Do users of mental health services lack access to general practitioner services?

Qun Mai, C D'Arcy J Holman, Frank M Sanfilippo, Jonathan D Emery and Louise M Stewart

ABSTRACT

Objective: To compare rates of visits to a general practitioner between users and non-users of mental health services (MHS).

Design, participants and setting: Population-based retrospective cohort study of 204 727 users and 294 076 matched non-users of MHS in Western Australia from 1 January 1990 to 30 June 2006, based on linked records of the use of MHS, hospital admissions, Medicare claims for GP and specialist services, electoral roll registration and deaths.

Main outcome measures: Adjusted rate ratios (ARRs) for the number of visits to GPs by users of MHS relative to non-users, and for different categories of mental disorders.

Results: Relative to non-users of MHS, the ARR of visits to GPs by users of MHS was 1.622 (95% CI, 1.613–1.631) overall, and was elevated in each separate category of mental illness. ARRs were highest for alcohol/drug disorders, schizophrenia and affective psychoses (2.404, 1.834 and 1.798, respectively). The results were not changed by location (metropolitan, rural or remote addresses). However, the 4% of MHS users with no fixed address had a very low ARR of visits to GPs (0.058; 95% CI, 0.057–0.060).

Conclusions: Users of MHS visit GPs substantially more often than non-users, with the exception of those with no fixed address who seldom see a GP at all.

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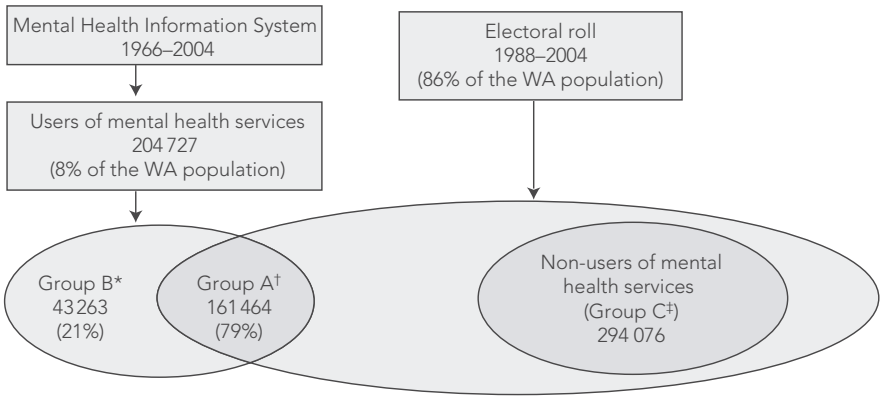
The Duty to Care study was a comprehensive investigation that used population-based data linkage to examine the burden of physical diseases in users of mental health services (MHS) in Western Australia.[1-5] The study showed that users of MHS, representing 8% of the general population (mostly with moderate to severe mental illness), were at excessive risk of developing all major physical diseases and had a high case-fatality rate from those illnesses.[1-3] This raises the question as to whether lack of physical health care contributes to the poor physical health outcomes associated with mental illness.

In earlier reports, we postulated that part of the problem in Australia may be that individual and structural barriers might preclude the users of MHS gaining adequate access to primary care provided by general practitioners.[1-3] Primary care is thought to be one of the foundations for improving the health outcomes of vulnerable populations[6] and, for people with mental illness, could be potentially important in facilitating the interface between MHS and specialist medical services for physical conditions.[7] This is particularly the case in Australia, where financial barriers to accessing GP services are largely removed by Medicare.[8] The transformation of MHS from an institution-based to a community-based care model in Australia has implied an increasing involvement of GPs in the physical health care of people with mental illness.[9]

However, the extent to which people with mental illness are engaged by the GP sector in Australia is unknown. Previous studies from the United States suggest that people with serious mental illness, particularly schizophrenia and alcohol or drug disorders, receive a lower intensity of primary care.[10-11] Homeless people with mental illness are unlikely to receive any medical care at all.[12,13]

Against this background, our objective was to determine if users of MHS have an appropriate level of access to GP services relative to non-users. Our working hypothesis was that users of MHS, especially those with serious mental illness, visit GPs less often than non-users, which might partly explain their poor physical health outcomes.

