



Published in final edited form as:

Med Care. 2009 October ; 47(10): 1077–1083. doi:10.1097/MLR.0b013e3181a80fc9.

Mental Health Service Utilization After Physical Trauma:

The Importance of Physician Referral

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Abstract

Background—Despite the availability of effective treatments for posttraumatic stress reactions after serious physical injuries, many sufferers do not use mental health services. Attempts to understand the factors that facilitate mental health service use have often focused on patient-related factors without assessing provider behavior.

Objectives—To examine the relative influence of patient-related factors and physician referral on mental health service utilization among patients after a traumatic physical injury.

Design—A fully structured interview was administered prospectively by trained lay persons to Los Angeles County trauma center injury patients. A total of 677 patients completed an initial interview. Of those who completed an initial interview, 70% (n = 476) completed a 6-month follow-up interview and 68% (n = 462) completed a 12-month interview.

Measures—We examined 3 classes of patient characteristics hypothesized to be related to mental health service use: need (eg, posttraumatic stress symptoms), predisposing factors (eg, gender), and enabling resources (eg, health insurance). Additionally, we looked at physician referral to mental health treatment as a provider behavior hypothesized to predict service use.

Results—Age, posttraumatic stress disorder symptom severity, previous mental health treatment, and physician referral were all associated with mental health service use. Physician referral demonstrated the strongest relationship with mental health service utilization. Although controlling for other factors, the odds of mental health service use were nearly 8 times higher for those respondents receiving a physician referral than for those without a referral.

Conclusions—Findings highlight the importance of physician referral in facilitating access to mental health services for trauma injury survivors.

Keywords

traumatic injury; posttraumatic stress; provider behavior; mental health service

Each year approximately 1.5 million individuals in the US experience a physical injury serious enough to require hospitalization.¹ Survivors of traumatic physical injuries are at increased risk for a variety of mental health problems including posttraumatic stress disorder (PTSD), major depression, and substance abuse problems.^{2–7} The mental health consequences of traumatic physical injuries can be burdensome and costly. PTSD,

depression, and substance abuse have been associated with significant impairments in quality of life, functioning, and physical health.^{8–16}

Despite the availability of effective treatments for the posttraumatic stress reactions that can follow injury,^{17,18} several studies suggest that the majority of those who could benefit from treatment fail to use mental health services.^{5,19} In a longitudinal study of trauma injury survivors, over a third perceived a need for treatment but did not seek help.¹⁹ In another longitudinal study with men who had been injured through community violence, only 23% of those who had met criteria for possible PTSD had obtained mental health care in the year after the injury.⁵ Similarly, cross-sectional studies conducted with nationally representative US samples demonstrate that a substantial proportion of individuals with PTSD do not obtain mental health services.^{20,21}

Attempts to understand the factors that facilitate mental health service use have met with limited success.²² Some have posited that this may be partly due to the substantial emphasis placed on patient-related factors.^{22,23} Most studies on mental health service utilization have focused on patient factors that can be classified within the behavioral model of health service use.^{22,23} The behavioral model includes individual need, predisposing characteristics, and enabling resources that have been posited as important influences on treatment seeking.²⁴ Need factors include objective (eg, symptoms of PTSD) and subjective (eg, distress) indicators of need. Predisposing characteristics consist of stable factors existing before the illness (eg, age, gender). Enabling resources involve factors that may facilitate or hinder service utilization (eg, health insurance coverage). Studies on mental health service use among trauma survivors have placed a similar, almost exclusive, focus on patient factors as determinants of treatment utilization (for recent reviews see^{25,26}).

However, mental health service utilization may be influenced by other factors, above and beyond those of patient characteristics, such as the behavior and actions of providers. In fact, collaborative care perspectives of health care underscore the influential role of providers, in particular physicians, in facilitating access to mental health services.^{22,27,28} In the President's New Freedom Commission report,²⁸ physician mental health screening and referral were identified as key components to a transformed mental health system. Physicians can provide an important entryway into the mental health system given that they are often the first point of contact for people with mental health problems.^{29–33}

Yet, limited studies have examined provider influences, such as physician referral, on mental health service use. Moreover, no study has investigated the relative contribution of provider versus patient factors on mental health treatment utilization. Understanding the differential influences of provider and patient factors on mental health service use seems vital to guiding policy and programming. Using longitudinal data on a representative sample of Los Angeles County (LAC) trauma center patients, the purposes of the present study were: (1) to assess rates of mental health service utilization for emotional problems after traumatic injury; and (2) to investigate the relative influence of physician referral and patient-related (ie, need, predisposing, and enabling) factors on mental health service utilization.

