


# BMJ Open Determinants of treatment non-attendance among those referred to primary mental health care services in Western Sydney, Australia: a retrospective cohort study

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## ABSTRACT

**Objectives** Recommendations of the recent mental health reforms provided an opportunity to implement regional approaches to service provision through Primary Health Networks. This study is designed to identify the determinants of sociodemographic, diagnostic and referral-level factors and first treatment session non-attendance among those referred to primary mental health care (PMHC) services in Western Sydney, Australia.

**Design** This study used routinely collected retrospective PMHC data between July 2016 and December 2018.

**Setting** The study was based on a geographical catchment that covers four local government areas of Blacktown, Parramatta, Cumberland and Hills Shire in Western Sydney, Australia.

**Participants** All individuals 5 years of age or older referred to PMHC services.

**Primary outcome measure** First treatment session non-attendance, following a referral to receive psychological treatments.

**Results** There were 9158 referrals received for 8031 clients, with 1769 (19.32%) referrals resulting in non-attendance to the first treatment session. Those with younger age (ORs ranging from 1.63 to 1.92), substance use (OR=1.55, 95% CI 1.17 to 2.06), poor English proficiency (OR=1.64, 95% CI 1.23 to 2.20), lower socioeconomic status (OR=1.57, 95% CI 1.34 to 1.83), psychotropic medication use (OR=1.20, 95% CI 1.06 to 1.36), and a referral by a social worker (OR=2.04, 95% CI 1.36 to 3.05), allied health (OR=1.49, 95% CI 1.03 to 2.16) or other professional (OR=1.72, 95% CI 1.30 to 2.29) were associated with a higher likelihood of first treatment session non-attendance. Those with a risk of suicide, who mainly speak a language other than English, and a previous use of PMHC services were more likely to attend their first treatment session.

**Conclusion** Youth-specific treatment approaches, behavioural engagement strategies, facilitation of transport services for those live in deprived regions and improvements in capacity for mental health training among allied health professionals are areas of focus for primary care service and policy responses.

## Strength and limitations of the study

- This study investigates the determinants of first treatment session non-attendance to primary mental health care services. This is of current relevance in Australia given recent national policy reforms to organise regionally specific approaches to mental health service provision.
- The study has a large sample size, and multiple imputation techniques were also employed to maximise the use of data.
- Age-specific analyses were conducted to investigate differences in the association between determinants of treatment non-attendance among younger age groups (age≤24) and older age groups (age>24).
- There may be important covariates that were not captured in the current study and which may also explain the treatment non-attendance.
- There may be a group of patients who did not attend these free or low-cost services, and may have accessed other fee for service mental health services.

## INTRODUCTION

Non-attendance to treatments following a referral is a common phenomenon in the primary health care sector, and is more likely to occur in mental health care settings compared with other primary health care contexts.<sup>1</sup> Treatment non-attendance can potentially affect deterioration in symptoms, quality of life<sup>1</sup> and other mental health outcomes. For example, subsequent hospital admission rates have been shown to be higher among those who did not attend their first appointment for psychiatric outpatient treatment following referral from a primary care setting,<sup>2</sup> and a recent study indicated that interventions to re-engage those lost to mental health services had the greatest potential impact on reducing the incidence of suicide.<sup>3</sup> In addition, treatment non-attendance is also



associated with additional work load and administrative burden in following-up patients and managing service attendance,<sup>4</sup> potentially decreasing the expected cost-effectiveness of services.

Treatment non-attendance can refer to those who never initiate treatment sessions for a given referral (first treatment non-attendance) and those who disengage with, or terminate, treatments (treatment dropout) against a service provider's recommendation. Previous studies have demonstrated differential patterns in these two forms of treatment non-attendance for patient demographic, clinical and service level characteristics.<sup>5 6</sup> There is no universal definition of treatment drop out or disengagement used.<sup>7</sup> Some studies have used number of sessions to define treatment dropout, but this can be problematic due to the methodological differences in terms of patient demographics, severity of mental health conditions and service-level characteristics, and also the use of different categories of session frequency between studies.<sup>7</sup> Information on number of treatment sessions can be difficult to interpret in routinely collected primary care data, where a non-attendance could reflect treatment drop out, referral to other services, or coding errors. It could also reflect treatment completion as previous research evidence indicates psychotherapy dropout even after the first session may also reflect improvements in a given mental health conditions.<sup>8</sup> Hence, the current study focusses on the determinants of first treatment non-attendance.

