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Changing Profiles of Service Sectors Used for Mental Health Care in the U.S

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Abstract

Objective— Redesigning the fragmented US mental health care system requires knowing how service sectors share responsibility for individuals with mental health needs.

Method— Respondents ages 15–54 from the National Comorbidity Survey (NCS) in 1990–2 (N=5388) and the NCS-Replication (NCS-R) in 2001–3 (N=4319). 12-month DSM-IV mental disorders and their severity were assessed in respondents from both surveys. Profiles of service sectors were defined in which pharmacotherapy plus psychotherapy (psychiatry [PSY] sector; general medical [GM] and other mental health specialty [OMH] without PSY sector), single modalities (GM without PSY or OMH; OMH without PSY or GM), or neither modality (human services [HS] without PSY or OMH or GM; and complementary-alternative medicine [CAM] only) could potentially have been received. Trends in use of these profiles between surveys were examined.

Results— GM without PSY or OMH use experienced the largest proportional increase (153%) between surveys and is now the most common profile. PSY use also increased (29%) as did GM and OMH without PSY (72%). OMH without PSY or GM (–73%), CAM only (–132%), and HS without PSY or OMH or GM (–137%) all decreased. The elderly, women, minorities, less-educated, and rural-dwellers were less likely to use profiles capable of delivering pharmacotherapies and/or psychotherapies.

Conclusions— How service sectors share responsibility for peoples' mental health care is changing, with more care falling to general medical providers without specialists. Efforts are required to ensure that people who would benefit have access to the necessary treatment modalities.

INTRODUCTION

The complexity of the US mental health care system, which diffuses responsibilities for patients over multiple service sectors, poses critical challenges for patients, providers, and policy makers. Both the recent Surgeon General's report and the President's New Freedom Commission on Mental Health make rational reorganization of the US mental health service system a high priority (1,2). Redesigning the delivery system depends on understanding how care is shared across sectors and how these complex relationships are evolving over time.

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The Epidemiologic Catchment Area (ECA) study in the 1980s provided the first glimpse of overlapping responsibilities between service sectors (3). The general medical sector (GM) provided mental health services to 43% of treated cases, including 32% solely. The mental health specialty sector served 40%, including 25% solely, 9% jointly with GM, and 7.5% with the human services (HS) sector. The HS sector provided services to 20% including 11% solely; self-help sectors served 28%, including 15% exclusively. The National Comorbidity Survey (NCS) a decade later confirmed the fragmented nature of care, with 26% receiving services from multiple sectors including 18% from two, 7% from three, and 1% from four sectors (4).

In the past decade, overall rates of mental health service use in the US increased from 12% of the population to 20% (5,6). However, significant increases were limited to the GM (159%), psychiatrist (PSY) (117%), and other mental health specialty (OMH) (59%) sectors. An important next step is to move beyond studying individual sectors, to the potentially more relevant *combinations* of sectors that people actually use. On one hand, managed care has placed greater emphasis on initial contact in primary care with triage of only more difficult cases to mental health specialists (7). Newer medications have also made it easier for general physicians to treat people exclusively with pharmacotherapies, without referral to specialists for psychotherapies (8,9). On the other hand, some (10,11) but not all (12,13) trials of pharmacotherapies and psychotherapies have shown increased efficacy with joint vs. isolated use of these modalities. Data on the questionable safety and effectiveness of non-health care have also raised concerns over isolated use of complementary and alternative medicine (CAM) or HS (14–17).

The current report had 3 aims. First, we used the NCS and NCS-Replication (NCS-R) to describe the combinations of service sectors used and how these changed over the past decade. We focused on profiles capable of delivering psychotherapy, pharmacotherapy, both, or neither modality. Since using sectors capable of delivering treatments does not necessarily mean those treatments were obtained (18), we also estimated the extent to which people using services did not receive any active treatment or particular modalities (e.g., combined pharmacotherapy plus psychotherapy). Second, we examined whether profile use differed by disorder severity. We did so in light of the greater needs for effective treatment among serious cases and evidence that combined modalities are especially beneficial for them (10,11). Third, we identified predictors of using different sector profiles to inform efforts to redesign and reorganize the US mental health care system.

METHOD

NCS and NCS-R Samples

The original NCS, conducted between 1990–2, was a nationally representative household survey of 8098 respondents ages 15–54 (4). A part I diagnostic interview was administered to all respondents, while a part II risk factor interview was administered to a probability sub-sample of 5877 respondents who screened positive for mental disorders and a random subsample of remaining part I respondents (response rate 82.4%).

The NCS-R in 2001–03 employed a nationally representative sampling scheme that differed from the NCS in three ways: 1) respondents age 15–17 were not included; 2) the age range included those 55+; and 3) a second respondent was selected in 25% of households to study within-household aggregation of disorders (19). Respondents completed a part I diagnostic interview (n = 9282) and a probability sub-sample completed a part II risk factor interview (n = 5692)(response rate 70.9%).

