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Temporal trends in medication and service use patterns for mental health issues among men with prostate cancer

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Abstract

Objective: Prostate cancer can significantly impact mental wellbeing, creating uncertainty and morbidity. This study described patterns of psychotropic medication and mental health service use, as a proxy measure for mental health problems, 5 years before and 5 years after prostate cancer diagnosis.

Methods: Population-based registry data were linked with Pharmaceutical Benefits Scheme and Medicare Benefits Schedule data for all prostate cancer patients diagnosed in South Australia between 2012 and 2020 ($n = 13,693$). We estimated the proportion and rates of psychotropic medication and mental health service use before and after diagnosis. Multivariable adjusted interrupted time series analyses (ITSA) were conducted to uncover temporal patterns.

Results: Fifteen percent of men commenced psychotropic medications and 6.4% sought out mental health services for the first time after diagnosis. Psychotropic medication use rose from 34.5% 5 years before to 40.3% 5 years after diagnosis, including an increase in use of antidepressants (from 20.7% to 26.0%) and anxiolytics (from 11.3% to 12.8%). Mental health service use increased from 10.2% to

12.1%, with the increase mostly being general practice mental health visits (from 7.8% to 10.6%). Multivariable ITSA indicated a significant rise in medication and service utilisation immediately before and in the first 2 years following prostate cancer diagnosis.

Conclusion: There is a clear increase in psychotropic medication use and mental health service use around the time of prostate cancer diagnosis. Mental health outcomes of men with prostate cancer may be improved with early mental health screening, particularly during the diagnosis process, to enable early intervention.

KEYWORDS
anxiety, cancer, depression, medicare benefits schedule, mental health, oncology, pharmaceutical benefits scheme, prostate cancer, psychotropic medication

1 | BACKGROUND

Prostate cancer is the most frequently diagnosed cancer among Australian males, with over 25,000 men diagnosed in 2023, accounting for 28% of all cancers diagnosed.[1] The combination of increased screening, early diagnosis and improved treatments has led to a longer life expectancy for men with prostate cancer. Five-year survival rates exceed 97%, and 10-year mortality rates are as low as 7% in Australia.[2] Although cancer-specific mortality remains low, the impact of therapies is substantial, with significant impact on emotional and psychosocial wellbeing, as well as physical function.[3–5] Men who are on active surveillance may also experience issues such as a decline in sexual function.[6]

Prostate cancer takes a toll on the mental health of men throughout all stages of the illness, including diagnosis, surveillance, treatment, and follow-up.[7–9] It is estimated that one in six patients with prostate cancer experience clinically significant depression.[10] The rates of depression and anxiety among prostate cancer patients are higher than in the general population[11] as is the risk of suicide.[12] Prostate cancer has been associated with a 52% rise in psychological distress and a 57% increase in depression among Canadian men.[13] With longer survival, mental health issues experienced by men with prostate cancer are not limited to acute episodes but can persist throughout the cancer journey with varying levels of severity.[11]

Current evidence comparing the rate of mental illness before and after diagnosis among men with prostate cancer is lacking. Most available evidence has compared the mental illness burden between a prostate cancer cohort at varied stages of the illness, and the general population.[11,13,14] In prior studies, mental health was assessed at various time periods including before a cancer diagnosis,[15] after diagnosis and before treatment,[16,17] or after commencement of cancer treatment.[18,19] Furthermore, evidence suggests that the cancer diagnostic workup may introduce psychological distress during the pre-diagnostic period.[14] To this end, baseline data on mental health symptoms and conditions are important for understanding the extent of new mental health episodes related to prostate cancer, but this information is largely unavailable.

Although mental health issues are complex and prevalent, most of the available evidence is based on small-scale studies either conducted at single institutions or focused solely on a few mental health outcomes, mainly depression and anxiety. Such reports likely only represent a small portion of the significant psychological distress associated with a newly diagnosed cancer. This limited scope does not provide a comprehensive understanding of the mental health issues before and after prostate cancer diagnosis. This study aims to describe psychotropic medication and mental health service use at a population level, as a proxy measure of mental health problems, prior to and following prostate cancer diagnosis, thereby identifying the time of greatest vulnerability.

