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Demographic and health profiles of people with severe mental illness in general practice in Australia: a cross-sectional study

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ABSTRACT

Background. People with severe mental illness have a higher rate of premature death than the general population, largely due to primary care preventable diseases. There has been little research on the health profile of this population attending Australian general practices. **Methods.** In this nationwide cross-sectional study, MedicineInsight data for adult patients regularly attending general practices in 2018 were analysed to estimate the prevalence of schizophrenia or bipolar disorders (SBD) and investigate the health profile of people with SBD compared with other patients. Multilevel models clustered by practice ($n = 565$) and patient, and practice characteristics were created. **Results.** The prevalence of recorded SBD was 1.91% (95% CI = 1.88%–1.94%) among the 618 849 patients included. Patients with recorded SBD were more likely than other patients to have records of health risk factors, particularly smoking (aOR = 3.8, 95% CI = 3.6–3.9) and substance use (aOR = 5.9, 95% CI = 5.6–6.3), and higher probabilities of comorbidities including cardiovascular diseases (aOR = 1.3, 95% CI = 1.2–1.4), cancer (aOR = 1.1, 95% CI = 1.0–1.2), diabetes mellitus type 2 (aOR = 2.2, 95% CI = 2.0–2.3), chronic kidney diseases (aOR = 1.7, 95% CI = 1.5–2.0), chronic liver diseases (aOR = 3.3, 95% CI = 2.6–4.0) and chronic respiratory diseases (aOR = 1.7, 95% CI = 1.7–1.8). **Conclusions.** The higher prevalence of health risk factors and comorbidities among patients with recorded SBD underscores the need for proactive health risk monitoring and preventive care to address this health inequity.

Keywords: bipolar disorder, chronic diseases, comorbidity, general practice, health inequality, preventive health, schizophrenia, severe mental illness.

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Introduction

Severe mental illness (SMI; i.e. psychotic illness, primarily schizophrenia or bipolar affective disorder, severe depression) presents a significant global health equity challenge (Gronholm *et al.* 2021). It affects about 4% of the population worldwide (Gronholm *et al.* 2021) and 3% of Australians each year (Whiteford *et al.* 2017). People with SMI die approximately 20 years earlier than those in the general population (Gronholm *et al.* 2021). Most deaths are due to preventable physical health conditions (e.g. cardiovascular disease, respiratory illnesses, diabetes, and cancer) (Firth *et al.* 2019; Gronholm *et al.* 2021). Higher levels of morbidity and mortality are due to numerous factors including modifiable risk factors, psychiatric medicines, healthcare and socio-economic factors (Morgan *et al.* 2017; Firth *et al.* 2019). People with SMI are more likely to smoke, excessively drink alcohol, eat poor diets and be physically inactive than the general population (Firth *et al.* 2019). They are also less likely to receive preventive care (e.g. weight and blood pressure monitoring; assessment and treatment for high cholesterol) than other patients (Firth *et al.* 2019).

General practice has an important role in addressing this health inequity. General practitioners (GPs) are the main source of preventive and other health care, with 83% of Australians seeing a GP each year (Australian Institute of Health and Welfare 2020). The Australian Survey of High Impact Psychosis (SHIP) identified that 88% of adults who screened positive for psychosis had seen a GP the previous year (Raudino *et al.* 2014).

There is little research on the prevalence and characteristics of people with SMI attending general practices in Australia and their health risk factors and comorbidities. Surveys from different samples of people with different mental illness profiles provide different demographic and health trends. For example, general practice patients tend to be better functioning than patients under the care of mental health services (Carr *et al.* 2002). The impacts of mild-to-moderate mental health conditions are not as extensive as SMI (Firth *et al.* 2019). Consequently, data from general practice patients with SMI are needed to inform general practice policy and practice about this group. How much of the GP workload includes people with SMI? How do these patients differ from other patients? What does general practice data tell us about the health risk indicators and comorbidities of patients with SMI?