Data from both surveys were weighted for differential probabilities of selection, non-response, and discrepancies with Census population distributions on demographic and geographic

variables (20–22). After complete description of the study to subjects, written informed consent was obtained. Recruitment and consent procedures were approved by the Human Subjects Committees of the University of Michigan and Harvard Medical School (NCS-R only).

Presence and Severity of DSM mental disorders

The NCS and NCS-R made DSM-III-R and DSM-IV (respectively) diagnostic assessments based on the World Health Organization Composite International Diagnostic Interview (CIDI) (23). Both CIDI versions assessed anxiety (panic disorder, generalized anxiety disorder, phobias, post-traumatic stress disorder), mood (major depressive disorder, dysthymia, bipolar disorder), and substance use disorders (alcohol and drug abuse and dependence). Good concordance has been observed between most CIDI disorders and blind clinician diagnoses made with the Structured Clinical Interview for DSM-III-R or DSM-IV (22,24).

NCS-R respondents who reported 12-month DSM-IV disorders were asked to focus on the month in the past year when symptoms were most persistent and severe and to rate role disability during that month. Sheehan Disability Scales (SDS) (25) responses were used to define a severity gradient. Serious cases met criteria for: bipolar I or non-affective psychosis; a suicide attempt or psychiatric hospitalization in the prior year; three or more areas of “severe” or “very severe” SDS role impairment (i.e., domain scores of 9 or 10); three or more areas of at least “medium” SDS role impairment (i.e., domain scores of at least 7 or 8) plus at least four mental disorder diagnoses or more than 5 days of hospitalization; or a multivariate functional impairment score equivalent to a Global Assessment of Functioning (GAF) (26) of less than 55. Moderate cases were defined as those having at least “moderate” interference from a mental disorder in any SDS life dimension (i.e., domain score of 4 or greater). All other disorders were classified as mild. In a previous examination of the validity of these ratings (6), a significant gradient was found in average days out of role reported by serious, moderate, and mild cases.

For NCS respondents, comparable aggregate estimates of disorder presence and severity were developed in nested logistic regression equations that used symptom measures available in both the NCS and NCS-R to predict: (i) serious disorder vs. all others; (ii) serious-moderate disorder vs. mild or no disorder; and (iii) any disorder (i.e., serious, moderate, or mild) vs. no disorder. These were estimated only in the NCS-R, as the measures of seriousness were not available in the NCS. Areas under the receiver operator characteristic (ROC) curves indicated good predictive validity (6).

Service Sectors

Part II NCS and NCS-R respondents were asked whether they ever received mental health services and, if so, what types of providers they saw. The interviewer inquired about each provider type separately to ensure the respondent focused on each type. Additional questions asked about time of most recent contact with each type of provider. All services received in the prior 12-months were classified into the following five sectors: psychiatrist (PSY); other mental health specialty (OMH), including a psychologist or other non-psychiatrist mental health professional in any setting, a social worker or counselor in a mental health specialty setting, or use of a mental health hotline; general medical (GM), including with a primary care doctor, other general medical doctor, nurse, any other health professional not previously mentioned; human services (HS), including with a religious or spiritual advisor, social worker or counselor in any setting other than a specialty mental health setting; and complementary-alternative medical (CAM) services, including with any other type of healer or participation in a self-help group. Respondents who made only 1 visit to any sector, received no psychiatric medications, and were not in ongoing treatment at interview were considered to have obtained no active treatment; those who made 8 or more visits and received a medication, or were in

ongoing treatment were considered to have obtained combined psychotherapy plus pharmacotherapy.

Socio-demographic correlates

The NCS and NCS-R asked identical questions to assess age (18–24, 25–34, 34–44, 45–54), sex, race-ethnicity (Non-Hispanic White, Non-Hispanic Black, Hispanic, other), marital status (married or cohabiting, previously married, never married), education (0–11, 12, 13–15, 16+), household income, and urbanicity. Income was defined as a multiple of the federal poverty line accounting for the composition of the respondent's family, with low income defined as an income: poverty ratio less than 1.5:1, low-average a ratio in the range 1.5:1 to less than 3:1, high-average a ratio in the range 3:1 to less than 6:1, and high a ratio of 6:1 or greater. Urbanicity was defined using the 1990 (NCS) and 2000 (NCS-R) Census as: large (at least 2 million residents) and smaller Metropolitan Statistical Areas (MSAs); central cities and suburbs within MSAs; adjacent areas (areas outside the suburban belt, but within 50 miles of the central business district of a central city of an MSA); and rural areas (areas more than 50 miles from the central business district of a central city).