2 | METHODS

2.1 | Data source and population

Our study cohort comprised all men diagnosed with prostate cancer in South Australia between July 2012 and December 2020 ($n = 13,693$), extracted from the population-based South Australian Cancer Registry (SACR), with additional data obtained from the South Australian Prostate Cancer Clinical Outcomes Collaborative (SA-PCCOC). These data were then linked to national prescription medications (Pharmaceutical Benefits Scheme, PBS) and health service utilisation (Medicare Benefits Schedule, MBS) data. PBS and MBS are components of Medicare, Australia's universal healthcare scheme introduced in 1984, which provide government-subsidized medical services and prescriptions to all citizens and permanent residents. Included in MBS are subsidized services, such as the general practitioners (GPs) Mental Health Treatment Plan, which allow individuals with mental health concerns to consult a GP and receive referrals.[20]

2.2 | Measurement and variables

Our outcome categories were having been prescribed psychotropic medication and selected medication groups (antidepressants, anxiolytics, and hypnotics and sedatives) and any MBS-subsidized mental health service use and its components (GP, psychiatrist, psychologist and allied health mental health visits). Psychotropic medication prescription rates were determined from the PBS dataset using Anatomical Therapeutic Chemical (ATC) codes. Specific classes of medication included antidepressants (N06A), anxiolytics (N05B), hypnotics and sedatives (N05C), psychostimulants (N06B), antipsychotics (N05A), and medications for addiction (N07B). Consistent with previous research,[21] we classified a person as experiencing a mental health issue if they had received at least two prescriptions for one of the outcomes within a 12-month period. Mental health service utilisation was extracted from MBS item codes and included mental health visits to GPs, psychiatrists, psychologists (including clinical psychologists), and allied health services (psychological strategies by mental health worker, occupational therapist and/or social worker). Due to small sample sizes, we combined psychologist and allied health visits for more meaningful statistical analyses. Detailed descriptions of the extracted MBS items and codes used are presented in Table S1. We confined our analyses to events within the 5-year period before and 5-year period after a prostate cancer diagnosis.

Covariates considered in the multi-variable interrupted time series analyses (ITSA) included age at diagnosis, socioeconomic status, place of residence, Rx-Risk comorbidity index,[22] diagnostic prostate-specific antigen (PSA) level, tumour grade group (GG), year of diagnosis and primary treatment type. Age was categorised as <60, 60–64, 65–69, 70–74, and ≥75 years. Socioeconomic status was derived from the Australian Bureau of Statistics (ABS) Socio-Economic Indices for Areas (SEIFA) scores, applied at the postal area level,[23] and was categorised from lowest to highest quintile of socioeconomic advantage. We used the Index of Relative Socioeconomic Advantage and Disadvantage (IRSAD) version of SEIFA. Place of residence was determined based on the ABS's Statistical Areas Level 3 (SA3-2016) data provided by the SACR for patients' residential addresses at the time of diagnosis.[24] The SA3 codes were categorised into 'Greater Adelaide' and 'Rest of South Australia'. The Rx-Risk comorbidity index was used to identify existing comorbidities at the time of diagnosis. Rx-Risk is based on prescription drug use data[22] and has previously been validated in our cohort.[25–27] Comorbidity categories were captured in the year prior to prostate cancer diagnosis. Ten of the 46 Rx-Risk comorbid categories that related to the outcome of interest (alcohol dependency, anxiety, bipolar disorder, dementia, depression, psychotic illness and smoking cessation) or prostate cancer (benign prostatic hyperplasia, incontinence and malignancies) were excluded from the calculation of the Rx-Risk score. The number of Rx-Risk categories applying to each individual was summed and then grouped as 0, 1, 2, 3, 4 and ≥ 5. As suggested by a recent systematic review,[28] we present the number of Rx-Risk disease categories instead of Rx-Risk scores.

Diagnostic PSA levels (ng/mL) were grouped as <10, 10–20, and >20 ng/mL, while GG was grouped as GG1 (Gleason score of ≤6), GG2 (Gleason score of 3 + 4), GG3 (Gleason score of 4 + 3), GG4 (Gleason score of 8), and GG5 (Gleason score of 9–10). The primary treatment type within 2 years of prostate cancer diagnosis was extracted from SA-PCCOC, MBS item codes, and PBS records and grouped as follows: no curative treatment (including unknown/no recorded treatment, active surveillance and watchful waiting), radical prostatectomy and radiotherapy (including brachytherapy and external beam radiotherapy). Due to its presumably higher impact on mental health,[29] any androgen deprivation therapy (ADT) administered within 2 years of diagnosis, including (neo)adjuvant ADT, was grouped as a single variable.

2.3 | Statistical analyses

Descriptive analyses of the number and proportion of men in each outcome category, occurring 5 years before and 5 years after prostate cancer diagnosis, were reported. We also reported the proportion of patients who experienced a change in their post-diagnosis mental health status (psychotropic medication or mental health service use) from their pre-diagnosis status. The rates of events per 1000 person-years were calculated for each year to allow year-by-year comparison, with rates adjusted for variable follow-up times and censoring due to death.