This study aimed to estimate the prevalence of the two main types of SMI (schizophrenia and bipolar disorder) in a nationwide sample of patients regularly attending Australian general practices. The focus on these two conditions was related to their high contribution to the burden of disease (Ferrari *et al.* 2016; Charlson *et al.* 2018), as well as the difficulties in identifying patients with severe levels of other severe mental illnesses within Electronic Health Records (EHR) data. The occurrence of common comorbidities and health risk factors was assessed to inform better practices for prevention and management of the physical health of this population.

Methods

Study design and data source

This was a cross-sectional observational study using MedicineInsight data from a national program managed by National Prescribing Service (NPS) MedicineWise (Busingye *et al.* 2019; NPS MedicineWise 2020). It contains longitudinal de-identified data extracted from EHRs from Australian general practices, including data equivalent to 13% of patients attending general practices in 2018–19 (NPS MedicineWise 2020). The profile of patients in the MedicineInsight dataset was similar to the profile of people who visited a GP during 2018–19 in terms of age, sex and socioeconomic status (NPS MedicineWise 2020). This study used a random sample of data from 25% of patients provided under contract to the UNSW School of Public Health ($N = 3\,473\,336$).

The dataset included 'condition flags' created by NPS MedicineWise that indicated if a condition was reported at any time in the MedicineInsight database for each patient (NPS MedicineWise 2019). These algorithms have shown good to excellent accuracy in identifying patients with five prevalent health conditions (sensitivity ≥ 85%) (Havard *et al.* 2021).

Study population

Adult patients (18–110 years) who were not deceased and regular patients of 565 practices as of 31 December 2018 were included in this study. Regular patients were those with at least three consultations in the previous 2 years in a single general practice (Royal Australian College of General Practitioners 2017). This criterion improved the quality of data ascertainment, increasing the opportunity for clinicians to record relevant health conditions, prescriptions, and tests (Busingye *et al.* 2019).

Age was calculated at 30 December 2018, based on each patient's year of birth. Patients with SMI were those with condition flags for schizophrenia or bipolar disorders (SBD) (Supplementary Table S1). Major depressive disorder was not included because the severity of depression was not reliably recorded in the dataset (NPS MedicineWise 2020).

Variables and definitions

Patients' characteristics included: (i) socio-demographic profile (age, sex, Indigenous status, government benefits); (ii) health risk factors (smoking status, substance use, dyslipidaemias, hypercholesterolemia, hypertriglyceridemia and hypertension); and (iii) chronic health conditions (cardiovascular diseases, chronic kidney diseases, diabetes mellitus type 2 (T2DM), chronic respiratory conditions, cancer, chronic liver diseases) (Supplementary Table S1). Body mass index was not included due to inconsistent recording of weight for two-thirds of patients (NPS MedicineWise 2020).

Smoking status was based upon the most recent recording of smoking status. Variables for other risk factors and the health conditions used in this study were NPS 'condition flags'. The condition flag for substance abuse was broadly defined to include, for example, smoking; alcohol use, abuse and dependence; illicit drug use, abuse and dependence; and prescription drug abuse. Given this broad definition, the term 'substance use' is used in this paper.

Practice characteristics included rurality and the Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) quintiles (Australian Bureau of Statistics 2018).

Statistical analysis

The prevalence of SBD was calculated by dividing the number of patients with a condition flag for SBD in the EHRs by the total number of included patients. Results were presented as a percentage with 95% confidence intervals (CIs) adjusted for clustering.

Descriptive statistics were calculated to assess the distribution of socio-demographic characteristics, health risk factors, and comorbidities in the study population stratified by study group (patients with and without SBD). Results are presented as percentages and associated 95% CIs for all categorical variables. Differences between patients with and without SBD and practice characteristics were assessed

using the Chi-squared test. The 95% CIs were calculated using robust variance estimation to account for clustering by practice.

The association between a record of SBD and the probability of having risk factors or comorbidities was evaluated by multilevel models adjusted for age and sex (model 1). As the likelihood of recorded SBD related to practices' IRSAD and remoteness of the area, multilevel models were further adjusted for IRSAD and remoteness (model 2). The practice ID was the grouping variable for the multilevel models. Model 2 presented a better fit than model 1 (assessed by the lower Akaikes' Information Criterion), so was the final model in this study.