METHODS

Participants and Procedures

The sample was recruited between February 2004 and August 2006 from 4 trauma centers in LAC: LAC + University of Southern California Medical Center (LAC + USC), UCLA Medical Center, King-Drew Medical Center, and California Hospital Medical Center. Interviewers attempted to screen and consent all eligible patients at each hospital on those

days when interviewers were at the hospital. At each hospital, interviews could occur on any day of the week. Different methods for identifying eligible individuals were used at the 4 hospitals due to different types of medical records and the IRB-approved protocols. At LAC + USC, interviewers had direct access to computerized admission records. These records were used to identify all admitted patients over 18 years of age who were not incarcerated and whose injuries required surgical intervention for injuries consistent with trauma registry criteria (eg, gunshot wound to the trunk, falls from greater than 15 feet). We only approached every other Hispanic patient at LAC + USC to adjust for the overrepresentation of Hispanics at this trauma center relative to others in LAC. Interview staff did not have direct access to a census of admissions at the other 3 hospitals. At those locations, trauma nurses identified patients who met those screening criteria and notified research staff. Patients who met the age, incarceration, and trauma injury criteria ($N = 1133$) were then screened in a face-to-face interview in the hospital to assess additional eligibility criteria. Of those screened, 10.3% were excluded because they were unable to converse in either English or Spanish, 10.0% because they were homeless and could not give contact information for a follow-up interview, 2.4% because the injuries were due to an attempted suicide, 1.4% because the injuries were caused by domestic violence, and 0.9% because they had a cognitive impairment that prevented informed consent or understanding the interview. Interviewers successfully screened 89% of patients attempted. Of the 850 patients identified as eligible, 677 (80%) completed the baseline interview. Of the 677 who completed an initial interview, 476 (70%) completed 6-month follow-up interview and 462 (68%) completed 12-month follow-up interview.

All participants provided informed consent and all study procedures were approved and monitored by the Institutional Review Boards of the RAND Corporation, LAC + USC Medical Center, UCLA Medical Center, King-Drew Medical Center, and California Hospital Medical Center.

Measures

PTSD Symptoms—The PTSD Checklist (PCL) was used to assess for PTSD symptom severity at the 6-month interview.³⁴ The PCL is a 17-item self-report measure of PTSD symptoms in which participants rated the degree to which they were bothered by each symptom on a scale ranging from 1 (not at all) to 5 (extremely). Symptoms were assessed with respect to the initial injury (eg, “how much have you been bothered by repeated, disturbing dreams of the injury”). To assess PTSD symptom severity, a sum of the 17 items was used ($M = 38.44$, $SD = 16.6$). This was standardized to $SD = 1$ when used as a predictor in logistic regression models. The PCL has been used in diverse samples, including physical trauma survivors, and possesses solid psychometric properties.^{35–38} After scoring the PCL according to the criteria in the Diagnostic Statistical Manual of Mental Disorders Symptoms, Fourth Edition,³⁹ and requiring a score of 3 or more to count as a diagnostically significant symptom, 30% of the sample met criteria for probable PTSD at the 6-month follow-up.

Depression Symptoms—The Patient Health Questionnaire-8 (PHQ-8),⁴⁰ a variant of the PHQ-9 in which a single item assessing suicidality is omitted, was used to index depressive symptom severity at the 6-month interview. The PHQ-8 is well validated and widely used as a brief screening measure for major depression.^{41,42} Responses are provided with respect to the frequency with which symptoms were experienced in the past 2 weeks, using a 4-point scale ranging from 0 (not at all) to 3 (every day). To assess for depressive symptom severity, the sum of the 8 items was used ($M = 7.26$, $SD = 6.67$). This was standardized to $SD = 1$ when used as a predictor in logistic regression models. According to scoring criteria established for the PHQ-8,⁴⁰ 31% of the respondents met criteria for probable depression at 6-month follow-up.

Alcohol Consumption—A quantity/frequency alcohol consumption measure was derived to assess past 30-day alcohol use, using questions administered during the 6-month interview. Frequency of use was assessed by the following item: “In the past 30 days, how often did you have a drink containing alcohol?” Responses were rated on a 5-point scale ranging from 1 (once a month or less) to 5 (everyday or nearly every day). Quantity of use was measured by asking respondents, “On those days that you drank in the past 30 days, how many drinks did you typically have on each day?” The quantity/frequency alcohol consumption measure was created by taking the product of the quantity and frequency item responses. A square root transformation of the quantity/frequency measure was conducted to normalize the distribution.

