Self-reported use of mental health services versus administrative records: should we care?

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ABSTRACT *Studies of mental health services have emphasized that people in need are not receiving treatment. However, these studies, based on self-reported use, may not be consistent with administrative records. This study compared self-reports of mental health service use with administrative records in a large representative sample. Respondent reports within the Ontario portion of the 1994/95 Household Component of the National Population Health Survey (NPHS) were individually linked to the provincial mental-health physician reimbursement claims. A total of 5,187 Ontarians, aged 12 years or more, reported on their use of mental healthcare within the NPHS and 4,621 (89%) consented and were successfully linked to administrative records.*

Comparisons between the two sources identified that the agreement for any use and volume of use was moderate to low and varied according to select respondent characteristics. These differences affected estimates of the associations with use and volume of use. People who reported high levels of distress reported more visits than those who did not and this effect was stronger in the self-reported data.

These results suggest that recall bias may be present. Regardless of the definition of care, access for those in need remains a concern despite universal medical insurance coverage.

Key words: self-reports, mental health services, administrative records

Introduction

Self-reported measures of the use of mental health services are becoming increasingly common in population-based health surveys (Bland et al., 1990; Regier et al., 1993; Kessler et al., 1994; Lin et al., 1996; Bland et al., 1997; Diverty and Beaudet, 1997). Concerns about access to mental healthcare have been raised because only 25% to 50% of those who meet criteria for a mental disorder report receiving any mental healthcare in the previous year. For a number of reasons, self-reported use may be lower than corresponding administrative records (Golding et al., 1988). If true, then access to care may be better than previously thought. However, there is no gold standard in the measurement of the use of mental health services. Few have formally studied the validity and reliability of mental health-service use in representative populations. Consequently, it is not known whether the findings from self-reported studies of use are consistent with administrative records.

Administrative healthcare records and self-reported use of mental health services

There are a number of limitations in the existing literature. The results from studies of psychiatric admissions (Cannel et al., 1965; Spector and Bedell, 1982) may be less relevant now as the majority of mental healthcare use is now ambulatory. Prevalence estimates of mental health service use have been reported for populations based on self-reports (cited above) and administrative records (D'Arcy et al., 1976; D'Arcy et al., 1981; Tataryn et al., 1994). These estimates fall within the same range (6% to 10%) but they must be viewed with some scepticism as definitions vary and estimates are based on different geographical areas and time frames.

Few studies have been able to compare the consistency of mental health service use across data sources within the same population. Manderschied, Rae, Narrow, Locke and Regier (1993), compared rates within the US using data from the Epidemiologic Catchment Area (ECA) Study and administrative data principally from the Center for Mental Health Services National Reporting Program. Use within specialty and general medical service sectors was assessed. Self-reported use was lower than administrative records by 11.4% and 17.5% respectively. In Ontario, self-reported use was also lower by almost 60%. Estimates of use from the Mental Health Supplement to the Ontario Health Survey (90/91) and physician reimbursement records among users of medical services (92/93) were compared (Lin and Goering, 1999). Nevertheless, there is some question as to whether studies such as these truly represent the same population because individual linkages were not performed.

Not many have conducted individual-level linkages. Two studies were found but the samples were select, thus making inferences to other populations uncertain. Taube, Schlenger, Rupp and Whitmore (1986) linked individual Medicaid claims-based data with proxy respondent data for household members participating in the National Medical Care Utilization and Expenditure Survey (1980/1981). A 'best estimate' of use was determined by examining both the household and Medicaid claims files event by event. Essentially, the best estimate of use was the claims file augmented with the household report. The inclusion of specific household reports was deemed necessary as claims-based data would miss events not covered and delays in processing claims were expected. In relation to best estimates of use, the household report underestimated use between 14% and 24% depending upon the study site. Reporting varied minimally by age and sex but was less than the best estimate in lower education groups. With respect to volume of use, the average number of self-reported visits exceeded the best estimate by a magnitude of 16% to 25%. Systematic variations were evident with overestimates more pronounced among the elderly, women, lower education groups and those with 'poor' perceived health status.

Self-reported mental health service use from the Los Angeles ECA site was compared with publicly funded mental health-service provider data (Golding et al., 1988). From the data presented, the prevalence of self-reported use was lower than that in the service-provider use (agreement in eight out of nine administrative cases); however, there were many cases in which the classification of use was ambiguous due to missing information.