All analyses were performed using SAS software version 9.4 (SAS Institute Inc., Cary, NC, USA). 'PROC SURVEY' was used to estimate CIs by robust variance; 'PROC GLIMMIX' with the LAPLACE method was used for the multilevel models.

Results

Of 618 849 patients who met the study criteria, 11 813 (1.91%, 95% CI = 1.88%–1.94%) had a record of SBD.

Characteristics of the study population

Patients with a record of SBD were more often males (48% vs 43%) than patients with no record of SBD. They were also more likely to be aged 30–59 years (59% vs 47%), to be recorded as Aboriginal or Torres Strait Islanders (6% vs 2%), have a healthcare card (67% vs 31%) and to have attended practices from the most disadvantaged areas (Table 1). Patient with recorded SBD had a lower proportion of missing data for recording of Indigenous status (17% vs 21%) and government benefits (9% vs 17%).

Health risk factors

SBD patients had significantly higher prevalence rates than patients without SBD for almost all the health risk factors: smoking (39% vs 13%), substance use (16% vs 2.5%), dyslipidaemia (22% vs 18%), hypercholesterolemia (13% vs 11%), and hypertriglyceridemia (0.3% vs 0.1%). Hypertension was significantly more prevalent among patients without SBD (22% vs 20%) (Table 2).

After adjusting for confounders, the probability of all health risk factors was higher among SBD patients than patients without SBD (adjusted odds ratio (aOR) 1.1–5.9). The highest probabilities were for substance use (aOR = 5.9), smoking (aOR = 3.8) and hypertriglyceridemia (aOR = 3.3). The probabilities of recorded dyslipidaemias, hypercholesterolemia, and hypertension were from 10% to 60% higher among SBD patients than patients without SBD (Table 3).

Comorbidities

SBD patients had higher recorded rates of most comorbidities evaluated than their counterparts, including chronic kidney disease (1.7% vs 1.4%), T2DM (9.9% vs 6.0%), chronic respiratory conditions (25% vs 16%) and chronic liver disease (0.7% vs 0.3%). However, unadjusted rates of cardiovascular disease and cancer were higher among patients without SBD (10% vs 9% and 15% vs 13%, respectively; Table 2).

Adjusted results revealed SBD patients were more likely to be diagnosed with all comorbidities assessed. The probability of having a recorded chronic liver disease diagnosis was over 3-fold higher among SBD patients (aOR = 3.3); T2DM was approximately 2-fold higher (aOR = 2.2). The probabilities of having recorded cardiovascular disease, chronic obstructive pulmonary disease, chronic kidney disease, or cancer were 10–70% higher among SBD patients than patients without SBD (Table 3).

Discussion

Overview

This study estimated the prevalence of recorded SBD as 2% in a population regularly attending Australian general practices. SBD patients were more likely to be male, less likely to be in the youngest or oldest age categories, and more likely to attend practices from the most disadvantaged areas compared to patients without SBD. They were also more likely to be recorded as Aboriginal or Torres Strait Islanders and in receipt of government benefits. Moreover, SBD patients had a higher prevalence of recorded health risk factors and chronic health conditions than non-SBD patients after adjusting for confounders.

Prevalence

The prevalence of 2% was lower than other estimates of SMI, as it only included those with a record of SBD. It also did not include patients with depression or anxiety that might warrant a classification of SMI. The data were insufficient for identifying such patients. As such, the prevalence of 2% seems consistent with Whiteford *et al.*'s estimate of SMI being 3.3% of the Australian population (Morgan *et al.* 2017). Although this might seem a small proportion of patients, they contribute substantially to the burden of disease (Ferrari *et al.* 2016; Charlson *et al.* 2018).

Demographic characteristics

There were different age distributions of patients with and without SBD. Patients from the SBD group were less likely to be in the youngest age group, possibly related to SBD being not yet diagnosed (Solmi *et al.* 2022). They were also less

Table 1. Sociodemographic characteristics of patients regularly attending general practices in Australia according to records of schizophrenia and bipolar disorders (SBD) diagnosis, 2018 ($N = 618\,849$).