Analysis methods

The weighted part II data files for respondents 18–54 were merged. Trends between the NCS and NCS-R in use of the following profiles were examined: sectors capable of delivering combined pharmacotherapies and psychotherapies (PSY; GM and OMH without PSY); sectors capable of delivering single modalities (GM without PSY or OMH; OMH without PSY or GM); and sectors potentially delivering neither (HS without PSY or OMH or GM; CAM only). Trends were assessed in the overall sample and separately in serious, moderate, mild, and subthreshold 12-month cases. Statistical significance was evaluated using z tests for the differences in prevalence estimates. Combined data from the two surveys were also used to estimate a series of logistic regression equations predicting use of specific service sector profiles. Standard errors of all prevalence estimates and all logistic regression coefficients were obtained using the Taylor series linearization method (27) implemented in SUDAAN (28).

RESULTS

Service sector profiles among all respondents

12-month prevalences of using each service sector profile are shown in the first two sets of rows in Table 1. In the NCS, the most common profiles in descending order were OMH without PSY or GM, GM without PSY or OMH, PSY, HS without PSY or OMH or GM, CAM only, and GM and OMH without PSY. In the NCS-R, GM without PSY or OMH was most common, followed by PSY, OMH without PSY or GM, HS without PSY or OMH or GM, and CAM only. The greatest increase between surveys occurred in GM without PSY or OMH use, followed by GM and OMH without PSY, PSY, OMH without PSY or GM, and HS without PSY or OMH or GM. The only profile to decrease between surveys was CAM only (see third set of rows of Table 1).

Sector profiles among those receiving services

To account for the increase (65%) in any service use in the NCS-R vs. NCS (6), we also examined 12-month prevalences of profile use just among respondents receiving services (see Table 2). The largest increase occurred in GM without PSY or OMH. There were increases in use of PSY as well as GM and OMH without PSY. There were decreases in use of OMH without PSY or GM, CAM only, and HS without PSY or OMH or GM. Among those using any 12-month services, 9.1% (SE 1.3) of NCS-R and 15.4% (SE 1.6) of NCS respondents met our definition for no active treatment. Among those using the PSY profile, 75.8% (SE 2.9) of

NCS-R and 71.1% (SE 5.0) of NCS respondents met our definition for combined psychotherapy plus pharmacotherapy; for those using GM and OMH without PSY, 53.4% (SE 2.3) of NCS-R and 37.4% (SE 2.7) of NCS respondents may have obtained dual modality treatments.

A significant positive relationship existed between severity and PSY use, with proportional PSY use being roughly 80% higher at the highest versus lowest severity levels in both surveys. Significant relationships with severity were not observed for use of other profiles. The association between severity and PSY use did not vary between surveys, implying the proportional increase in PSY use over time was roughly equal across disorder severity levels. The consistency in the relationship between severity and PSY use between surveys also means the distribution of severity among people using PSY was comparable over time. Only a minority of people using PSY had serious disorders at either time and many had mild or sub-threshold disorders.

Socio-demographic correlates of profile use

Table 2 presents demographic predictors of using particular sector profiles, controlling for disorder severity and time. Age was positively related to use of both PSY as well as GM without PSY or OMH, but negatively related to OMH without PSY or GM use. Females were less likely than males to use PSY and CAM only but more likely to use GM without PSY or OMH. Hispanics were less likely to use PSY than Non-Hispanic Whites; Hispanics and Non-Hispanic Blacks were both more likely than Whites to use HS without PSY or OMH or GM. Unmarried people were more likely than those married to use OMH without PSY or GM and less likely to use GM without PSY or OMH. Education was positively related to PSY, OMH without PSY or GM, and HS without PSY or OMH or GM use, but negatively related to GM without PSY or OMH use. Urbanicity was positively associated with CAM only and negatively related to HS without PSY or OMH or GM use.

Examination of interactions between predictors and time revealed that significant associations between demographic variables and profile use were generally consistent between surveys. One exception was that the decrease in HS without PSY or OMH or GM use over time was significantly greater in urban than non-urban areas. No interactions between demographic variables and severity were significant (data not shown but available upon request).

DISCUSSION

Three sets of limitations should be kept in mind. First, although the methods, instruments, and sector classifications were kept largely the same between the NCS and NCS-R, the internal validity of responses could have been affected by even subtle differences in surveys, non-response, and non-reporting. For example, mental disorders were assessed differently and imputation was employed to ensure comparable estimation of prevalences over time. Accuracy of these imputations is supported by strong associations between imputed and direct assessments in the NCS-R.

Second, we cannot be certain whether those using sector profiles actually obtained any treatment, particular modalities, or adequate care. Our crude lower bound estimates suggest at least 10–15% of those using services fail to receive any active treatment. Among those using profiles capable of delivering combined psychotherapy plus pharmacotherapy, perhaps the minority actually obtain these modalities. Even those receiving pharmacotherapies and psychotherapies often fail to obtain regimens that meet minimal thresholds for adequacy (18, 29). As a consequence, the actual number of patients that receive evidence-based pharmacotherapies and psychotherapies is likely to be much smaller than those with the potential to do so based on their sector profile use.