In summary, the previous literature suggested that the self-reported prevalence of mental health service use tends to be lower than estimates drawn from administrative data sources. Volume of use may be over reported. Systematic differences by respondent characteristics may occur in both the prevalence and volume of use and these differences may have an appreciable effect on estimates of the association between respondent characteristics and the use of mental health services.

The purpose of this study is to examine the individual-level agreement between self-reported use of mental healthcare and administrative records and to assess the consistency of the estimates of self reported and administrative records of use for any use and the volume of use by select respondent characteristics. A Canadian province is chosen for this study as most mental health services are covered under the single-payer insurance coverage scheme. A large province, such as Ontario, is advantageous as more precise estimates for comparison purposes can be generated. In Ontario, 95% of physician services are covered within the Ontario Health Insurance Program (consultation with J.I. Williams, 1999, Institute for Clinical Evaluative Sciences).

Methods

Study design and sample

This was a cross-sectional study that compared self-reported use of mental healthcare for persons sampled within the Ontario portion of the household component of the National Population Health Survey (NPHS) in 1994/95 (Swain et al. 1999). Persons living on reserves, armed forces bases, institutions and remote areas were excluded by study design. A total of 5,187 respondents aged 12 years or more were sampled: 374 (7.2%) did not consent to the linkage; 192 did consent but no records were linked (3.7%) and 4, 621 (89.1%) consented to their survey responses being linked to healthcare records and were successfully linked. The sample for this study was therefore N = 4,621. The survey responses of these individuals were individually linked with physician reimbursement claims in the Ontario Health Insurance Program (OHIP) and inpatient discharge data from the Canadian Institute for Health Information (CIHI). Those who were not linked (in each of the categories above) did not differ from the linked sample in terms of social, economic and health variables (Mustard et al., 2000).

Self-reported mental healthcare use

The questions in the NPHS that were asked of the respondents were as follows: 'In the past 12 months have you seen or talked on the telephone to a health professional about your emotional or mental health? How many times (in the past 12 months)?'

The NPHS definition was not specific and depending upon its interpretation may include inpatient, outpatient, emergency care and telephone contacts with a wide variety of health professionals. In contrast, the definition of use according to administrative records was narrower. Only face-to-face contacts with physicians were included in the administrative records.

Administrative records of mental healthcare use

Mental healthcare was defined according to physician reimbursement claims made for a subset of a list of codes designated as mental healthcare by the Ontario Ministry of Health. Although diagnostic data were available, they were not included because mental disorders may be inaccurately reported (Schwartz et al., 1980; Towery et al., 1980). Diagnostic information is more consistent when there has been a recent inpatient stay (Robinson et al., 1997) but this applied to only a small minority of the population of users. It is noteworthy that the mental-health codes chosen appeared to be effective in zeroing in on mental health visits as the vast majority of these visits identified a mental disorder. In addition, for each mental health visit, the bulk of the reimbursement claims were made up of the select mental health codes in contrast to claims made for other reasons. Mental health claims were specific to each respondent and corresponded to a 12-month time frame prior to the date of the interview. Claims were aggregated into one or more visits according to claims made to the same physician on the same day. Specialty use was defined according to whether one or more mental health claims per visit were made by a psychiatrist. The presence of an inpatient stay was determined by specific OHIP claims and/or an inpatient stay with a most responsible diagnosis of an ICD-9 mental disorder in the CIHI data.

Respondent characteristics

Based on the NPHS data, respondents were classified according to their age, sex, urban/rural residence, marital status, household income in the past year, labour force activity and highest level of education attained. Measures of health and function included one or more disability days in the past 14 days, perceived health status, level of alcohol consumption in the past month, emotional distress in the past month and a major depressive episode in the past 12 months. Distress was measured according to a scale developed by Kessler and Mroczek of the Survey Research Center, University of Michigan (National Population Health Survey, 1996). This scale is made up of six items scored on a five-point scale (none of the time = 0; a little of the time = 1; some of the time = 2, most of the time = 3 and all of the time = 4). This scale was divided into four levels of approximately the same size: none (score of zero); low (score of 1 to 2); medium (score of 3 to 5) and high (score of 6 to 24). The presence of a major depressive episode was determined by the University of Michigan Composite International Diagnostic Interview (UM-CIDI) short form (Kessler et al., 1998). A cut point of a 90% probability of depression in the National Comorbidity Survey was chosen for this study as in other studies (Beaudet, 1996; Diverty and Beaudet, 1997; Cairney et al., 1999). This instrument is a shortened version of the original UM-CIDI , which imparts a diagnosis on the basis of DSM-III-R and ICD-10 (World Health Organization, 1990; Wittchen, 1994).