Subjective Distress—To measure the degree of subjective distress related to the injury, the following item was administered at the 6-month interview: “How much have you been bothered by emotional or personal problems because of your injury, such as having problems with your nerves, moods, relationships, alcohol use, drug use, or mental health?” Responses were rated on a 5-point scale ranging from 1 (not at all) to 5 (extremely) ($M = 2.14$, $SD = 1.30$).

Physician Referral—To assess whether participants had received a physician referral to mental health services, the following item was administered at 6-month follow-up: “Since your injury, has your doctor suggested that you talk to a psychiatrist, psychologist, counselor, or therapist about any emotional or personal problems?” Responses were dichotomously scored as 0 (no) or 1 (yes).

Mental Health Service Utilization—Preinjury mental health service use was assessed during the baseline interview by asking respondents: “In your lifetime, have you ever talked to a psychologist, counselor, therapist, or some other health professional about any emotional or personal problems?” During the 12-month follow-up interview, mental health service use was assessed with the following item: “Since your last interview [ie, 6-month interview], have you talked to a doctor, psychologist, counselor, therapist, or some other health professional about any emotional or personal problems?” Mental health service use was measured broadly to capture any degree of service use including very minimal contact.

Other Measures—Sociodemographic information was obtained by self-report. Information on age, gender, race/ethnicity, and type of injury (assault vs. accident) was collected during the initial interview. Health insurance status, income, and employment status was assessed during the 6-month follow-up interview. For analytic purposes, we distinguished assaults from other mechanisms of injuries. Assaults were defined as injuries resulting from being shot with a gun, stabbed with a knife or another sharp object, hit with an object like a bat or a metal bar, or getting kicked, hit, or punched by someone; all other types of injuries were classified as accidents. Objective injury severity was indexed using Injury Severity Scores obtained from medical records.⁴³

Data Analysis

Poststratification and attrition weights were used in all analyses to create an analytic sample that was representative of the population of patients seen in trauma centers in LAC in 2005. Poststratification weights matched the sample to the full population identified in the LAC Trauma and Emergency Medicine Information Systems (TEMIS). TEMIS is comprised of patient-level data for every trauma patient at each of the 13 LAC trauma centers. Although the unweighted baseline sample was very similar to the 2005 TEMIS population with respect to age, ethnicity, gender, and cause of injury, poststratification weights were created to exactly match the sample to the TEMIS population in 36 categories: age (3 levels) \times sex

(2 levels) × ethnicity (Hispanic, Black, White/Other) × cause of injury (assault, accident) and by injury severity score.⁴⁴

To adjust for the effects of study attrition from initial interview to 6- and 12-month follow-up, a logistic regression model was built to predict study attrition from all baseline demographic characteristics, injury severity, and psychiatric symptoms. This model was used to generate inverse probability attrition weights. All subsequent analyses were conducted using both poststratification and attrition weights to provide an analytic sample that is representative of the (a) general LAC trauma population on age, sex, ethnicity, cause of injury, and ISS, as well as (b) full characteristics of the baseline sample, including the severity of psychiatric symptoms. See Table 1 for unweighted and weighted sample characteristics. Multiple imputation was used to address missing data occurring at the item level.

All analyses controlled for possible trauma center site effects. Site fixed effects were entered for UCLA Medical Center, King-Drew Medical Center, California Hospital Medical Center, and LAC + USC. To examine predictors of mental health service utilization reported at the 12-month follow-up interview, we conducted bivariate and multivariate logistic regressions to obtain the odds ratio for each predictor variable. Guided by the behavioral model,²⁴ predictors in the multivariate model were entered in blocks in the following order: need (PTSD and depression symptom severity, subjective distress measured at the 6-month interview), predisposing (age, gender, ethnicity, injury severity, type of injury, previous service use measured at the baseline interview), and enabling factors measured at the 6-month interview (income, employment status, and health insurance) along with physician referral. Need variables were entered into the first block of the model given their strong association with treatment utilization^{25,26} and the study's focus on provider-related factors that may be related to mental health service utilization beyond need factors.