1 Definition of the study cohorts, comprising 498 803 participants



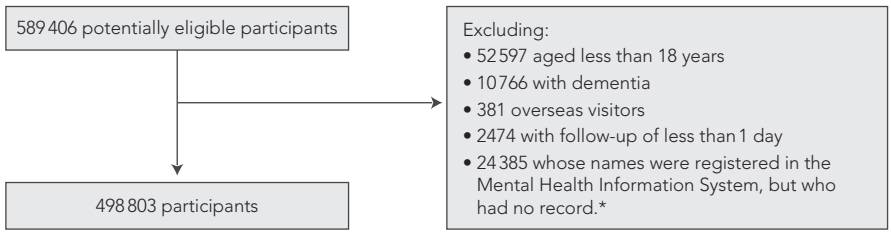
WA = Western Australia.
* Users of mental health services who were not registered on the Western Australian electoral roll. † Users of mental health services who were also registered on the Western Australian electoral roll. ‡ People on the Western Australian electoral roll who were never in the Mental Health Information System, matched 2:1 with Group A by 5-year age group and sex. ◆

METHODS

We carried out a population-based retrospective cohort study for the period 1 January 1990 to 30 June 2006, using the crossjurisdictional data linkage facility of the Western Australian Data Linkage System (WADLS), which has enabled the integration of datasets held by the Australian federal and Western Australian state governments to support medical and health research.

Study participants comprised two groups (users and non-users of MHS) selected from the Western Australian Mental Health Information System (MHIS) and the electoral roll, respectively. The MHIS collects inpatient data from psychiatric institutions and public and private general hospitals, and outpatient data from public mental health outpatient clinics,

2 Details of the selection of study participants



* Patients who had contact with a community mental health service, but for whom clinicians provided no further information on the number of service contacts. These could be referrals, once-only visits or situations in which health services were not compliant in providing service contact data. ◆

3 Summary of study methods

***A** Data sources*

Source	Period	Records	Persons
Medicare Benefits Scheme records	1984–2006	143 416 764	554 541
Hospital inpatients, including mental health inpatients	1966–2006	4 922 939	525 983
Mental health outpatients	1971–2006	9 981 236	190 440
Electoral roll	1988–2006	782 161	483 524
Deaths	1990–2006	80 546	80 546

***B** Hierarchy of mental health diagnoses*

Severity	Diagnosis	ICD-9 code
Severe	Dementia, organic psychotic conditions, schizophrenia and affective psychosis	290, 293–296
Moderate	Alcohol and drug psychoses, paranoid states, other non-organic psychoses, neurotic disorders, personality disorders, sexual deviations, alcohol and drug dependence, and childhood disorders	291–292, 297–305, 313–315
Mild	Adjustment reaction, reaction to stress, depressive disorders not elsewhere classified, conduct disorders not elsewhere classified, special syndromes not elsewhere classified and mental retardation	306–312, 317–319
Other	Other than mental or behavioural disorders	Not in 290–319

***C** Category of mental disorders*

Category	ICD-9 code
Alcohol/drug disorders	291, 292, 303—305
Schizophrenia	295
Affective psychoses	296
Other psychoses	293, 294, 297–299
Neurotic disorders	300
Personality disorders	301
Adjustment reaction	309
Depressive disorder	311
Other mental disorders	302, 306–308, 310, 312–319
In the Mental Health Information System, but had no mental health diagnosis	Other than 290–319

ICD-g = International Classification of Diseases, ninth revision. ◆

community MHS and psychiatric residential units. Ambulatory services provided by private psychiatrists and GPs treating mental disorders were not included.

Users of MHS for this study included all people recorded in the MHIS from 1 July 1966 to 31 December 2004 who were still alive on or after 1 January 1990. These people were categorised as Group A or Group B, based on whether or not they had ever been on the Western Australian electoral roll (Box 1). The electoral roll data represented about 86% of the Western Australian general population aged ⩾ 18 years. Non-users of MHS were a random sample of people who were on the electoral roll, but never recorded in the MHIS; these people were categorised as Group C. Group C was matched 2:1 with Group A by 5-year age group and sex.