Analyses

The four main mental health-service use variables were: any self-reported use (yes/no); any administrative use (yes/no); self-reported volume of use (number of visits) and volume of administrative use (number of visits). Respondents with inpatient stays (n = 31) were excluded from the volume of use analyses due to their differential reporting of any use (see results) and the problem of defining the number of visits for this group. Analyses for volume of use were conducted among those who either self-reported use or were captured in the administrative records (n = 581). The distributions of the number of visits in the self-reported data, the number of visits in the administrative records data and the difference scores between these data sources were all skewed. Symmetry was attained when each distribution was log transformed. Therefore, log transformations were performed when analysing each of these distributions to guard against violating assumptions of parametric tests. (A constant of one was applied before log transformations were performed.) The removal of outliers from the analyses had little impact on the results; thus, all observations were retained. In the full sample (n = 4621), missing data in the study variables ranged from none (age, sex, marital status, urban/rural residence, disability days) to 4.5% in distress. Among users (n = 581), the range was smaller, from none (age, sex, marital status, urban/rural residence, disability days, depression) to 2.2% in household income. In multivariate analyses, (see consistency of estimates below), complete case analyses were employed. The number of observations in the two models of any use was n = 4134 (10.5% missing) and n = 555 (4.6% missing) in the two models of volume of use. Statistical significance was set an alpha level of 0.05 and all tests were two-sided.

Individual level agreement overall and by respondent characteristics

The level of agreement between any self-reported use and administrative records was assessed according to the kappa statistic. To determine whether there were systematic differences in the level of agreement according to respondent characteristics, the heterogeneity of the kappa statistic was tested (Fleiss, 1981). Sensitivity and specificity were also examined. For the volume of use, agreement between the two data sources was evaluated according to the Pearson correlation coefficient and the intra-class coefficient (ICC) (Kramer and Feinstein, 1981). The mean difference was also tested (see next section). To determine whether differences in the number of visits between the data source varied according to respondent characteristics, the difference scores were regressed on each of the respondent characteristics. Kappa and ICC statistics were interpreted in relation to the guidelines of Landis and Koch (1977). These analyses were meant to identify where individual differences in agreement occurred within the sample and therefore were not weighted.

Consistency of the estimates overall and by respondent characteristics

The 12-month prevalence estimates for any self-reported use and administrative records were evaluated by testing the difference between the two proportions. Two separate multiple logistic regression models, one for self-reported use, the other for administrative records, were fitted with respondent characteristics as the independent variables. The overlap in the 95% confidence intervals for respective odds ratios was examined. For volume of use, two separate multiple linear regression models of the mean differences between the logged distributions were fitted. As volume of use is expressed in logs, exponentiation of the regression coefficients for any of the independent variables provides the percentage by which the average number of visits for those having the characteristic exceeds the number of visits for those who do not. For example, a regression coefficient of 0.62209 for those who were depressed in the self-reported equation corresponds to an 86.3 % higher number of visits compared to those who were not depressed.

These analyses were conducted initially using unweighted data with the statistical software SAS (SAS Institute Inc. 2000). Then the analyses were repeated using weights and a bootstrapping technique to provide estimates and their respective variances that represent the population of Ontario (Rao et al., 1992; Rust and Rao, 1996).

Results

Individual level agreement between data sources overall and by respondent characteristics

The percentage agreement was high (90.2%) but the chance corrected agreement was fair with a kappa of 0.40 (0.35;0.44). The row and column percents indicate that only about half of self-reported use was captured in administrative records and vice versa.

The kappas were not homogeneous according to the following respondent characteristics: age, labour force status, distress and depression. Agreement was higher for those who were distressed and those who had depression in the past year and lower for older persons

Table 1. Any use of mental health services in the past year

	Administrative records = yes	Administrative records = no	Total
Self-reported = yes	177	230	407
row%	43.5		
column%	46.6		
Self-reported = no	203	3811	4014
Total	380	4041	4421

200 missing (95% of thee were not found in administrative records or self-reported use).
[1] Unweighted. Weighted row and column percents are 43.4% and 42.5% respectively.

and those who were retired. See Table 2. Those who had an inpatient stay in the past year also had a lower level of agreement (kappa: 0.11 95% CI: 0.062;0.17) as compared to users in the mental health specialty sector (kappa: 0.35 95% CI: 0.29;0.41) and general medical sector (kappa: 0.25 95% CI: 0.20;0.31).