RESULTS

At 12-month follow-up, 17% of the respondents reported having obtained mental health services for emotional or personal problems since their previous interview (ie, the 6-month interview). For those with objective need (ie, probable PTSD or depression at 6-month interview), 26% had used mental health care; whereas among those without probable PTSD or depression at the previous interview only 11% had obtained mental health care. At the 6-month interview, approximately 19% reported receiving a physician referral to mental health services. Meeting criteria for probable PTSD or depression was significantly associated with obtaining a physician referral ($\chi^2 = 13.52$, $P < 0.001$). Among those with probable PTSD or depression at 6-month follow-up, 28% had received a physician referral for mental health services compared with 12% of those who did not meet diagnostic criteria.

Bivariate logistic regression analyses revealed a number of significant associations between predictor variables and subsequent mental health service utilization. As seen in Table 2, while adjusting for site effects, PTSD symptom severity, depressive symptom severity, alcohol consumption, subjective distress, age, previous mental health service use, monthly income, disability status, health insurance coverage for mental health, and physician referral were all related to increased odds of receiving mental health care.

Overall, physician referral was the single most important factor in predicting which trauma survivors received mental health care. Overall, 51% of the sample who received such a referral subsequently got some level of mental health care, while only 9% of individuals without a referral received care over the same interval. This is a stronger predictor than an individual's PTSD symptom severity or subjective level of distress.

As seen in Table 2, multivariate logistic regression analyses examined the effects of the predictor variables on mental health service utilization in sequential blocks ordered by need, predisposing, and enabling factors based on the behavioral model of health service use.²⁴ C-statistic values indicated that each additional block of predictors resulted in an increase in discriminative power. The final multivariate model, which included all hypothesized predictors, revealed that individuals who received a physician referral in the first 6 months after the injury (OR = 7.73, 95% CI: 3.35–17.84), those who had received previous mental health treatment before the injury (OR = 3.66, 95% CI: 1.80–7.45), persons with more severe PTSD symptoms (OR = 2.06, 95% CI: 1.01–4.19), and older individuals (OR = 1.42 per decade, 95% CI: 1.02–1.99) were more likely to obtain mental health services during the 6 to 12 month period postinjury. Although controlling for a variety of patient-related factors, the odds of mental health service use were nearly 8 times higher for those respondents receiving a physician referral in the first 6-month postinjury than for those not receiving a referral.

This finding that physician referral is strongly predictive of subsequent mental health service utilization is important for documenting a potentially causal role of physician referral. However, this analysis necessarily omitted examination of services obtained during the first 6 months after the injury. Cross-sectional analyses predicting service use during this period yielded a slightly stronger effect of physician referral than was found in the longitudinal analyses (data not shown). The adjusted odds of obtaining mental health service use in the 6 months postinjury was an order of magnitude higher for those respondents who received a physician referral during the same time period than for those who did not (OR = 10.74, 95% CI: 4.78–24.12).

DISCUSSION

Our findings highlight the high levels of unmet need for mental health services after traumatic physical injury. In this prospective study of LAC trauma center patients, relatively few individuals reported utilizing mental health care despite demonstrated need. Among those who met screening criteria for either probable PTSD or depression at the 6-month interview, 74% did not obtain professional help in the subsequent 6 months. These results are similar to others reported for physical trauma survivors requiring hospitalization. In particular, Jaycox et al (2004) reported that less than 25% of men who met screening criteria for PTSD had obtained mental health care in the year after hospitalization for injuries stemming from community violence.⁵ Given the existence of effective interventions for both major depression and PTSD,^{17,18,45} far too many individuals may be suffering from treatable psychiatric conditions in the aftermath of physical trauma.

This study's results also underscore the critical importance of physician referral in facilitating access to mental health services for injury survivors. Most strikingly, these data indicate that having a physician suggest that the patient talk to a mental health professional is the strongest predictor of subsequent service utilization. After accounting for various patient factors including severity of psychiatric symptoms and health insurance coverage, the odds of subsequent mental health service utilization was 8 times greater among injury survivors who reported receiving a physician referral than among those who did not receive a referral.

Although this is a large effect size, it is likely an underestimate of the potential influence of physician referral on mental health service use due to the conservative methods employed by this study. First, the study only assessed for referrals that occurred in the first 6 months after the injury. It is likely that some individuals received a referral between the 6- and 12-month interviews that led to their mental health service utilization in that interval. Similarly, we

controlled for preinjury mental health treatment. However, the significant effect of preinjury treatment might reasonably be interpreted as the mediated effect of earlier referrals that were not measured. That is, at least some of the individuals who received prior treatment may have received prior referrals from a physician. Second, this study assessed physician referral rather broadly. Our measure is likely capturing a mix of physician behaviors that vary in effectiveness, ranging from a casual suggestion to a formal referral in which the physician assists patients in setting up an appointment with a specific provider.