Characteristic	Patients with a record of SBD ($n = 11\,813$)		Patients without a record of SBD ($n = 607\,036$)		*P* value
	Number	% (95% CI)	Number	% (95% CI)	
Patient's characteristics					
Sex[A]					<0.001
Male	5607	47.5 (46.1–48.8)	257 266	42.5 (41.9–43.0)	
Female	6201	52.5 (51.2–53.9)	348 625	57.5 (56.9–58.1)	
Missing	5	<0.1 (<0.1–<0.1)	1145	0.2 (0.1–0.2)	
Age group (years)					<0.001
18–29	1591	13.5 (12.6–14.3)	105 053	17.3 (16.3–18.3)	
30–39	2224	18.8 (17.9–19.7)	97 670	16.1 (15.4–16.8)	
40–49	2495	21.1 (20.3–21.9)	88 317	14.5 (14.2–14.9)	
50–59	2294	19.4 (18.7–20.2)	96 727	15.9 (15.6–16.2)	
60–69	1340	11.3 (10.7–11.9)	79 868	13.2 (12.7–13.6)	
70+	1869	15.8 (14.9–16.7)	139 401	22.9 (21.9–24.0)	
Aboriginal or Torres Strait Islander					<0.001
Yes	714	6.0 (5.1–6.9)	12 067	1.9 (1.7–2.3)	
No	9112	77.1 (75.0–79.3)	469 155	77.3 (74.9–79.6)	
Missing	1987	16.8 (14.5–19.0)	125 814	20.7 (18.3–23.1)	
Government benefits					<0.001
None	2814	23.8 (21.5–26.1)	313 191	51.6 (47.9–55.2)	
Pensioner or healthcare card	7851	66.5 (64.6–68.3)	186 229	30.7 (29.3–32.0)	
Department of Veterans' Affairs	32	0.3 (0.2–0.4)	2231	0.4 (0.3–0.4)	
Missing	1116	9.4 (7.2–11.7)	105 385	17.4 (13.7–21.0)	
Practice's characteristics					
Rurality					<0.001
Major city	6791	57.5 (49.9–65.1)	384 506	63.4 (56.2–70.5)	
Inner regional	3004	25.4 (20.2–30.7)	128 292	21.1 (16.7–25.6)	
Outer regional	1891	16.0 (7.1–24.9)	85 453	14.0 (6.1–22.0)	
Remote/very remote	123	1.0 (0.45–1.6)	8531	1.4 (0.6–2.2)	
Missing	4	<0.1 (0.0–0.1)	245	<0.5 (0.0–0.1)	
Socio-economic status quintiles[B]					<0.001
1 (most disadvantaged)	2925	24.8 (15.9–33.5)	116 211	19.1 (11.3–26.9)	
2	1971	16.7 (12.3–21.0)	81 547	13.4 (10.0–16.8)	
3	2693	22.8 (17.8–27.8)	137 834	22.7 (17.9–27.5)	
4	2033	17.2 (12.7–21.7)	111 341	18.3 (14.3–22.4)	
5 (most advantaged)	2129	18.0 (14.0–22.0)	155 020	25.5 (20.6–30.4)	
Missing	62	0.5 (<0.5–1.0)	5083	0.8 (0.0–1.7)	

Note: Only regular patients were included, defined as patients with at least three clinical encounters in the prior 2 years.
Chi-squared test for comparisons among SBD and non-SBD patients with valid data.
[A]There were no patients with sex recorded as indeterminate or intersex in the 25% MedicineInsight sample.
[B]Socio-economic status categorised by Australian Bureau of Statistics Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage (IRSD).

Table 2. Prevalence of health behaviour risk factors and health conditions among patients with records of schizophrenia and bipolar (SBD) and patients without SBD in general practices in Australia (*N* = 618 849).