To further explore the trend and timing of high vulnerability for mental health issues, we applied the concept of ITSA to evaluate whether prostate cancer diagnosis 'interrupted' the level and/or trend of medication and service use for mental health issues. We used Linden's *xtitsa* command, which allows ITSA models to be applied to individual level data (for multiple records of mental health issues within an individual).[30] Autocorrelation was tested using *actest* command and the final models were adjusted whenever there was autocorrelation in the lag orders of years from prostate cancer diagnosis. A series of ITSA models were conducted separately, for each medication/service use outcomes. To enhance the power, we increased the number of data points to every 6 months instead of annually, as recommended.[31] We then estimated the levels and trends over six monthly intervals. To account for missing data, an additional 'unknown' category was created for place of residence (13.3%), PSA (47.6%) and Gleason GG (40.4%). All analyses were conducted using Stata version 17 software (StataCorp, College Station, Tx, USA).

3 | RESULTS

3.1 | Cohort characteristics

Table 1 summarises the characteristics of the cohort (n = 13,693). The mean age at diagnosis was 70.2 years (standard deviation ± 9.2). Of those with known tumour characteristics, the largest proportion had a PSA level of <10 (36.0%) and GG1 (18.6%). About 22.2% of

TABLE 1 Cohort characteristics ($n = 13{,}693$).

Variables	Categories	No.	%
Age at diagnosis	<60	1997	14.6
	60–64	2105	15.4
	65–69	3001	21.9
	70–74	2827	20.6
	75+	3763	27.5
	Mean ± standard deviation	70.2 ± 9.2	
Diagnostic PSA	<10	4939	36.0
	10–20	1434	10.5
	>20	807	5.9
	Missing	6513	47.6
Grade group (gleason score)	GG1 (<7)	2541	18.6
	GG2 (3 + 4)	2219	16.2
	GG3 (4 + 3)	1434	10.5
	GG4 (8)	956	7.0
	GG5 (9–10)	1007	7.4
	Missing	5536	40.4
Socioeconomic status	Lowest (least advantaged)	3669	26.8
	Low	2492	18.2
	Average	2195	16.0
	High	2366	17.3
	Highest (most advantaged)	2971	21.7
Place of residence	Greater Adelaide	8628	63.0
	Rest of South Australia	3245	23.7
	Unknown	1820	13.3
Year of diagnosis	2012	838	6.1
	2013	1600	11.7
	2014	1444	10.5
	2015	1487	10.9
	2016	1442	10.5
	2017	1706	12.5
	2018	1730	12.6
	2019	2065	15.1
	2020	1381	10.1
Number of comorbidities (Rx-risk)	0	2139	15.6
	1	2255	16.5
	2	2366	17.3
	3	2149	15.7
	4	1750	12.8
	5+	3034	22.2

TABLE 1 (Continued)

Variables	Categories	No.	%
Treatment type[a]	No curative treatment	5254	38.4
	Radical prostatectomy	5862	42.8
	Radiation therapy	2577	18.8
Received ADT (within 2 years of prostate cancer diagnosis)	No	12,405	90.6
	Yes	1288	9.4
Vital status	Alive	11,569	84.5
	Dead	2124	15.5
	Mean follow-up ± standard deviation	4.8 ± 2.5 years	

[a]In the final adjusted models, only treatments received before the mental health episode was included.

men had ≥5 Rx-risk comorbidity categories. The most common primary treatment type among men in our cohort was radical prostatectomy (42.8%) while 18.8% had radiotherapy and 38.4% did not receive any curative treatment. About 9% of men had received ADT within 2 years of prostate cancer diagnosis. Sixteen percent of the men had died (Table 1).

3.2 | Proportion of medication and mental health service use

The proportion of men using psychotropic medication and mental health services before and after prostate cancer diagnosis are presented in Table 2. The proportion of men who had prescribed medications for mental health issues increased from 34.5% before diagnosis to 40.3% after diagnosis. Antidepressant use rose from 20.7% to 26.0% and the use of anxiolytics increased from 11.3% to 12.8%. Mental health service utilisation increased from 10.2% before diagnosis to 12.1% after diagnosis, with GP mental health services being the main service type used, increasing from 7.8% to 10.6% (Table 2).

With respect to change in mental health status, 15.0% of men were prescribed psychotropic medications and 6.4% sought out mental health services for the first time following a prostate cancer diagnosis. Meanwhile, 25.3% of participants were persistent users of psychotropic medications, and 5.5% were persistent users of mental health services. Moreover, 9.2% of men who were using psychotropic medication and 4.7% who were receiving mental health services before a prostate cancer diagnosis, discontinued using these medications/services after diagnosis (Table S2).

