, short-term residential mental health and drug treatment settings and, therefore, have no basis for direct comparison. However, we believe that our findings can be generalized to these types of residential settings located in treatment systems similar to that of San Francisco—in particular, systems with extensive public sector treatment programs and separate rather than integrated services for mental health and drug problems.

We attribute the lack of concurrence between our study findings and the two related comorbidity studies (12, 13) to methodological differences rather than service system differences. In particular, both studies sampled from outpatient programs rather than acute residential treatment settings that serve as initial entry points into their respective public sector service systems. Our experience suggests that drug abusers are not readily accepted into specialized outpatient treatment programs (for example, methadone maintenance) if they have severe mental illnesses, such as schizophrenia. Our findings, however, indicate that such clients may be found in drug treatment settings that have minimal exclusion criteria.

A final limitation is that these data provide only a snapshot of comorbid patients at the time of treatment entry. The context of these treatment episodes, including how patients came to be admitted to these programs, as well as their subsequent service use and treatment outcomes, are not included in this article.

This study established that comorbid patients in the two types of treatment settings are similar in some important domains. The next important questions for us are whether these populations received similar services before and after the target treatment episode or if access to and receipt

of services varied as a function of admission to one sector or another. Future examinations of study data will address these questions. Furthermore, our study did not collect data on patients' paths into the treatment site at which they were recruited in terms of referring agencies and decision making. Based on study findings, we believe it is important to obtain these data. We plan to conduct additional research that will include such data.

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