Finally, the external validity of these results may be limited because the sampling frame excluded people in institutions as well as the homeless and does not span all diagnostic categories. However such restricted sampling frames have been shown to exclude only a small proportion of mentally ill people and clinical reappraisal interviews have found that a vast majority of serious cases are detected by the NCS-R interview (21).

With these potential limitations in mind, this study sheds light on both the complexity of the US mental health care delivery system as well as important shifts in the combinations of service sector utilization. General medicine without psychiatrists or other mental health professionals experienced the largest growth over the past decade and is now the most common profile. This increased use of general medical providers without specialists may be due to the fact that primary care physicians now act as “gatekeepers” for nearly one-half of patients (30). Provision of mental health care in general medical settings has also been improved through greater understanding of how mental disorders present and design of primary care screening tools (31,32). Development and heavy promotion of new antidepressants and other psychotropic medications with improved safety profiles have further spurred care of mental disorders exclusively in general medical settings (8,9). There has also been a growing tendency for some primary care physicians to deliver psychotherapies themselves (33).

Two aspects of this expanded use of general medical without specialty sectors warrant concern. One is that it has occurred equally for people with severe as well as less severe disorders. This is worrisome in light of growing evidence favoring combined psychotherapy and pharmacotherapy for patients with serious disorders (10,11). In addition, general medical care without specialty use may result in lower treatment intensity and adequacy than in specialty care (29,34).

Psychiatry is now the second most common profile and also one experiencing growth during the last decade. On one hand, this may seem surprising, given both cutbacks in spending for specialty care as well as warnings by psychiatrists that managed care and gatekeeping would lead to diminished use of their services (32). This increase may reflect similar factors to those responsible for greater use of non-psychiatrist physicians, including diminished stigma, greater recognition of needs for mental health treatment, and greater availability and demand for pharmacotherapies (5,6,35).

However, it is disconcerting that the temporal increase in psychiatrist use has not particularly benefited patients with serious conditions. The psychiatrist profile is one of the two examined in which combined modality treatment could have been received. As mentioned above, evidence has been growing that dual modality treatments are especially beneficial to those with more serious disorders (10,11). Primary care with non-psychiatrist mental health professionals was the other profile from which combined modality treatment could have been received. Unfortunately, it was used only modestly and did not increase between surveys. The fact that it, like psychiatry, was not more likely to be used by severe patients raises further questions over whether dual modality treatments are being optimally allocated.

Mental health care without treatment from physicians, representing possible use of psychotherapy alone, had been the most popular profile in the NCS but declined significantly in the past decade. This finding is consistent with a significant decrease in psychotherapy visits during the 1990s (5,33). It could reflect new restrictions on the number of psychotherapy sessions, increased patient cost-sharing, and reduced provider reimbursements for psychotherapy visits imposed by many payers (36). It could also reflect changes in the popularity of therapeutic modalities, particularly patients’ growing preferences for psychotropic medications (5).

The decreasing use of human services without health care sectors, may be part of a longer term decline in use of the clergy for mental health care (37). Recent cut-backs in funding and programs in social services agencies may also be contributing to the declining use of this profile (36). Exclusive use of complementary-alternative medicine also decreased dramatically, perhaps in response to accumulating evidence that these treatments may lack efficacy or pose safety problems (14,15).

Younger cohorts' greater use of profiles capable of delivering psychotropic medications (PSY, GM without PSY or OMH) could reflect the particular popularity and successful promotion of these agents to younger people (5,9). By contrast older cohorts' reduced use of profiles employing exclusively psychotherapy may reflect an unacceptability of this modality to the elderly (38). Our observation that females receive less psychiatric services but more general medical services than males is consistent with earlier findings that primary care physicians are more willing to treat women but tend to refer men to specialists (39). Racial and ethnic minorities' greater reliance on exclusively human services may reflect their lower barriers to accessing religious leaders or social services agencies as well as prior experiences of prejudice and mistreatment within health care sectors (16,17,40).

Non-married peoples' greater use of profiles capable of delivering exclusively psychotherapy and reduced use of profiles capable of delivering exclusively pharmacotherapy may indicate that counseling is a preferred modality for relational difficulties (41). Education's positive relationship with profiles potentially employing psychotherapies and negative relationship with profiles potentially employing exclusively pharmacotherapies may reflect an importance placed on knowledge and cognitive processes in many psychotherapies (42). Urbanicity's positive association with exclusively using CAM and negative association with using human services without health care, may be due to structural realities that few CAM sources are found outside of urban areas while religious and social services may be the only resources available to rural residents (43). The fact that use of human services without health care did not decline in rural as in urban areas may further indicate the reliance on religious leaders for mental health needs among rural residents.