3.3 | Rate of medication and service use for mental health issues

The unadjusted trends prior to and following diagnosis are shown in Figure 1. For all medication classes there was a sharp increase in the

TABLE 2 Number and proportion of men using psychotropic medications and mental health services before and after prostate cancer diagnosis (n = 13,693).

			Five years before diagnosis		Five years after diagnosis	
			No.	%	No.	%
At least two psychotropic medication prescriptions[a]	Any medication use	Yes	4723	34.5	5516	40.3
		No	8970	65.5	8177	59.7
	Antidepressants	Yes	2836	20.7	3566	26.0
		No	10,857	79.3	10,127	74.0
	Anxiolytic	Yes	1549	11.3	1748	12.8
		No	12,144	88.7	11,945	87.2
	Hypnotics and sedatives	Yes	1642	12.0	1964	14.3
		No	12,051	88.0	11,729	85.7
One or more mental health care visit[a]	Any service use	Yes	1390	10.2	1657	12.1
		No	12,303	89.8	12,036	87.9
	General practice mental health plan	Yes	1074	7.8	1447	10.6
		No	12,619	92.2	12,246	89.4
	Psychiatrist	Yes	289	2.1	318	2.3
		No	13,404	97.9	13,375	97.7
	Psychologist and allied health	Yes	659	4.8	765	5.6
		No	13,034	95.2	12,928	94.4

[a]An individual may have been prescribed multiple psychotropic medications or utilised various mental health services. In that case, they were counted more than once for each specific outcome. Therefore, the numbers within each sub-outcome category will not add up to the total number of 'any medication' or 'any service' use.

first year after prostate cancer diagnosis. Most of the increasing trend in any psychotropic medication use was attributed to antidepressants. Rates of any psychotropic medication, antidepressant, anxiolytic, and hypnotic and sedative use in the first year after diagnosis were 106, 66, 28 and 33 per 1000 person-years, respectively. These rates remained elevated compared to pre-diagnosis levels for the first 2 years after diagnosis but declined in subsequent years. The use of any psychotropic medication and use of antidepressants also showed an elevated trend in the year before diagnosis, reaching their peak in the first year of diagnosis. The use of anxiolytics and hypnotics and sedatives remained relatively stable throughout, except for a slight increase in the first year following diagnosis (Figure 1A).