Characteristic[A]	Patients with a record of SBD (*n* = 11 813)		Patients without a record of SBD (*n* = 607 036)		*P* value
	Number	% (95% CI)	Number	% (95% CI)	
Health risk factors					
Smoking status					<0.001
Smoker	4602	38.9 (37.0–40.9)	79 038	13.0 (12.0–14.0)	
Non-smoker/ex-smoker	6154	52.0 (50.0–54.0)	441 440	72.2 (71.4–74.0)	
Missing	1057	8.9 (8.0–9.8)	86 558	14.3 (13.2–15.3)	
Substance use					<0.001
Yes	1877	15.9 (14.4–17.4)	15 357	2.5 (2.3–2.7)	
No/not recorded	9936	84.1 (82.6–85.6)	591 679	97.5 (97.3–97.7)	
Dyslipidaemias					<0.001
Yes	2632	22.3 (21.2–23.4)	110 665	18.2 (17.4–19.0)	
No/not recorded	9181	77.7 (76.6–78.8)	496 371	81.8 (80.9–82.6)	
Hypercholesterolemia					<0.001
Yes	1535	12.9 (12.0–13.9)	69 199	11.4 (10.7–12.0)	
No/not recorded	10 278	87.0 (86.0–87.9)	537 837	88.6 (87.9–89.3)	
Hypertriglyceridemia					<0.001
Yes	40	0.3 (0.2–0.4)	809	0.1 (0.1–<0.2)	
No/not recorded	11 773	99.7 (99.5–99.8)	606 227	99.9 (99.8–99.9)	
Hypertension					<0.001
Yes	2382	20.2 (19.2–21.0)	135 759	22.4 (21.4–23.3)	
No/not recorded	9431	79.8 (78.9–80.8)	471 277	77.6 (76.7–78.6)	
Health conditions					
Cardiovascular disease					<0.001
Yes	1007	8.5 (7.9–9.2)	57 736	9.5 (8.9–10.1)	
No/not recorded	10 806	91.5 (90.8–92.2)	549 300	90.4 (89.9–91.1)	
Chronic kidney disease					0.0136
Yes	197	1.7 (1.3–2.0)	8487	1.4 (1.2–1.6)	
No/not recorded	11 616	98.3 (97.8–98.7)	598 549	98.6 (98.4–98.8)	
Diabetes mellitus type 2					<0.001
Yes	1174	9.9 (9.1–10.7)	36 779	6.0 (5.7–6.4)	
No/not recorded	10 639	90.0 (89.2–90.9)	570 257	93.9 (93.6–94.3)	
Chronic respiratory conditions					<0.001
Yes	2960	25.0 (24.0–26.1)	94 278	15.5 (15.0–16.0)	
No/not recorded	8853	74.9 (73.9–75.9)	512 758	84.5 (83.9–84.9)	
Cancer					<0.001
Yes	1572	13.3 (12.3–14.3)	89 644	14.8 (13.7–15.8)	
No/not recorded	10 241	86.7 (85.7–87.7)	517 392	85.2 (84.2–86.3)	
Chronic liver disease					<0.001
Yes	78	0.7 (0.5–0.8)	1377	0.3 (0.2–0.3)	

(*Continued on next page*)

Table 2. (*Continued*)

Characteristic[A]	Patients with a record of SBD (*n* = 11 813)		Patients without a record of SBD (*n* = 607 036)		*P* value
	Number	% (95% CI)	Number	% (95% CI)	
No/not recorded	11 735	99.3 (99.2–99.5)	605 659	99.8 (99.7–99.8)	

[A]Apart from smoking, it was not possible to distinguish patients who did not have the specified risk factors or conditions from those who had missing data for these factors/conditions.

Table 3. Probability of health risk factors among patients with records of schizophrenia and bipolar disorders (SBD) compared to patients without SBD (*N* = 618 849).