For users of MHS (Groups A and B), the start of follow-up (T_0) was 1 January 1990 for people recorded in the MHIS before 1 January 1990, or the first date of registration with the MHIS for those who were first recorded from 1 January 1990 onwards. For non-users (Group C), T_0 was the same as that of their matched person in Group A. People aged less than 18 years, those diagnosed with dementia, overseas visitors, those with a follow-up period of less than 1 day and people recorded in the MHIS with only incomplete mental health outpatient records were excluded from the study (Box 2).

Data sources

Linked records concerning the study participants, dated according to time of services or events, were extracted from Western Australian Government and Australian Government datasets (see Box 3, A for details). Medicare Benefits Scheme (MBS) data included all claims for GP and specialist visits made by the participants within Australia, and not just in WA.

Variables and measurements

The outcome measure was the rate ratio of visits to GPs comparing users of MHS with non-users. Rates were calculated as the number of GP visits divided by the person-time "at risk" for GP visits. Person-time "at risk" was the time from study entry to exit, minus any time spent in hospital. Study entry was at T_0 and exit was either the censoring date of 30 June 2006 or at date of death if that was earlier. Specialist visits were measured during the same period.

We ascertained the principal mental disorder for each user of MHS using a previously published method.[2] Because some patients had extended periods of inpatient and outpatient contact with MHS, during which clinical views on the diagnosis were prone to vary, we used the last diagnosis recorded during the illness episode. However, if an earlier diagnosis was higher in the hierarchy of severity[2] (Box 3, B), then the

earlier diagnosis was taken as the principal diagnosis. If the last inpatient diagnosis was in the same hierarchical category as the last outpatient diagnosis, then we used the inpatient diagnosis. People with dementia were excluded after ascertaining the principal mental disorder. The remaining records were then grouped into one of 10 mutually exclusive categories of mental disorders (Box 3, C).

Scores for social and locational disadvantages were derived from the Index of Relative Socio-Economic Disadvantage (IRSD),[14] and the Accessibility/Remoteness Index of Australia (ARIA).[15] The IRSD and ARIA indices were available at the collector's district level of the Australian Census, obtained for each record by geocoding the address field. IRSD scores were grouped into five levels of social disadvantage: most disadvantaged (the lowest 10% of IRSD scores of the Western Australian general population), more disadvantaged (10% to <25%), little disadvantaged (25% to <50%), less disadvantaged (50% to <75%) and least disadvantaged (75%+).

The category of the lowest 10% IRSD was created because a high proportion of users of MHS fell into this group. ARIA scores were grouped into three levels: metropolitan, rural and remote, with metropolitan indicating least and remote indicating most locational disadvantage.

Age, social and locational disadvantages, and calendar year were measured at T_0. Physical comorbidities were measured by means of the Charlson Index, based on hospital inpatient data with a 5-year look-back period from T_0.[16]

Statistical analysis

Characteristics and crude outcomes of study cohorts were compared using χ^2 tests (for categorical variables) or Mann–Whitney tests (for continuous variables). As there was overdispersion in our data, negative binomial regression models were used to compare the rates of visits to GPs between users and non-users of MHS as well as between the two subgroups of MHS users, after adjustment for 5-year age group, sex, Indigenous status, social disadvantage, locational disadvantage, calendar year, physical co-morbidities and visits to specialists. We also assessed locational disadvantage as a potential effect modifier in the relationship between mental disorders and visits to GPs. Missing values were treated as a separate exposure group so that all subjects were included in the analyses (Box 4). The analyses were performed using Stata version 10.0 for Windows (StataCorp, College Station, Tex, USA).

Ethics approval

The study was approved by Human Research Ethics Committees of the University of Western Australia and health departments of the Australian and Western Australian governments.