The pattern for MBS-subsidized mental health service use was consistent with that for medication use, showing a sharp increase around the time of prostate cancer diagnosis. The rate of seeking any mental health services peaked at 20 per 1000 person-years in the first year following a prostate cancer diagnosis. Mental health care visits to GPs and to psychologists or allied health professionals showed a similar pattern, peaking at 13 and 8 per 1000 person-years in the first year of diagnosis, respectively. However, visits to psychiatrists did not increase at all, remaining below 5 per 1000 person-years, and appear to decline 3–5 years after prostate cancer
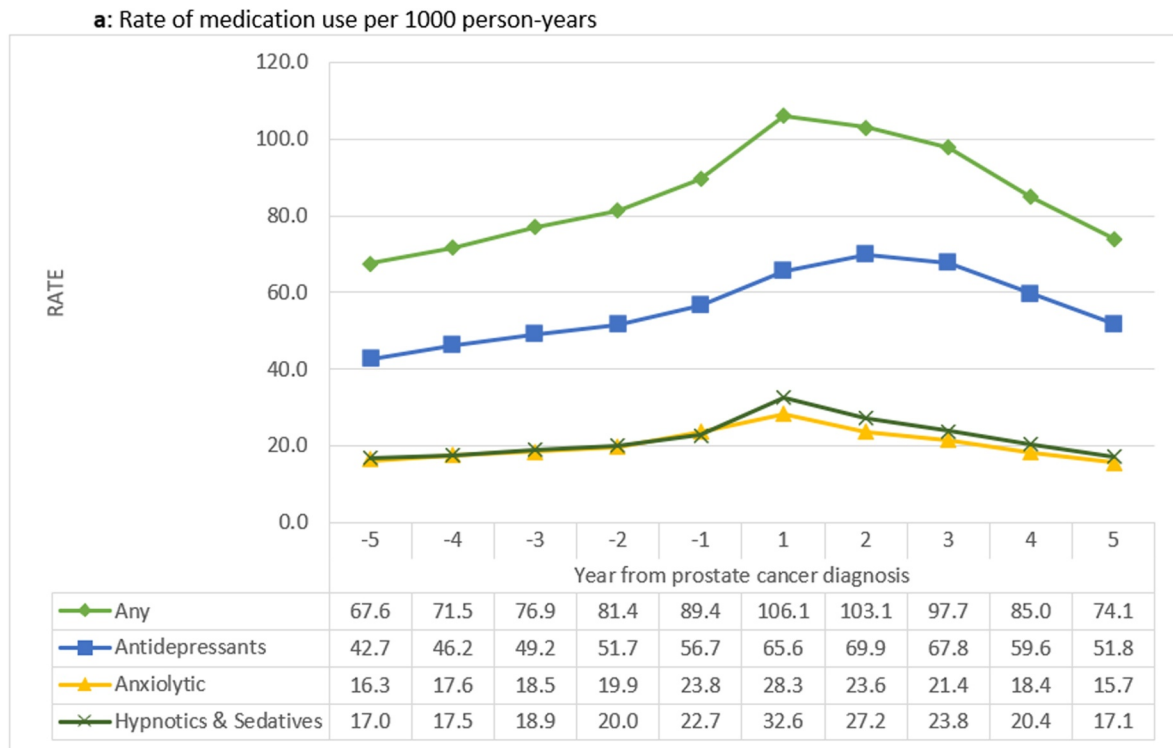
diagnosis. Much of the increase in MBS-funded mental health service utilisation was due to increased GP mental health visits (Figure 1B).
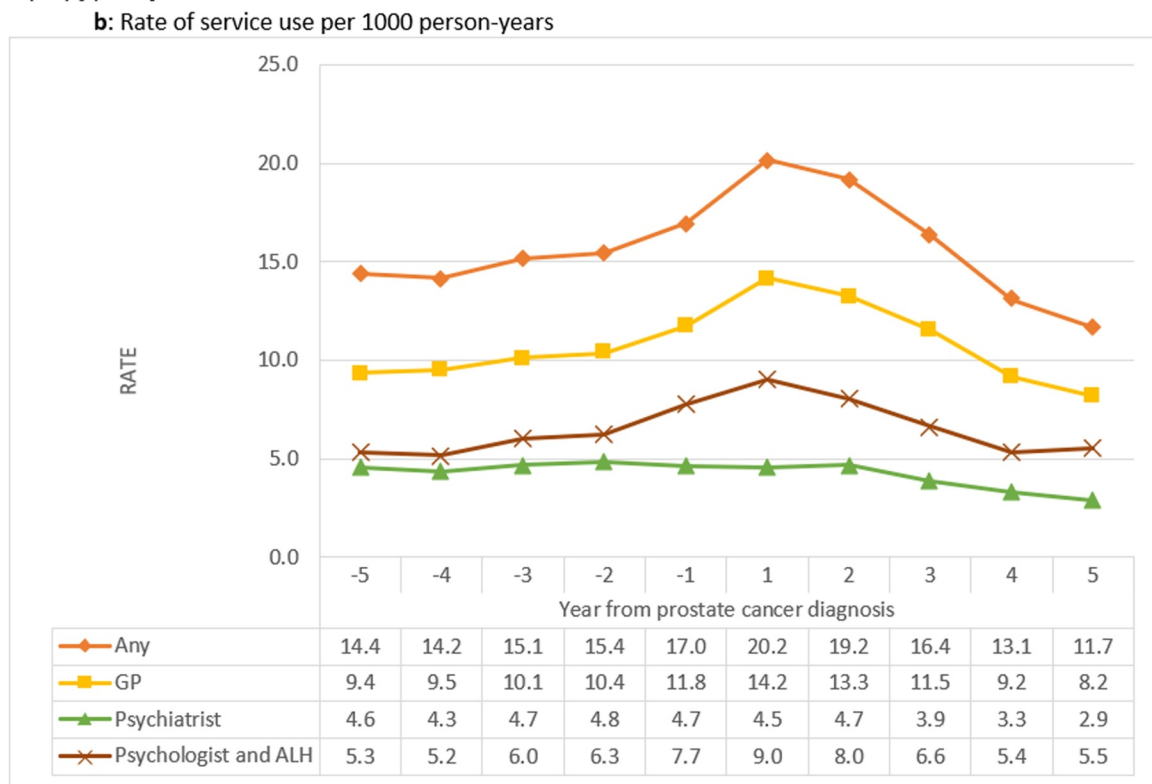
3.4 | Multivariable adjusted ITSA results

The ITSA results are presented in Figure 2. The results show that medication and service use patterns peaked at the time of prostate cancer diagnosis, generally persisted for 2 years followed by a decreasing trend afterwards.