Despite these limitations, none of the patient-related factors (eg, symptom severity, previous treatment) was as strongly associated with mental health service use as was physician referral. Consistent with previous research, the current study did find that several patient characteristics were associated with subsequent service use, including PTSD symptom severity, age, insurance type, and a history of mental health treatment.^{5,25,26,46–48} Interestingly, although need factors have been shown to be one of the strongest predictors of treatment utilization,^{25,26} the effect of physician referral was 3 times as large as PTSD symptom severity. When examining the relative contributions of patient versus provider influences on mental health service utilization, the prospective effects of patient factors were substantially smaller than physician referral. These findings are in contrast to the predominant emphasis placed on patient rather than provider factors within mental health services research.

Moreover, physician referral may be a more promising point of intervention when designing programs to facilitate utilization of mental health treatments. Many patient factors (eg, age or prior treatment use) cannot be modified via intervention; however, physician behavior may be amenable to intervention. Although physicians may underestimate the extent to which their recommendation would influence patient service seeking,⁴⁹ they are often the first point of contact for individuals with mental health problems and serve as a critical gateway into the mental health service system.^{22,29,33} This may be particularly true for individuals who were recruited through the medical system due to a serious injury, many of whom are in extended treatment for their physical conditions. As the field seeks to improve access to effective mental health treatments and to reduce disparities in care, it seems that modifying the behaviors of gatekeepers may be a critical point at which to intervene.

These findings need to be considered in view of certain limitations of this study. Results are based on a representative sample of Los Angeles County trauma center patients but may not be generalizable to trauma centers in other regions or other patient populations. Additional research is also needed to determine if the findings generalize to other medical settings (eg, primary care). Moreover, since the current study relied solely on self-report, future research incorporating medical record information is needed. Previous research indicates that concordance between patient self-report and provider record data on service utilization may not always be optimal.^{50,51} This is in part due to the limitations associated with both self-report (eg, recall errors, social desirability bias) and medical record data (eg, incomplete records, accuracy of reports).^{51,52} Studies suggest that the use of multiple sources of data may yield the most accurate assessment of service use.⁵¹

Finally, further research examining the complex factors involved in postinjury mental health service use is warranted. For example, additional research is needed to better understand how different types of providers and referrals impact the help seeking process. Prior studies suggest that many trauma injury survivors may interact with multiple service delivery sectors including emergency department, acute care inpatient and outpatient, primary care, and community care service settings.⁵³ Further, nonphysician providers (eg, trauma care nurses, care managers) may play an increasingly important role in referral and treatment given recent policy changes requiring trauma centers to implement brief screening and

interventions for at-risk alcohol users.^{52,54} It is possible that the current study's use of a broad measure of physician referral may have masked considerable heterogeneity in the effects of different types of referral. For instance, some respondents may have included nonphysician referrals when reporting having received a physician referral.

In addition, it is important to note that provider referral effects may vary across different contexts. For example, one study found that referrals delivered in acute care settings as part of a research protocol were only weakly associated with access to specialty mental health care.⁵⁵ Further, the present study and previous research indicate that health care providers often fail to detect and then provide referrals for PTSD and depression,⁵⁶ suggesting that greater examination of provider behavior is critical. Future longitudinal research examining the process of care beginning from acute care and then in primary care and community health settings may be necessary to better comprehend how to optimize postinjury mental health service use.⁵⁷

Existing research on mental health treatment utilization has focused primarily on patient factors that are often examined within the widely used framework of the behavioral model of health service use. Consequently, much of the mental health services research has focused on identifying which patient characteristics are associated with receiving needed treatments. This focus may have distracted the field from other, more useful, questions such as, which provider characteristics or behaviors are related to patient access to services? The current findings suggest that a more balanced research approach, incorporating both patient- and provider-level factors, is essential to developing policies and programs that can ameliorate the unmet mental health needs of trauma survivors.

Acknowledgments

Supported by NIH/National Institute for Mental Health R01-MH056122, and NIH/National Institute on Alcohol Abuse and Alcoholism R01-AA014246.