Characteristic	Unadjusted odds ratio (95% CI)	Model 1 adjusted odds ratio (95% CI)	Model 2 adjusted odds ratio (95% CI)	*P*-value[A]
Health risk factors				
Smoking status (smoker)	4.0 (3.8–4.1)	3.8 (3.6–4.0)	3.8 (3.6–4.0)	<0.001
Substance use (yes)	6.2 (5.8–6.5)	6.0 (5.7–6.4)	5.9 (5.6–6.3)	<0.001
Dyslipidaemias (yes)	1.2 (1.2–1.3)	1.6 (1.5–1.7)	1.6 (1.5–1.7)	<0.001
Hypercholesterolemia (yes)	1.1 (1.0–1.2)	1.4 (1.4–1.5)	1.4 (1.4–1.5)	<0.001
Hypertriglyceridemia (yes)	2.3 (1.6–3.1)	2.7 (1.9–3.7)	3.3 (2.4–4.4)	<0.001
Hypertension (yes)	0.8 (0.7–0.8)	1.1 (1.1–1.2)	1.1 (>1.0–1.2)	0.001
Health conditions				
Cardiovascular diseases (yes)	0.8 (0.8–0.9)	1.3 (1.2–1.4)	1.3 (1.2–1.4)	<0.001
Chronic kidney diseases (yes)	1.0 (0.8–1.2)	1.7 (1.5–2.0)	1.7 (1.5– 2.0)	<0.001
Diabetes mellitus type 2 (yes)	1.6 (1.5–1.7)	2.2 (2.0–2.4)	2.2 (2.0–2.3)	<0.001
Chronic respiratory conditions (yes)	1.7 (1.6–1.7)	1.7 (1.6–1.8)	1.7 (1.7–1.8)	<0.001
Cancer (yes)	0.8 (0.7–0.9)	1.0 (1.0–1.1)	1.1 (>1.0–1.2)	0.003
Chronic liver diseases (yes)	2.7 (2.1–3.4)	3.2 (2.5–3.9)	3.3 (2.6–4.0)	<0.001

Model 1: Adjusted for age and sex.
Model 2: Adjusted for age, sex, IRSAD quintiles, and rurality.
[A]*P*-value is calculated for valid data and the fully adjusted model (Model 2).

likely to be above the age of 60 years, which could reflect their shorter life expectancy compared with other patients (Firth *et al.* 2019).

The high levels of indicators of socio-economic disadvantage were consistent with other Australian research about people with psychotic disorders; 67% or our sample had a pension or concession card recorded compared to 85% of respondents in the Australian Survey of High Impact Psychosis (SHIP) (Morgan *et al.* 2017). The lower proportion of patients with a healthcare card in our sample could be due to incomplete records and a selection effect. Socioeconomic disadvantage among people with SBD is well known (Morgan *et al.* 2017), and our study provides evidence for this among those who access a GP.

A higher proportion of SBD patients were recorded as having an Aboriginal or Torres Strait Islander background than non-SBD patients. This could be related to higher rates of schizophrenia (4.8% vs 1.5%) and bipolar affective disorder (3% vs 1.7%) among Indigenous Australians compared with non-Indigenous Australians (Australian Institute of Health and Welfare 2016). There has been a lack of community population prevalence data for psychotic disorders in Indigenous Australians populations (Black *et al.* 2015). This study adds to the need for urgent action to address the double jeopardy of health inequities experienced by people with SMI and Aboriginal and Torres Strait Islander peoples more widely.

Health risk factors and comorbidities

The higher rates of health risks and comorbidities for patients with SBD compared with other patients (without SBD) were consistent with population surveys of people with SMI (Morgan *et al.* 2017; Firth *et al.* 2019) and the NPS analysis of general practice patients with long-term mental illness (LTMI) (NPS MedicineWise 2020). The SHIP identified higher rates of substance use, smoking, hypertension, dyslipidemia, hyperglycaemia, elevated triglyceride levels, and diabetes, compared with general population data (Morgan *et al.* 2012, 2017). The NPS estimated patients with LTMI had significantly higher adjusted odds for smoking,

dyslipidaemia, cardiovascular diseases and diabetes. Direct comparisons between studies are difficult because each study included different mental health conditions and adjusted for a different set of potential confounders. To illustrate this point, our adjusted odds ratio for smoking was 3.8; SHIP's was 2.3 and the NPS's was 2.5 (Morgan *et al.* 2017).