There was an increasing trend in the use of medication for mental health before a diagnosis of prostate cancer ($\beta = 0.04$, $p < 0.001$), followed by a sharp rise in the first 6 months after diagnosis ($\beta = 0.23$, $p < 0.001$). Subsequently, there was a significant decrease in the 6-monthly trend following a diagnosis of prostate cancer ($\beta = 0.07$, $p < 0.001$). Similar trends were observed for specific drug groups, with an increase within the first 6 months of prostate cancer diagnosis (Figure 2A).

There was no significant change in overall mental health service use trends before prostate cancer diagnosis ($\beta = 0.02$, $p = 0.207$), except for psychologist and allied health use ($\beta = 0.06$, $p < 0.001$). However, a significant increase in mental health service use was observed during the first 6 months following diagnosis ($\beta = 0.25$,

a: Rate of medication use per 1000 person-years

	-5	-4	-3	-2	-1	1	2	3	4	5
Any	67.6	71.5	76.9	81.4	89.4	106.1	103.1	97.7	85.0	74.1
Antidepressants	42.7	46.2	49.2	51.7	56.7	65.6	69.9	67.8	59.6	51.8
Anxiolytic	16.3	17.6	18.5	19.9	23.8	28.3	23.6	21.4	18.4	15.7
Hypnotics & Sedatives	17.0	17.5	18.9	20.0	22.7	32.6	27.2	23.8	20.4	17.1

Any, any psychotropic medication use

b: Rate of service use per 1000 person-years

	-5	-4	-3	-2	-1	1	2	3	4	5
Any	14.4	14.2	15.1	15.4	17.0	20.2	19.2	16.4	13.1	11.7
GP	9.4	9.5	10.1	10.4	11.8	14.2	13.3	11.5	9.2	8.2
Psychiatrist	4.6	4.3	4.7	4.8	4.7	4.5	4.7	3.9	3.3	2.9
Psychologist and ALH	5.3	5.2	6.0	6.3	7.7	9.0	8.0	6.6	5.4	5.5

Any, any mental health service use; GP, general practice mental health visit; ALH, allied health mental health services

FIGURE 1 Rate of medication and service use for mental health issues per 1000 person-years. The time points were scaled at yearly intervals. Patients who had mental health issues on the same day as their prostate cancer diagnosis were included in year-1 post-diagnosis.
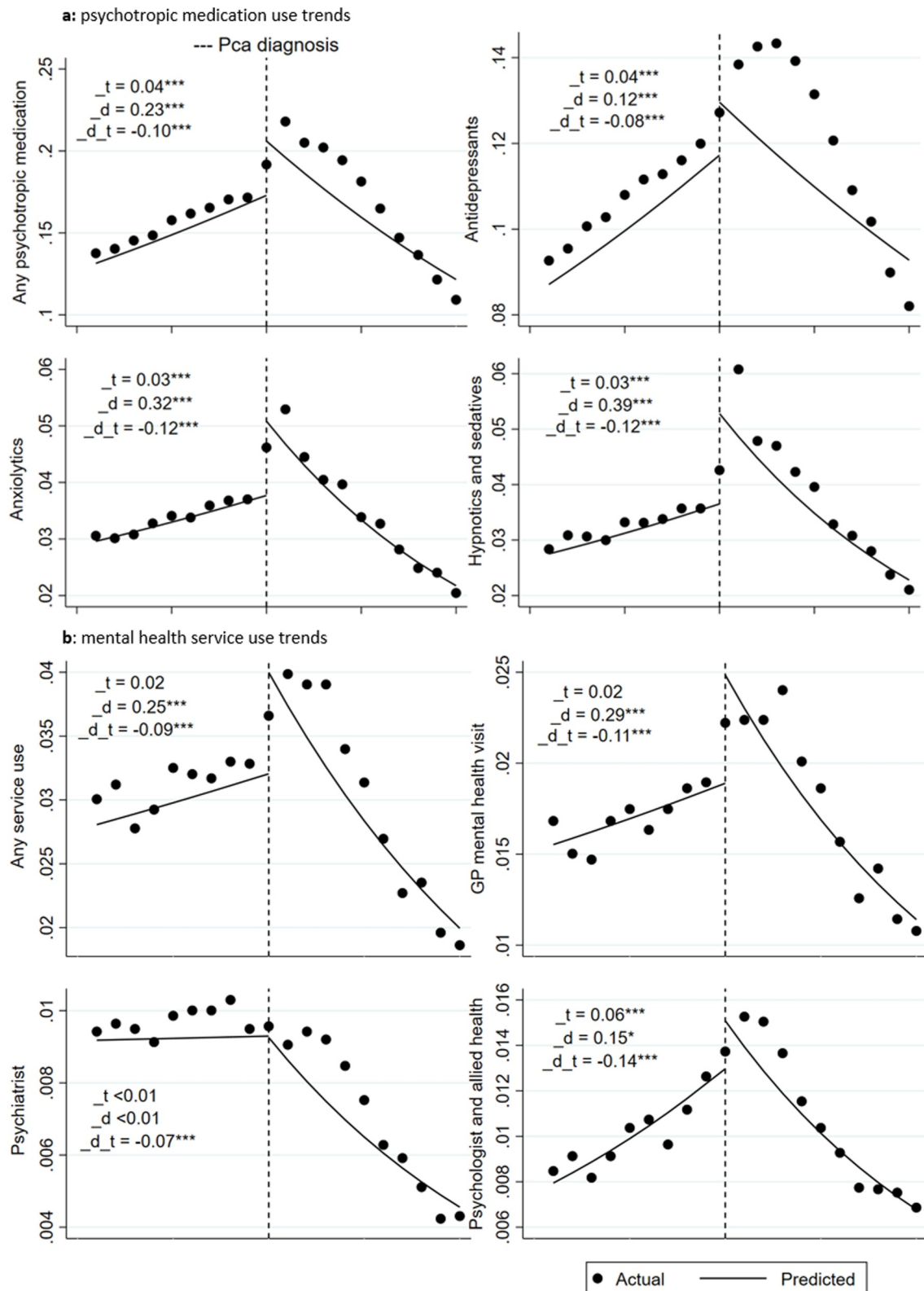
FIGURE 2 Multivariable adjusted interrupted time series analyses outputs, psychotropic medication and mental health service use trends (six monthly interval). _t: 6-monthly trend before prostate cancer diagnosis. _d: immediate effect after prostate cancer diagnosis (within the first 6 months). _d_t: 6-monthly trend after prostate cancer diagnosis.