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TABLE 1

Sample Characteristics Unweighted and Weighted Sample (N = 391)

Sample Characteristics	Unweighted % or Mean	95% CI	Weighted % or Mean	95% CI
Age (yr)	33.59	32.40–34.78	34.31	32.97–35.64
Female	24.04	20.03–28.57	21.48	17.04–25.91
Ethnicity				
African American	24.30	20.03–28.57	18.63	14.64–22.63
Hispanic American	48.34	43.36–53.31	48.99	43.47–54.52
Non-Hispanic White	20.72	16.68–24.75	24.79	19.68–29.90
Other ethnicity/race	6.65	4.17–9.13	7.59	4.47–10.71
Assault (vs. accident)	30.18	25.61–34.75	31.77	26.38–37.16
Injury severity score	9.73	8.96–10.51	8.51	7.75–9.26
Monthly income (dollars) [‡]	867.02	697.48–1036.57	925.66	709.63–1141.68
Employment status [‡]				
Employed	43.22	38.29–48.15	42.87	37.43–48.31
Unemployed	21.48	17.39–25.57	22.56	17.75–27.37
Disabled	35.29	30.54–40.05	34.57	29.32–39.82
Health insurance [‡]	48.85	43.87–53.83	47.86	42.34–53.39
Includes mental health coverage	27.88	23.41–32.34	27.28	22.29–32.26

* Sample limited to those 391 respondents with data from all 3 waves.

[‡] Attrition and poststratification weights were applied.

[‡] Income, employment, and insurance status were measured 6 months after the injury; all other variables measured at the baseline interview.

TABLE 2
Odds Ratios for Seeking Mental Health Care Between Six- and Twelve-Month Postinjury (N = 391)

Predictors	Bivariate		Block 1: Need		Block 2: Predisposing		Block 3: Enabling	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Need factors								
PTSD symptom severity	2.04*	1.55–2.70	1.23	0.68–2.19	1.89 [†]	1.03–3.46	2.03 [†]	1.02–4.05
Depression symptom severity	2.02*	1.54–2.65	1.22	0.70–2.13	0.87	0.50–1.51	0.74	0.39–1.40
Alcohol consumption	0.63 [‡]	0.45–0.88	0.63 [‡]	0.47–0.85	0.67 [‡]	0.47–0.97	0.68	0.45–1.02
Subjective distress	2.26*	1.50–2.35	1.89 [‡]	1.29–2.78	1.83 [‡]	1.25–2.67	1.39	0.91–2.13
Predisposing factors								
Age (decades)	1.44 [‡]	1.17–1.78	—	—	1.32	0.97–1.79	1.38 [†]	1.00–1.90
Female	0.91	0.47–1.74	—	—	0.65	0.28–1.50	0.68	0.28–1.65
Ethnicity								
Non-Hispanic White	1.00	—	—	—	1.00	—	1.00	—
African American	0.50	0.21–1.19	—	—	0.53	0.21–1.36	0.62	0.21–1.80
Hispanic American	0.37 [†]	0.17–0.79	—	—	0.46	0.19–1.08	0.47	0.19–1.16
Other	0.26	0.07–1.07	—	—	0.23	0.04–1.20	0.43	0.07–2.60
Injury severity	1.31	0.97–1.76	—	—	1.32	0.89–1.96	1.19	0.76–1.85
Assault	0.95	0.48–1.89	—	—	1.04	0.45–2.42	0.79	0.32–1.95
Previous mental health treatment	3.98*	2.12–7.44	—	—	3.81*	1.82–8.00	3.84*	1.92–7.66
Enabling factors								
Monthly income (per \$1000)	1.17 [†]	1.03–1.34	—	—	—	—	1.14	0.98–1.33
Employment status								
Employed	1.00	—	—	—	—	—	1.00	—
Disabled	3.15 [‡]	1.61–6.18	—	—	—	—	1.93	0.79–4.75
Unemployed	1.39	0.58–3.33	—	—	—	—	1.53	0.53–4.47
Insurance with mental health coverage	2.06*	1.08–3.95	—	—	—	—	1.20	0.57–2.50
Physician referral	10.13*	5.32–19.30	—	—	—	—	7.67*	3.39–17.38

* P < 0.001.

[†] $P < 0.05$.

[‡] $P < 0.01$.

[§] Predisposing factors were assessed at the baseline interview; need and enabling factors were assessed at the 6-month interview. Analyses have been adjusted for trauma center site effects.

[#] C-statistic values for block 1, 2, and 3 were 0.76, 0.82, and 0.87, respectively.