4 Characteristics of study participants at the start of follow up (T_0)

Characteristics	Users of mental health services			Non-users of mental health services (Group C§)	
	Group A*	Group B†	P‡		P¶
Number of participants	161464	43263		294076	
Sex			<0.001		<0.001
Male	66699 (41.3%)	23373 (54.0%)		118786 (40.4%)	
Female	94695 (58.7%)	19890 (46.0%)		175290 (59.6%)	
Mean age in years (SD)	41.5 (18)	39.0 (17)**	<0.001	45.0 (20)	<0.001
Indigenous status			<0.001		<0.001
Indigenous	10482 (6.5%)	3136 (7.2%)	0.084	6107 (2.1%)	<0.001
Non-Indigenous	150801 (93.4%)	39478 (91.3%)	<0.001	258510 (87.9%)	<0.001
Missing	181 (0.1%)	649 (1.5%)	0.063	29459 (10.0%)	<0.001
Level of social disadvantage			<0.001		<0.001
Most disadvantaged	23808 (14.8%)	5865 (13.6%)	0.016	32167 (10.9%)	<0.001
More disadvantaged	30934 (19.2%)	7433 (17.2%)	<0.001	46474 (15.8%)	<0.001
Little disadvantaged	40222 (24.9%)	7872 (18.2%)	<0.001	69286 (23.6%)	0.346
Less disadvantaged	28935 (17.9%)	6273 (14.5%)	<0.001	59030 (20.1%)	<0.001
Least disadvantaged	37530 (23.2%)	6999 (16.2%)	<0.001	87119 (29.6%)	<0.001
Missing	35 (0)	8821 (20.4%)	0.001	0 (0)	
Location††			<0.001		<0.001
Metropolitan Western Australia	111437 (69.0%)	23778 (55.0%)	<0.001	214598 (73.0%)	<0.001
Rural Western Australia	35823 (22.2%)	6781 (15.7%)	<0.001	60506 (20.6%)	0.218
Remote Western Australia	14099 (8.7%)	4232 (9.8%)	0.014	18966 (6.5%)	<0.001
Missing	105 (0)	8472 (19.6%)	<0.001	6 (0)	0.338
Mean Charlson index score (SD)	1.18 (2.24)	0.43 (1.38)	<0.001	1.04 (2.18)	<0.001

* Users of mental health services who were also registered on the Western Australian electoral roll. † Users of mental health services who were not registered on the Western Australian electoral roll. ‡ Obtained from a χ^2 or Mann–Whitney test comparing Group A with Group B. § People on the Western Australian electoral roll who were never in the Mental Health Information System, matched 2:1 with Group A by 5-year age group and sex. ¶ Obtained from a χ^2 or Mann–Whitney test comparing users with non-users of mental health services. ** 16 people in Group B had missing data for age. †† Metropolitan location indicates least, and remote indicates most, locational disadvantage. ◆

RESULTS

There were 498 803 eligible participants selected: 204 727 users of MHS and 294 076 non-users (Box 1). Characteristics of the study cohorts at T_0 are shown in Box 4. Relative to non-users, users of MHS were more socially disadvantaged, more likely to be Indigenous and more likely to live in remote WA. Among users of MHS, Group B was younger, had a higher ratio of males to females (Box 4), and higher proportions of alcohol/drug disorders, schizophrenia and personality disorders compared with Group A (Box 5).

The 498 803 participants visited GPs a total of 32 575 719 times during a mean follow-up period of 10.9 years. The crude rate of visits to GPs was higher in Group A (8.22 visits per person-year; Box 6), and lower in Group B (4.31) compared with Group C (5.00). There were no visits to GPs observed in 2.1% of people in Group A, 44.4% in Group B (mainly because 98.3% of people in Group B who never had an address recorded in the WADLS had no visits to GPs recorded at all) and 3.9% in Group C (Box 6).

The large number of visits to GPs produced effect measures with very narrow confidence intervals (and all P values <0.0001), so rate ratios were reported to three decimal places. Univariate regression analysis showed that users of MHS visited GPs significantly more often than non-users; and Group A participants visited GPs significantly more often, but Group B participants significantly less often, than Group C participants (Box 7). Multivariate regression analysis (Box 7) showed that, compared with non-users of MHS, the overall adjusted rate ratio (ARR) for visits to GPs among users of MHS was 1.622 (95% CI, 1.613–1.631). The ARR was highest in Group A (ARR, 1.663; 95% CI, 1.653–1.672), and higher in Group B (ARR, 1.416; 95% CI, 1.401–1.431), compared with Group C (ARR = 1).