The level of agreement for the volume of outpatient mental health use was low. The intra-class coefficient was 0.005 and the Pearson correlation coefficient was 0.18. The mean difference is reported below. Agreement varied according to the same respondent characteristics as noted above for any use. Age, labour-force activity, distress and depression each predicted the difference scores between self-reported outpatient mental health service use and administrative records at a statistically significant level.

Consistency of the estimates across data sources overall and by respondent characteristics

The 12-month prevalence of self-reported mental health service use was equivalent to the prevalence estimate from the administrative records 9.18% (95% CI: 7.76;10.61) versus 8.71% (95% CI:7.51;9.92). The difference, 0.47, did not differ from zero (95% CI: –1.1; 2.03).

Among those who were depressed in the past 12 months, 46.5% self-reported use and 34.1% were recorded as receiving mental healthcare in administrative records.

There was a statistically significant difference in the volume of self-reported and administrative outpatient mental health visits. The mean difference was 28% higher in the self-reported data than in the administrative records (95% CI: 8.5%; 52.0%). The median number of visits (not logged) in the self-reported data was two compared to one in the administrative records. Among those who were depressed, the median number of visits (not logged) in the self-reported data was five in contrast to one in the administrative records. The corresponding percentage difference in the average number of visits across data sources for those who were depressed was 40.2% (15.6%; 70.1%).

In the two separate multiple logistic regression models, the odds ratios for the probability of any use in a 12-month period were comparable across respondent characteristics with the exception of distress. While there was a graded, positive, statistically significant relationship between distress and any use in both sources of data, the odds ratios were much higher in the self-reported data – see Figure 1. In contrast to persons with no distress, the odds of use for persons at the highest level of distress were 9.21 (4.04; 20.96) in the self-reported data compared to 2.67 (1.43; 4.97) in the administrative data, a relative difference of 245%. Nevertheless, the 95% confidence intervals for these odds ratios overlapped indicating that the observed relationships may represent the same underlying distribution.

A similar pattern was visible in the two separate multiple linear regression models of volume of outpatient use in relation to the measure of distress. See Figure 2. In the self-reported data, the percentage difference in the average number of visits was 2.2 times higher among those at the highest level of distress compared to those with no distress. Again a graded positive relationship with distress was apparent in the self-reported volume of use. However, the relationship between distress and volume of use in the administrative records was weaker, in the opposite direction and not statistically significant. The 95% confidence intervals around the percentage differences did not overlap for those whose current level of distress was at the medium or high level compared to those with no distress.

Table 2: Variations in the level of agreement between any self-reported use of mental health services and administrative records by respondent characteristics