$p < 0.001$), with a subsequent significant decrease in the 6-monthly trend ($\beta = -0.09$, $p < 0.001$). GP mental health visits ($\beta = 0.29$, $p < 0.001$) and allied health services ($\beta = 0.15$, $p < 0.001$) also increased in the first 6 months of prostate cancer diagnosis, but there was no significant change in psychiatrist visits ($\beta < 0.01$, $p = 0.938$) (Figure 2B). Detail ITSA outputs are presented in Table S3.

4 | DISCUSSION

In this study, we described the scale and temporal patterns of use of medications and services for mental health issues during the pre-diagnosis and post-diagnosis periods among men with prostate cancer. Both medication and service utilisation for mental health issues were higher immediately before and following prostate cancer diagnosis but decreased subsequently. This pattern potentially reflects the broader spectrum of psychological distress during the diagnostic and pre-treatment period of this disease. While it is important to explore the factors behind the observed patterns, these findings suggest that interventions targeted toward improving mental wellbeing during the diagnostic workup and immediately following diagnosis may be beneficial.

Our study showed that prostate cancer patients experienced an increase in the use of psychotropic medications during the time of their cancer diagnosis at this time. The increased use of hypnotics and sedatives potentially highlights stress, adjustment issues, and sleep disorders among prostate cancer patients. Future research is needed to explore the factors that contribute to the increased use of psychotropic medications immediately before and during diagnosis, as well as the decreasing trend with time since diagnosis. An elevated risk of mental health issues in the year before diagnosis may relate to the impact of pre-diagnostic cancer symptoms and the stress of diagnostic tests for suspected cancer. The greatest vulnerability to psychological morbidity appears to be immediately upon diagnosis. This may stem from the stress of being diagnosed with cancer, concerns about untreated cancer, and distress related to decision-making.[7] This corroborates with findings from a meta-analysis, which showed an increased risk of suicide immediately following a prostate cancer diagnosis.[12] Other factors that may contribute to negative psychological outcomes include treatment side effects, fear of cancer recurrence, impaired quality of life and financial stress.[7] The subsequent decline in use of psychotropic medications/mental health services suggests that some patients may have exhausted their allocated number of mental health care visits and may not follow up, adjusted to living with their condition, are coping well after treatment, and/or no longer require these medications or services.