Among users of MHS, ARRs were most elevated in people with alcohol/drug disorders, schizophrenia and affective psychoses (ARRs, 2.404, 1.834 and 1.798, respectively); moderately raised in people with other psychoses, neurotic disorders, personality disorder (ARRs, 1.658, 1.552 and 1.700, respectively); and least elevated, but still higher than for non-users in those with adjustment disorder, simple depression and other mental disorders (ARRs, 1.399, 1.472 and 1.321, respectively). Patients from all categories of mental disorders visited GPs more often than non-users of MHS in metropolitan, rural and remote parts of WA (all ARRs > 1; Box 8).

A notable exception to the general pattern of results was observed in the 4% of users of MHS with no fixed address recorded on any record in the WADLS (mostly those in Group B). This subgroup seldom visited a GP at all (ARR, 0.058; 95% CI, 0.057–0.060).

5 Distribution of mental disorders in 204 727 users of mental health services

Categories of mental disorders	Users of mental health services		
	Group A*	Group B†	P‡
Alcohol/drug disorders	15 409 (9.5%)	7 114 (16.4%)	<0.001
Schizophrenia	8 095 (5.0%)	4 307 (10.0%)	<0.001
Affective psychoses	28 849 (17.9%)	5 141 (11.9%)	<0.001
Other psychoses	10 376 (6.4%)	2 198 (5.1%)	0.011
Neurotic disorders	28 513 (17.7%)	5 470 (12.6%)	<0.001
Personality disorders	4 960 (3.1%)	2 230 (5.2%)	<0.001
Adjustment reaction	12 682 (7.9%)	2 433 (5.6%)	<0.001
Depressive disorder	7 324 (4.5%)	1 066 (2.5%)	0.001
Other mental disorders	15 142 (9.4%)	4 981 (11.5%)	<0.001
Other than mental health diagnoses	30 114 (18.7%)	8 323 (19.2%)	0.151

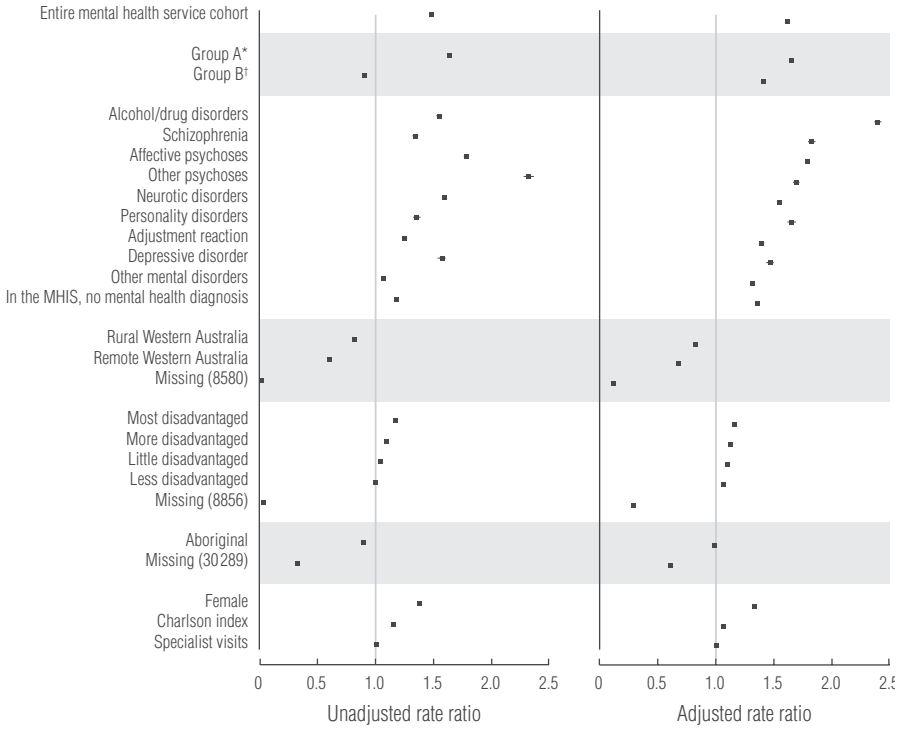
* Users of mental health services who were also registered on the Western Australian electoral roll. † Users of mental health services who were not registered on the Western Australian electoral roll. ‡ Obtained from a χ^2 or Mann–Whitney test comparing Group A with Group B. ◆