These results clearly confirm key observations made by the President's New Freedom Commission on Mental Health—that the US mental health care system remains fragmented and this complexity may be contributing to many Americans failing to receive the treatments they need (2). While this analysis primarily focused on fragmentation of care *across* sectors, the Commission also recognized the equally important fragmentation that can occur *within* sectors due to the variety of competing clinical (e.g., mental health vs. general medical), social, and human service needs that many patients and their clinicians experience (44).

Beyond documenting these realities, what can be done to address both types of fragmentation and help ensure that Americans with mental health needs receive effective care? In considering this difficult question, the Commission recommended overcoming obstacles posed by fragmentation by meeting six goals. The Commission's first goal—increasing American's awareness of their mental health needs—will almost certainly require renewed educational and awareness campaigns to promote the public's recognition of disorders and sectors from which effective care can be received (7). Another goal—early detection and treatment—would benefit from additional application of screening programs as well as timely referrals from non-health care to health care professionals (31,32,45). The goal of increasing high-quality, consumer-oriented care will likely require expansion of treatment resources as well as demanding greater accountability for the outcomes resulting from the use of individual and profiles of sectors (46). Eliminating current disparities in service use suggests that such initiatives and resources be focused on traditionally underserved groups, including racial and ethnic minority and rural communities (47). Final goals call for increased uptake of best-practices that optimally employ

generalists, specialists, and health technology. Such interventions may be especially needed to address *within* sector fragmentation from competing clinical, social, and human service demands on clinicians' limited time and resources. Several disease management models that employ allied health personnel and innovative decision-support systems to assist beleaguered clinicians, have already proven to be effective and may deserve wider dissemination (48–53). Recent legislation suggests the public may already be willing to pay for such programs to ensure that Americans receive effective care (54). Parallel efforts to define return-on-investments are needed to generate analogous support among employer-purchasers for model programs that help transform the fragmented US mental health care delivery system (37).

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Table 1
12-month use of multi-sector profiles, as a proportion of all NCS and NCS-R respondents ages 18–54, by severity of DSM-IV disorders.

	Combined Modalities				Single Modality				Neither			
	PSY		GM and OMH Without PSY		GM without PSY or OMH		OMH without PSY or GM		HS without PSY or OMH or GM		CAM only	
	%	(se)	%	(se)	%	(se)	%	(se)	%	(se)	%	(se)
I. NCS (1990–1992)												
Serious	7.3	(2.2)	1.6	(0.9)	4.9	(2.4)	6.1	(2.1)	2.6	(1.7)	1.9	(1.1)
Moderate	5.8	(1.2)	2.6	(0.6)	4.2	(1.0)	8.2	(1.4)	2.4	(0.8)	2.3	(0.7)
Mild	2.5	(1.2)	0.5	(0.3)	3.1	(1.5)	3.7	(1.1)	2.0	(1.2)	1.5	(0.7)
Any	1.4	(0.3)	0.4	(0.1)	2.1	(0.4)	2.6	(0.4)	1.2	(0.3)	1.2	(0.2)
None	4.8	(0.8)	1.6	(0.3)	3.9	(0.8)	6.0	(0.8)	2.3	(0.6)	1.9	(0.4)
Total	2.4	(0.3)	0.7	(0.1)	2.6	(0.3)	3.6	(0.3)	1.5	(0.2)	1.4	(0.2)
%		(se)	%	(se)	%	(se)	%	(se)	%	(se)	%	(se)
II. NCS-R (2001–2003)												
Serious	14.4	(3.3)	3.2	(1.9)	12.5	(2.5)	6.9	(2.3)	2.4	(1.0)	1.2	(0.6)
Moderate	13.0	(1.6)	2.8	(1.0)	11.8	(2.1)	6.5	(1.3)	2.5	(0.8)	0.7	(0.5)
Mild	5.1	(1.3)	2.3	(1.1)	8.0	(2.3)	4.7	(1.8)	2.1	(1.0)	0.9	(0.6)
Any	2.9	(0.4)	1.2	(0.3)	4.7	(0.5)	3.6	(0.5)	1.6	(0.3)	0.6	(0.1)
None	10.5	(1.0)	2.7	(0.7)	10.6	(1.1)	5.9	(1.0)	2.3	(0.6)	0.9	(0.3)
Total	5.2	(0.3)	1.7	(0.2)	6.5	(0.5)	4.3	(0.4)	2.3	(0.3)	0.7	(0.1)
% (RR-1)		(se)	% (RR-1)	(se)	% (RR-1)	(se)	% (RR-1)	(se)	% (RR-1)	(se)	% (RR-1)	(se)
III. NCS-R:NCS ¹												
Serious	2.0	(0.8)	2.0	(1.5)	3.0	(1.8)	1.2	(0.5)	1.1	(0.8)	0.7	(0.6)
Moderate	2.3	(0.6)	1.1	(0.5)	2.9	(0.8)	0.8	(0.2)	1.0	(0.5)	0.3	(0.3)
Mild	2.2	(1.1)	6.4	(8.8)	2.8	(2.0)	1.3	(0.6)	1.1	(0.7)	0.8	(1.1)
Any	2.0	(0.5)	3.1	(1.1)	2.3	(0.5)	1.4	(0.2)	1.3	(0.4)	0.5	(0.2)
None	2.2	(0.4)	1.7	(0.6)	2.8	(0.6)	1.0	(0.2)	1.0	(0.3)	0.5	(0.2)
Total	2.2	(0.3)	2.2	(0.5)	2.5	(0.3)	1.2	(0.2)	1.2	(0.2)	0.5	(0.1)
% ²		(p)	% ²	(p)	% ²	(p)	% ²	(p)	% ²	(p)	% ²	(p)
IV. Statistical Significance ²												
Time	34.5 [*]	(.000)	14.4 [*]	(.000)	46.0 [*]	(.000)	1.7	(.191)	0.7	(.400)	15.2 [*]	(.000)
Severity	112.2 [*]	(.000)	20.2 [*]	(.000)	30.8 [*]	(.000)	28.0 [*]	(.000)	4.0	(.258)	4.1	(.246)
Time × severity	0.2	(.975)	3.9	(.276)	0.4	(.932)	3.0	(.394)	0.3	(.953)	0.6	(.901)