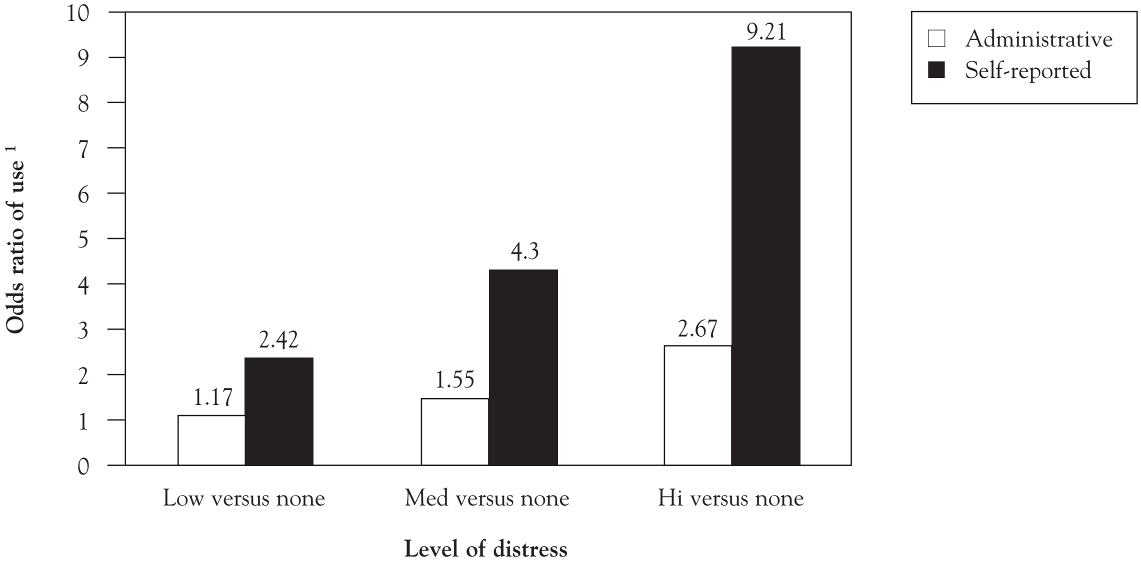
Respondent characteristics	**Kappa (95% confidence interval)**	Marginal percentage SR vs. AD use	Sensitivity and specificity (%)[1]
Age n = 4421; 200 missing	*Test for heterogeneity* p = 0.018	unweighted	unweighted
Quartiles			
12–28 yrs	0.38 (0.28;0.48)	9.85 versus 6.08	55.6; 93.1
29–40 yrs	0.48 (0.40;0.56)	13.05 versus 10.58	60.0; 92.5
41–58 yrs	0.39 (0.30;0.48)	9.34 versus 10.50	42.4; 94.5
58–100 yrs	0.26 (0.16;0.37)	4.61 versus 7.01	25.3; 97.0
Main activity n = 4296; 325 missing	*Test for heterogeneity* p = 0.039		
Family care	0.48 (0.37;0.59)	12.39 versus 12.03	55.2; 93.5
School	0.35 (0.19;0.52)	10.37 versus 5.59	43.1; 94.8
Illness disability	0.46 (0.29;0.62)	33.33 versus 33.33	57.1; 92.4
Looking for work/other	0.46 (0.27;0.64)	16.47 versus 14.12	58.3; 90.4
Retired	0.23 (0.12;0.34)	4.97 versus 7.34	23.1; 96.5
Work for pay	0.36 (0.29;0.43)	7.91 versus 7.03	43.6; 95.1
Distress n = 4411; 210 missing	*Test for heterogeneity* p = 0.011		
Score of zero	0.30 (0.13;0.46)	1.52 versus 4.02	21.6; 99.3
Score of 1 to 2	0.32 (0.20;0.43)	3.87 versus 4.93	30.8; 97.5
Score of 3 to 5	0.26 (0.18;0.35)	8.65 versus 8.49	33.0; 93.6
Score of 6 to 24	0.44 (0.37;0.51)	25.19 versus 18.49	66.1; 84.1
Depression n = 4418; 203 missing	*Test for heterogeneity* p = 0.003		
No	0.30 (0.25;0.36)	6.59 versus 6.74	34.5; 95.4
Yes	0.48 (0.38;0.58)	46.08 versus 34.81	79.4; 71.7

[1] Calculated using administrative records as criterion measure.

Conclusions

In contrast to previous studies of mental health services, this study did not find that the estimated prevalence of self-reports of any mental health service use was lower than estimates obtained from administrative records even though the definition of self- reported use was broader than the administrative records definition. Self-reported volume of use was higher than administrative records as in the study by Taube et al. (1986). The individual level of agreement was moderate for any use and low for volume of use. These findings are similar to those for medical service in general where estimates across data sources for any use were similar but more variable for volume of use (Mustard et al., 2000).

Systematic differences in the level of agreement were evident for specific respondent characteristics and adjusted estimates of use were affected by these differences. In particular, the estimates of use among persons who were distressed were less consistent across data sources with stronger positive effects in the self-reported data. There are a number of possible interpretations for these results. The differential recall of use by respondents in distress suggests that recall bias may be present. It is plausible that the recall of the use of mental health services is affected by current distress as mood states are known to influence memory (Koriat et al., 2000). When persons are depressed, they are better at recalling past depressed states or stressful life events (Aneshensel et al., 1987; Simon and Von Korff,