6 Numbers and crude rates of visits to general practitioners and specialists by users and non-users of mental health services, 1 January 1990 to 30 June 2006

Variables	Users of mental health services				
	Group A*	Group B†	P‡	Non-users of mental health services (Group C§)	P¶
Visits to GPs	14 595 064	2 160 541		15 820 114	
Mean (SD)	90 (112)	50 (118)	<0.001	54 (58)	0.440
Median	60	7		37	
People with no visit to a GP at all	2.1%	44.4%		3.9%	
Visits to specialists	2 338 724	230 851		2 636 097	
Mean (SD)	14 (33)	5 (22)	<0.001	9 (16)	0.506
Median	5	3		5	
Mean valid follow-up period in years (SD)	11.0 (5.5)	11.6 (5.7)	<0.001	10.8 (5.5)	0.487
Median	12.7	11.5		16.4	
Crude rate of visits to GPs (per person-year)	8.22	4.31	<0.001	5.00	<0.001
Crude rate of visits to specialists (per person-year)	1.32	0.46	<0.001	0.83	<0.001

* Users of mental health services who were also registered on the Western Australian electoral roll. † Users of mental health services who were not registered on the Western Australian electoral roll. ‡ Obtained from a χ^2 or Mann–Whitney test comparing Group A with Group B. § People on the Western Australian electoral roll who were never in the Mental Health Information System, matched 2:1 with Group A by 5-year age group and sex. ¶ Obtained from a χ^2 or Mann–Whitney test comparing users with non-users of mental health services. ◆

7 Unadjusted (univariate analysis) and adjusted (multivariate analysis) rate ratios of visits to general practitioners from negative binomial regression analysis



MHIS = Mental Health Information System.

* Users of mental health services who were also registered on the Western Australian electoral roll. † Users of mental health services who were not registered on the Western Australian electoral roll.

Multivariate analysis included the outcome variable (GP visits), exposure variable and potential confounders (5-year age group, sex, Indigenous status, social disadvantage, locational disadvantage, Charlson index, calendar year, and visits to specialists). Three models were investigated based on different definitions of the exposure variable (exposed/non-exposed): (i) users of mental health services/non-users, (ii) Group A/Group B/non-users and (iii) categories of mental disorders/non-users. The results for confounding variables shown above were obtained from the second model. The reference groups were: non-users; age <20 years; males; non-Indigenous people; the least disadvantaged group; metropolitan Western Australia (most advantaged location); index year 1990. Because of the large simple size, all estimates had very narrow 95% confidence intervals that will not show in the graph. ◆

DISCUSSION

Contrary to our hypothesis, we found that users of MHS from all categories of mental disorders visited GPs more often than non-users, with the exception of the 4% of users with no fixed address who seldom visited GPs at all. Those with more severe mental illness visited GPs more often than those with less severe mental illness. The results were similar in metropolitan, rural or remote areas.

Our findings differ from those of two large US studies that showed poor access to ambulatory general medical services among people with severe mental illness.[10,11] One reason may be the differences between the Australian and US health care systems. The Australian health care system provides universal access to GP services financed by Medicare, while the US system does not. Another reason is that because MBS record data for visits to GPs have information on the length but not the purpose of consultations, we could not distinguish whether a GP visit was for physical or mental health reasons. A proportion of visits to GPs in this study may have been solely for mental health reasons, whereas physical and other preventive and health promotion issues may not have been dealt with during the same consultation. Our finding that the 4% of users of MHS who never had an address recorded in the WADLS (presumably homeless people) were unlikely to visit GPs at all is consistent with other studies.[12,13]

To our knowledge, this is the first geographically defined, population-based, longitudinal study on the effect of mental disorders on visits to GPs, with a large sample size, long follow-up time, and covering the whole spectrum of mental disorders treated at both hospital or community settings. The high precision of the study is reflected by the narrow 95% confidence intervals of the rate ratios. Three strategies controlled potential confounding: domain restriction to the Western Australian electoral roll, matching between users and non-users of MHS, and multivariate analysis.