* Significant at the .05 level, two-sided test.

$I_{\text{RR-1}}$ (RR-1) = Proportional increase in prevalence in NCS-R compared to NCS. For example, if a relative risk (RR) of 1.5 corresponds to the NCS-R prevalence being 50% higher than the NCS prevalence, in which case $\%(\text{RR}-1) = 50.0$.

² χ^2 tests have 1 degree of freedom for time, 3 for severity, and 3 for the interaction between time and severity. Significance tests of main effects are based on an additive model.

Table 2

12-month use of multi-sector profiles, as a proportion of NCS and NCS-R respondents ages 18–54 receiving any 12-month treatment, by severity of DSM-IV disorders.

	Combined Modalities			Single Modality			Neither		
	PSY			GM without PSY or OMH			HS without PSY or OMH or GM		
	%	(se)		%	(se)		%	(se)	%
I. NCS (1990–1992)									
Serious	30.3	(8.4)	6.7	19.7	(8.6)	25.0	10.6	(6.4)	7.7
Moderate	22.8	(4.0)	10.1	16.4	(3.4)	32.7	9.5	(2.8)	9.0
Mild	18.9	(3.5)	7.6	23.3	(9.1)	27.7	15.0	(7.6)	11.6
Any	23.4	(3.5)	7.6	18.9	(3.3)	29.4	11.3	(2.6)	9.4
None	16.0	(3.2)	4.4	23.2	(3.9)	29.5	13.8	(2.6)	13.0
Total	19.6	(1.7)	6.0	21.1	(2.0)	29.4	12.6	(1.5)	11.2
%		Se	%		se	%	%	se	%
II. NCS-R (2001–2003)									
Serious	35.5	(6.7)	7.9	30.9	(5.6)	16.8	6.0	(2.5)	2.9
Moderate	35.0	(4.0)	7.4	31.7	(4.5)	17.4	6.7	(2.2)	1.9
Mild	22.1	(4.9)	10.0	34.7	(7.4)	20.2	9.0	(4.3)	4.0
Any	31.9	(2.6)	8.2	32.3	(2.7)	17.9	7.0	(1.7)	2.7
None	19.7	(2.4)	8.3	32.3	(3.3)	24.7	11.1	(2.3)	3.9
Total	25.8	(1.5)	8.2	32.3	(1.8)	21.3	9.1	(1.3)	3.3
% (RR-1)		Se	% (RR-1)		se	% (RR-1)	% (RR-1)	se	% (RR-1)
III. NCS-R:NCS ¹									
Serious	0.44	(0.4)	0.65	1.75	(0.9)	0.69	1.20	(0.9)	1.20
Moderate	0.23*	(0.2)	0.71	1.94	(0.5)	0.54*	0.74	(0.3)	1.54
Mild	0.47	(0.7)	0.64	1.61	(0.9)	0.73	3.63	(4.6)	1.27
Any	0.29*	(0.1)	0.80	1.72*	(0.2)	0.61*	1.07	(0.3)	1.37
None	0.30*	(0.1)	0.63	1.40	(0.3)	0.84	1.87	(0.6)	1.25
Total	0.29*	(0.1)	0.72	1.53*	(0.2)	0.73*	1.37	(0.3)	1.32
%		(p)	%		(p)	%	%	(p)	(p)
IV. Statistical Significance ²									
Time	6.0	.015	2.8	15.6	.000	8.6	2.9	.087	47.4
Severity	14.6	.002	1.2	1.0	.808	1.4	3.3	.345	3.0
Time × severity	0.9	.828	3.5	0.9	.826	2.3	0.3	.964	0.4

* Significant at the .05 level, two-sided test.