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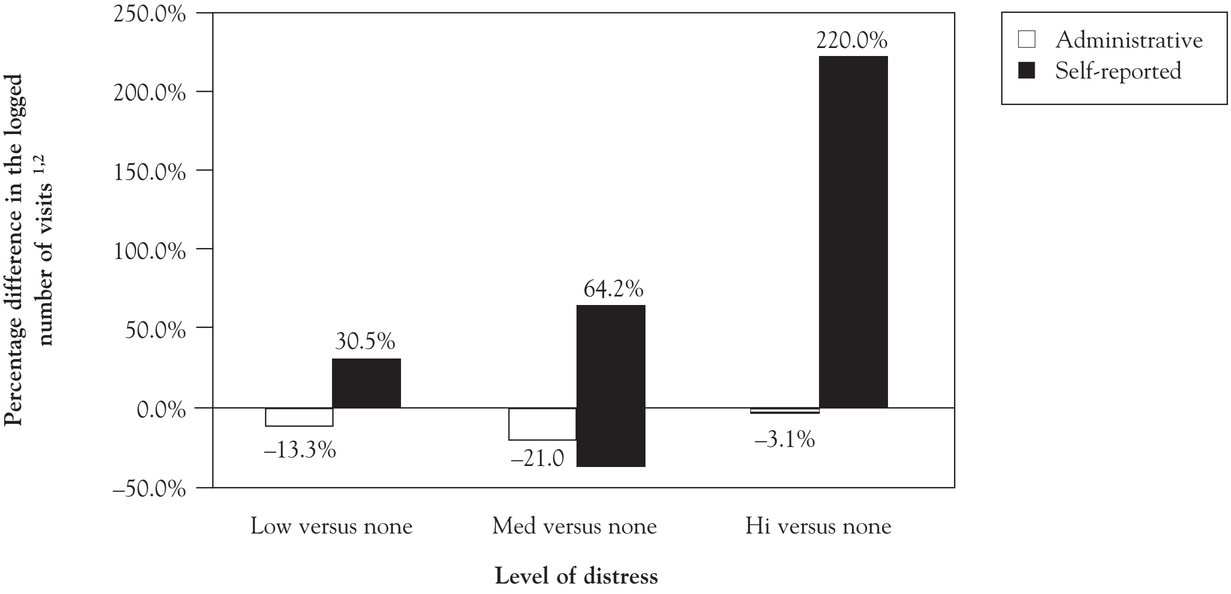
[1] Adjusted for: age, sex, urban/rural residence, marital status, labour force activity, education, income, depression, alcohol consumption, subjective health, disability days

Figure 1. The association between distress and any mental health service use by data source N = 4,134; missing = 487.



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[1] Adjusted for: age, sex, urban/rural residence, marital status, labour force activity, education, income, depression, alcohol consumption, subjective health, disability days.

[2] Because the dependent variable is expressed in longs, exponentiation of the estimated coefficient for an independent variable provides the percentage by which the average differs from the reference group.

Figure 2. The difference in the volume of outpatient mental health visits among users by distress and data source (N = 554; missing = 27).

1995) that may well extend to use connected to these states. If recall bias is present, then from a policy standpoint this is disturbing. For planning purposes, one would need to deflate estimates of self-reported use or rely on administrative records. While shorter recall periods may minimize the bias, precision may become an issue. Self-reported data may falsely reassure planners that those in need are receiving care appropriate to their level of need when they are not.

Another interpretation is that distressed individuals are reporting their use of mental health services accurately. The administrative definition of use was specific to medical care. Distressed individuals may be more likely to see other providers, such as social workers or psychologists. Their volume of use may also be greater due to visits to these providers. The 94/95 NPHS self-reported definition of use did not include questions about the types of providers seen for mental health reasons. We were therefore unable to study the use of non-medical providers. Previous studies of non-medical provider use in Canada have been based on self-reported use. These studies have shown the bulk of mental health services are provided by physicians on an outpatient basis. Fewer individuals use other types of providers or services and their use is not mutually exclusive of physician use (Bland et al., 1990; Lin et al., 1996; Bland et al., 1997). This may be due to referral practices between providers. The sample sizes in these studies have limited a more detailed examination of use outside the medical sector.

If neither recall bias nor coverage matters are at issue, then the low to moderate levels of agreement observed may symbolize differences between perceived and evaluated need. In essence, both provider- and consumer-based definitions of use are accurate. They are discrepant as they represent the different social and cultural orientations of consumers and providers in relation to mental illness (Mechanic, 1995). Discrepancies may not be a problem if the care given falls within what is considered appropriate more often than not. On the other hand, agreement between clinicians and consumers about need does not insure that appropriate care is given. Both may be wrong (Redelmeier et al., 2001).

Regardless of how use is defined, access remains a concern even among those who have universal medical insurance. As in previous studies, this study found that only about a third to half of those who have experienced depression received mental health services in the past year (Bland et al., 1997; Parikh et al., 1997; Regier et al., 1998; Kessler et al., 1999). The global burden of depression is growing (Murray and Lopez 1996). To what degree changes in access to care can reduce the burden of depression needs to be weighed against alternative interventions.

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