Our study findings suggest that the utilisation of mental health services was relatively low compared to the use of psychotropic medication. These findings align with those from a previous study, which showed a similar temporal pattern for medication use and mental health diagnosis before and after being diagnosed with cancer, but with a larger magnitude of medication use.[14] This may reflect a tendency towards pharmacotherapy over psychotherapy among men.[29] Our reporting of a higher rate of psychotropic medication use than health service utilisation may also indicate the relative under-utilisation of, or lack of access to, MBS-subsidized mental health services among patients. Studies from Australia have shown that despite a higher prevalence of mental distress, cancer survivors underutilise mental health services.[20,32] Only one-third of cancer survivors are offered mental health support at the time of diagnosis, and many reported being unable to access or afford the psychological services they required.[20] The reasons identified for underutilisation of mental health services were low perceived need, affordability, mental health stigma and lack of care coordination.[20]

This study found that GP mental health visits were the most utilised mental health services after prostate cancer diagnosis, while use of psychiatrists' services did not increase after a diagnosis of prostate cancer. In Australia, individuals can access a GP Mental Health Treatment Plan, which allows Medicare subsidised mental-health specialist visits.[20] However, evidence shows that these care plans are still underutilised by some population groups.[33] The subsidies are also limited to a few sessions annually and commonly require a co-payment, which potentially limits cancer survivors' access to optimal care.[20] Incorporating mental health screening into standards of care, normalising mental health discussions, and liberal provision of GP mental health plans may help address some of these barriers.

4.1 | Strengths and limitations

The main limitation of our data is the indirect measurement of mental illness burden. The use of medications and services may not directly denote having a mental illness. Some psychotropic medications are prescribed for non-mental health concerns (e.g., tricyclic antidepressants and pregabalin for neuropathic pain), though these would represent a small proportion of prescriptions. The rate of mental health service use may also be an underestimate given unsubsidized mental health services can be accessed privately without a referral or through community services (e.g., Prostate Cancer Foundation of Australia (PCFA), the Cancer Council and BeyondBlue). In addition, some men with mental health issues may not seek help.[20,29] Taking all of this into consideration, the true impact of a prostate cancer diagnosis on men's mental health is likely to be underestimated in this study. The strengths of this study include its utilisation of extensive population-wide data, encompassing most prescribed medications and government-funded mental health services. It also examines the prevalence of mental health issues before and after diagnosis, something that has received less attention in existing literature. Additionally, the study employs advanced statistical models (ITSA) to pinpoint temporal trends and the period of highest vulnerability to mental health issues.

4.2 | Clinical implications

Psychosocial issues continue to be one of the most commonly reported unmet needs of cancer survivors.[34,35] Our findings support the importance of timely psychological interventions, particularly during diagnostic workup and immediately after prostate cancer diagnosis. This includes maintaining ongoing vigilance for mental health issues, incorporating mental health screening into standards of care at these vulnerable times, facilitating early access to mental health care, establishing robust follow-up plans, and integrating mental health standards of care into prostate cancer survivorship plans. This is particularly important given the wide-ranging impact of mental health problems on treatment decisions,[36] poor quality of life,[16] poor prognosis and oncologic outcomes,[37] and overall burden on the health system.[10,38] Initiatives such as telehealth services, offered by the PCFA and the Cancer Council, and the appointment of prostate cancer nurses could be expanded as a potential alternative to fill the gap in service use. PCFA also provides distress training for specialist nurses which could further help improve mental health services. Telehealth services are important options where costs or distance make access difficult for some cancer survivors[20] and as such, have potential to reduce geographic disparities.

4.3 | Conclusion

An increase in medication and service use for mental health issues is more common immediately before and after prostate cancer diagnosis, which may reflect the burden of psychological distress during cancer diagnosis. Antidepressant use and GP mental health services were commonly utilised by men diagnosed with prostate cancer in this period. Medicare-funded mental health services seem to be underutilised compared to the widespread use of pharmacotherapies. Our findings suggest a potential need for early screening for mental health issues starting from diagnostic workup of prostate cancer.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no competing interests.

DATA AVAILABILITY STATEMENT

The linked datasets that support the findings of this study are stored in the Secure Unified Research Environment (SURE) system, where restrictions apply regarding data access, and so are not publicly available. However, data are available from the authors upon reasonable request and with permission from the data custodians.

ETHICS STATEMENT

Ethics approval was obtained from the South Australia Department for Health and Wellbeing Human Research Ethics Committee (HREC/ 20/SAH/58) and Australian Institute of Health and Welfare Ethics Committee (EO2020/5/1202). The requirement for informed consent was waived by the same ethics committees that approved the study (South Australia Department for Health and Wellbeing Human Research Ethics Committee and the Australian Institute of Health and Welfare Ethics Committee). The study was performed in accordance with the ethical standards of the 1964 Declaration of Helsinki and its later amendments.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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