The prevalence estimates of risk factors and comorbidities tended to be lower in the present study than in population surveys. The SHIP reported higher rates than the present study for smoking (66% vs 39%), substance use (about half vs 16%), heart or circulatory disease (27% vs 10%), hypertension (39% vs 20%), diabetes (35% vs 10%), and asthma (30% vs 25% including other chronic respiratory conditions) (Morgan *et al.* 2012). Given existing evidence on the incomplete recording of risk factors in EHRs in general practice (Harris *et al.* 2017; NPS MedicineWise 2020), this is probably in part due to incomplete capture of those conditions in the EHRs compared to surveys. Another reason could be the healthier profile of people regularly attending general practices (Carr *et al.* 2002).

The different pattern of results between raw prevalence data and adjusted odds for hypertension, cardiovascular disease (CVD) and cancer highlights the need for caution when comparing unadjusted prevalence figures. For example, this study and the SHIPS study identified that the prevalence of cancer was lower for each sample of SMI than the comparison data; however, after adjustment, our study identified that the odds of cancer were in fact greater for the SBD group.

Implications for preventive care

Although the higher rates of recorded risk factors and comorbidities for SBD patients suggested that these conditions were screened and monitored, it is still possible that some patients with SMI missed screening for cardiometabolic risk. However, Morgan *et al.* (2017) identified a decline in the proportion of people with psychosis who had received a physical health examination between 1998 and 2010 (from 80% to 66%) or a fasting blood test (from 83% to 65%) in the previous 12 months (Morgan *et al.* 2017). Similarly, the NPS identified that patients with LTMI and established CVD were less likely to be prescribed recommended therapy for cardiovascular prevention than patients without LTMI and existing CVD (NPS MedicineWise 2020).

The higher rates of risk factors and comorbidities suggests that more preventive management is needed, particularly given evidence of excess premature mortality among people with SMI (Firth *et al.* 2019). Recommendations for service delivery have been published by the World Health Organization (WHO) and others (World Health Organization 2018; Firth *et al.* 2019). Programs have been developed to improve access to general practice by people with SMI (Cameron *et al.* 2017); however, access to preventive care remains an issue for people with SMI across health systems and urgently needs to be addressed.

Even if access and screening were improved, are there interventions GPs can offer to their patients with SMI? Factors such as cognitive deficits and the effects of medication pose challenges for lifestyle interventions, so adaptation of existing interventions are required (Firth *et al.* 2019). There is some promising research on interventions to address smoking (Peckham *et al.* 2017), diet (Teasdale *et al.* 2017) and physical activity (Rosenbaum *et al.* 2014) in this patient group. Beyond this, better control of comorbidities such as diabetes and hypertension are needed, including better integration of care across different services and providers (Firth *et al.* 2019).

Limitations

A limitation of this study was the completeness of clinical records in the EHRs. MedicineInsight does not include information on all of the factors that contribute to the health gap for people with severe mental illness (e.g. housing security). We have focused on the data available and limited our discussion to this. Although 39% of SBD patients were recorded as smokers, this was likely an underestimate, given overall levels of recording of smoking by GPs (Selak *et al.* 2006). This study might not have captured all patients with SBD, because they had not been diagnosed or their diagnosis was not recorded in the EHRs. Further, condition flags could not distinguish between the absence of a condition and missing data. Consequently, the degree to which group differences were due to differences in rates of health conditions or differences in recording is unknown. The differences in missing data between SBD and other patients for Indigenous status (17% vs 21%) and government benefits (9% vs 17%) show how differences in prevalence rates can be influenced by rates of missing data between the two groups. This is an important distinction that warrants further research. General practice EHRs do not systematically record the reasons that screening is not performed. In addition, we were not able to assess patterns of psychotropics prescribing due to complexities in retrieving this information from the MedicineInsight dataset. Finally, this study included only patients regularly attending general practices, and their health profiles might not be generalisable to patients that do not visit their GP regularly, including people with unstable housing.

Conclusion

This study estimated the prevalence of SBD in Australian general practice and the likelihood of comorbidities and health risk factors among this population compared to patients without SBD. Preventive care in general practice for this disadvantaged population is important to reduce the gap in health outcomes. Further research is required to explore the quality of health care provided (preventive and therapeutic) by GPs for patients with SBD to better understand how primary care can contribute to reducing disparities.

Supplementary material

Supplementary material is available online.

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