¹ % (RR-1) = Proportional increase in prevalence in NCS-R compared to NCS. For example, if a relative risk (RR) of 1.5 corresponds to the NCS-R prevalence being 50% higher than the NCS prevalence, in which case % (RR-1) = 50.0.

² χ^2 tests have 1 degree of freedom for time, 3 for severity, and 3 for the interaction between time and severity. Significance tests of main effects are based on an additive model.

Table 3

Socio-demographic predictors of proportional 12-month use of six multi-sector profiles controlling for disorder-severity and time, among NCS and NCS-R respondents ages 18–54 receiving any services.

	Combined				Single				Neither			
	PSY		GM and MH without PSY		GM without PSY or OMH		OMH without PSY or GM		HS without PSY or OMH or GM		CAM only	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Time												
2001–2003	1.4*	(1.0–1.9)	1.2	(0.8–1.8)	2.1*	(1.5–2.9)	0.6*	(0.5–0.9)	0.7	(0.4–1.0)	0.3*	(0.2–0.4)
1990–1992	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---
χ^2_1 (p)	4.6 (.03)		0.8 (.38)		20.5 (.00)		8.7 (.00)		3.2 (.07)		41.5 (.00)	
Severity												
Serious	2.3*	(1.2–4.4)	1.1	(0.3–3.6)	0.9	(0.4–1.7)	0.7	(0.4–1.4)	0.6	(0.2–1.5)	0.6	(0.2–1.5)
Moderate	1.9*	(1.3–2.9)	1.3	(0.7–2.4)	0.8	(0.5–1.3)	0.9	(0.6–1.3)	0.6	(0.3–1.1)	0.6	(0.3–1.2)
Mild	1.2	(0.6–2.3)	1.1	(0.4–2.6)	1.1	(0.5–2.3)	0.8	(0.4–1.7)	0.9	(0.3–2.7)	0.9	(0.4–2.3)
None	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---
χ^2_3 (p)	13.6 (.00)		1.0 (.80)		1.2 (.76)		1.1 (.78)		4.0 (.26)		3.1 (.38)	
Age at interview												
18–24	0.6	(0.4–1.0)	1.6	(0.7–3.6)	0.3*	(0.2–0.6)	3.7*	(2.3–5.8)	2.2*	(1.1–4.4)	0.6	(0.3–1.5)
25–34	0.6*	(0.4–0.8)	1.0	(0.5–2.1)	0.6*	(0.4–0.9)	2.7*	(1.8–4.0)	1.6	(0.8–3.2)	1.2	(0.6–2.3)
35–44	0.7*	(0.5–0.9)	1.6	(0.9–2.6)	0.7*	(0.5–1.0)	2.1*	(1.4–3.0)	1.1	(0.5–2.4)	1.0	(0.6–1.9)
χ^2_3 (p)	12.0 (.01)		6.3 (.10)		13.0 (.00)		33.8 (.00)		6.5 (.09)		1.5 (.67)	
Gender												
Female	0.7*	(0.6–0.9)	1.3	(0.8–2.0)	1.8*	(1.3–2.4)	1.0	(0.8–1.3)	0.8	(0.5–1.3)	0.5*	(0.3–0.8)
Male	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---
χ^2_1 (p)	6.0 (.01)		1.2 (.27)		12.3 (.00)		0.0 (.96)		0.8 (.38)		10.8 (.00)	
Race-Ethnicity												
Non-Hispanic White	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---
Hispanic	0.5*	(0.3–0.8)	0.7	(0.3–1.5)	1.0	(0.6–1.6)	1.6	(1.0–2.6)	2.2*	(1.1–4.4)	0.4*	(0.2–0.9)
Non-Hispanic Black	0.9	(0.6–1.5)	1.1	(0.5–2.4)	0.8	(0.4–1.4)	0.6	(0.4–1.1)	2.7*	(1.4–5.0)	1.0	(0.5–2.0)
Other	0.9	(0.5–1.7)	0.7	(0.4–1.4)	0.9	(0.3–3.1)	1.4	(0.5–4.5)	0.4	(0.1–1.7)	1.4	(0.5–3.9)
χ^2_3 (p)	10.4 (.02)		1.9 (.60)		0.8 (.85)		7.1 (.07)		16.1 (.00)		5.7 (.12)	
Marital Status												
Separated/Widowed/Divorced	1.0	(0.7–1.3)	1.9*	(1.0–3.6)	0.4*	(0.3–0.6)	1.6*	(1.1–2.4)	1.1	(0.6–2.1)	1.2	(0.8–2.0)
Never Married	1.2	(0.8–1.6)	1.3	(0.7–2.4)	0.7	(0.4–1.1)	1.1	(0.8–1.6)	1.1	(0.6–1.9)	0.9	(0.4–1.7)
Married	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---
χ^2_2 (p)	1.0 (.59)		4.6 (.10)		32.7 (.00)		6.8 (.03)		0.2 (.91)		1.3 (.53)	
Education												
0–11	0.9	(0.6–1.3)	0.9	(0.4–2.2)	3.2*	(1.9–5.4)	0.6*	(0.4–0.8)	0.3*	(0.1–0.8)	1.4	(0.6–3.3)
12	0.8	(0.6–1.2)	0.6	(0.3–1.2)	3.0*	(2.1–4.4)	0.6*	(0.4–0.9)	0.6	(0.3–1.2)	1.1	(0.6–2.1)
13–15	0.7*	(0.5–0.9)	0.9	(0.5–1.5)	2.5*	(1.7–3.8)	0.8	(0.5–1.2)	0.8	(0.4–1.4)	0.8	(0.4–1.5)
16+	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---	1.0	---
χ^2_3 (p)	8.3 (.04)		2.3 (.52)		37.3 (.00)		10.5 (.01)		7.7 (.05)		3.0 (.40)	
Family Income [†]												
Low	1.2	(0.8–1.9)	0.7	(0.3–1.4)	1.0	(0.6–1.6)	0.7	(0.5–1.1)	1.7	(0.7–4.0)	1.0	(0.5–1.9)
Low-average	0.9	(0.6–1.4)	0.8	(0.4–1.6)	1.3	(0.8–2.0)	0.8	(0.5–1.2)	1.4	(0.7–2.7)	1.1	(0.6–2.3)
High-average	0.8	(0.5–1.2)	0.9	(0.5–1.6)	1.2	(0.8–1.8)	0.8	(0.6–1.2)	1.4	(0.7–2.8)	1.3	(0.7–2.4)