One limitation of our study was that the MBS data for visits to GPs did not have information on the purpose of the visit. Another limitation was the lack of data for private psychiatrists and GPs treating mental disorders. This would limit the extrapolation of our findings to all people with mental illness in Australia. Nevertheless, our study included about 40% of people with mental illness (generally with moderate to severe illness) whose physical health disparities were probably greater than the remainder of people with mental illness. Moreover, we used the same definition for our mental health cohort as did the Duty to Care study,[2] which ensures the continuity and integrity of our investigations and findings.

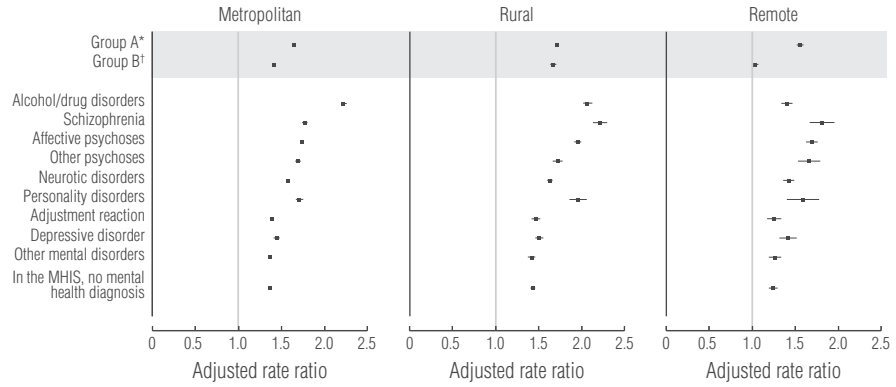
The previously reported Duty to Care study highlighted the poorer physical health outcomes in users of MHS.[1-3] With the opportunity provided by the recent development of the crossjurisdictional data linkage facility of the WADLS, we were able to determine whether the poorer physical health outcomes were partly the result of poorer engagement with the GP sector. The results show that, for the vast majority of users of MHS, this is not the case, at least in terms of the frequency of visits to GPs.

Although it is encouraging that most users of MHS seem able to gain access and use GP services, the poorer physical health outcomes in this group may mean that they have not benefited from their higher level of use of GP services. Promoting even higher levels of GP attendance may be futile. Therefore, policies focusing on how to improve the quality and preventive value of existing contacts between patients with mental illness and their GPs may be a more fruitful approach.

An exception to this is that users of MHS with no fixed address grossly lacked provision of any primary care. Further work is required to assess the need for outreach programs to deliver primary care to homeless people with mental illness.

Furthermore, relying solely on GPs to provide preventive services may be insufficient, given the complex care needs in this

8 Adjusted rate ratios of visits to general practitioners from multivariate analysis, stratified by locational disadvantage



MHIS = Mental Health Information System.

* Users of mental health services who were also registered on the Western Australian electoral roll. † Users of mental health services who were not registered on the Western Australian electoral roll.

Multivariate analysis included outcome variable (GP visits), exposure variable (Groups A, B or C) and potential confounders (5-year age group, sex, Indigenous status, social disadvantage, Charlson index, calendar year, and visits to specialists) except locational disadvantage. The reference groups were: non-users of mental health services (people on the Western Australian electoral roll who were never in the MHIS, matched 2:1 with Group A by 5-year age group and sex in the index year); age < 20 years; males; non-Indigenous people; the least disadvantaged group; index year 1990. There were 349 813 participants included in the metropolitan model, 103 113 in the rural model and 37 297 in the remote model. ◆

group of people. A system-wide, multidisciplinary and coordinated approach, together with building a strong community-based MHS system, which includes appropriate health promotion strategies for people with mental illness, may be part of the eventual solution to health inequities in this vulnerable and sizeable population.

The ability to generalise our findings to the whole of Australia is assisted by the consistent operation of the health system across the Australian states and the fact that the Western Australian population is well representative of Australia as a whole. Our results suggest that the desirable social goal of universal access to GPs in Australia works for most people with mental disorders, with the important exception of those who are homeless. However, while universal access may be a necessary pre-condition, it alone is insufficient to guarantee improved health outcomes.

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