	Combined				Single				Neither			
	PSY		GM and MH without PSY		GM without PSY or OMH		OMH without PSY or GM		HS without PSY or OMH or GM		CAM only	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
High	1.0	--	1.0	--	1.0	--	1.0	--	1.0	--	1.0	--
χ^2_3 (p)		7.2 (.07)		1.1 (.77)		2.8 (.42)		2.3 (.52)		1.8 (.62)		1.0 (.79)
Urbanity ²												
Large MSA-Central City	0.8	(0.3–2.1)	1.8	(0.2–19.0)	0.6	(0.3–1.1)	2.5	(0.9–6.9)	0.3*	(0.1–0.7)	12.0*	(2.0–74.3)
Large MSA-Suburbs	0.7	(0.2–2.0)	2.6	(0.3–25.0)	0.5*	(0.3–1.0)	2.7*	(1.0–7.0)	0.5*	(0.3–1.0)	7.2*	(1.2–43.7)
Small MSA-Central City	0.5	(0.2–1.4)	2.5	(0.3–23.5)	0.7	(0.4–1.4)	3.8*	(1.4–10.0)	0.4*	(0.2–0.7)	4.3	(0.7–25.7)
Small MSA-Suburbs	0.5	(0.2–1.4)	3.6	(0.4–32.8)	0.8	(0.4–1.4)	2.8*	(1.1–7.4)	0.5*	(0.3–0.9)	4.1	(0.7–23.1)
Adjacent	0.6	(0.2–1.6)	4.6	(0.5–41.7)	0.6	(0.3–1.1)	2.5	(1.0–6.7)	0.5*	(0.3–0.9)	5.5*	(1.1–28.4)
Rural	1.0	--	1.0	--	1.0	--	1.0	--	1.0	--	1.0	--
χ^2_5 (p)		6.9 (.23)		9.2 (.10)		7.0 (.22)		9.3 (.10)		12.3 (.03)*		13.9 (.02)*

* Significant at the .05 level, two-sided test.

¹ Defined as a multiple of the federal poverty line (1990 in the NCS and 2001 in the NCS-R) for a family having the composition of the respondent's family: Low= an income:poverty ratio less than 1.5:1; Low-average= a ratio between 1.5:1 and less than 3:1; High-average= a ratio between 3:1 and less than 6:1; High= a ratio of 6:1 or greater.

² Large MSA-Central City= the Census-defined Central City of a Metropolitan Statistical Area (MSA) with a population exceeding one million; Large MSA-Suburbs= the Census-defined Suburbs of an MSA with a population exceeding one million; Small MSA-Central City= Census-defined Central City of an MSA with a population not exceeding one million; Small MSA-Suburbs= Census-defined Suburb of an MSA with a population not exceeding one million; Adjacent= non-MSA counties adjacent to an MSA; Rural=Census-defined rural counties.