Previous research has indicated that sociodemographic factors such as younger age, race, being unmarried and lower socioeconomic status (SES) have been associated with a higher risk of first treatment session non-attendance.<sup>1 5 9-12</sup> Additionally, substance use as a main diagnosis (or as a comorbid condition), personality disorder, risk of suicide and previous mental health service use have also been associated with non-attendance.<sup>1 5 10 13</sup> Other referral-level factors associated with non-attendance also include referrer profession, poor communication between referrer and patient, and waiting time to first treatment appointment.<sup>1 6 14 15</sup>

This question is of current relevance in Australia given recent national policy reforms, which have aimed to provide more appropriate and regionally specific mental health services through Primary Health Networks (PHNs).<sup>16</sup> The current study is based on primary mental health care services (PMHC) in Western Sydney (Australia), a sociodemographically heterogeneous geographic region comprising a high proportion of culturally and linguistically diverse communities.<sup>17</sup> Although there has been previous research conducted on first treatment session non-attendance, the extent to which recommendations in these studies are applicable to the Western Sydney population catchment is uncertain due to the heterogeneity of population backgrounds and differences in mental health services provided in a primary care setting, and changes over time in mental health policies and services. The aim of the current study is to investigate the sociodemographic, clinical and

referral-level determinants of first treatment session non-attendance among those referred to the PMHC services in Western Sydney (Australia). Findings can be used to improve treatment engagement among population subgroups that are more likely to not initiate treatments, despite a referral to PMHC services.

## METHODS

### Study catchment

This study was based on the Western Sydney PHN population catchment that covers four local government areas of Blacktown, Parramatta, Cumberland and Hills Shire in Western Sydney, Australia. The estimated population in this geographical setting was approximately 950 000 in 2016.<sup>18</sup> In addition, the Western Sydney PHN catchment comprises the highest proportion (39.4%) of people born in predominantly non-English speaking countries compared with all other 30 PHN catchment areas in Australia.<sup>17</sup>

### Primary mental health care services

The PMHC services considered in this study are federal government initiatives established to support those who otherwise have no, or limited, access to mental health services, established under the Better Outcomes in Mental Health Care Programme in 2001 to facilitate mental health service access.<sup>19</sup> As part of this programme, general practitioners (GPs) were provided incentives to work collaboratively with mental health professionals under the Access To Allied Psychological Services (ATAPS) and to refer people with mental disorders to receive psychological therapies where appropriate. While there is no limit to the number of sessions per referral for individuals, under this scheme now, clients are required to visit their GP for a mental health review after every six sessions, and can extend for another six sessions based on the client's specific circumstances

These services were first commissioned by Divisions of General Practice and were transitioned to Medicare Locals in 2011,<sup>20</sup> and then to PHNs in July 2016 following the recommendations of a major mental health review conducted in Australia in 2014.<sup>16</sup> These recommendations proposed a more regional approach to mental health and suicide prevention services. Under these reforms, PMHC services are designed to deliver mental health support under eight main focus areas including (1) psychological therapy; (2) low intensity psychological interventions; (3) clinical care coordination; (4) complex care packages; (5) child and youth specific mental health services; (6) Indigenous-specific mental health services; (7) other and (8) psychosocial support services.

### Participants

This study included routinely collected de-identified data of those age $\geq$ 5 years, referred to PMHC services between July 2016 and December 2018. The majority of the referrals were for psychological therapy (7987, 72.6%),

followed by low intensity psychological interventions (1758, 15.5%) and child and youth specific mental health services (650, 7.1%). However, referrals to low intensity psychological interventions (1758, 15.5%), clinical care coordination (60, 0.53%) and psychosocial support (18, 0.16%) were not included due to the inconsistent data reporting.

### Patient and public involvement

Patients and the public were not involved in the study or study design, except for their contribution to the health records. Because this study used routinely collected de-identified data, it was not feasible to involve patients or the public in the design or conduct of the study.

### Data sources

Data for PMHC services were extracted from the PMHC national Minimum Data Set (MDS) and ATAPS MDS. The PMHC MDS was developed based on the previous ATAPS MDS data architecture, but collects a broader range of information than the previous ATAPS MDS. The PMHC MDS is designed to collect mental health data from treatment providers commissioned by PHNs to provide primary care services and provides the basis for PHNs and the Commonwealth Department of Health to monitor the quantity and quality of mental health treatment delivery. Treatment providers are required to enter or upload data into the PMHC MDS central web portal. The PMHC MDS comprises items relating to patients' sociodemographic and socioeconomic information, mental health referral and diagnosis information, service session information and practitioner characteristics. Since the establishment of the PMHC MDS, all ATAPS MDS data were incorporated into the current PMHC MDS in July 2017. The current study is based on data extracted from both ATAPS and PMHC MDSs for the period between July 2016 and December 2018. In addition to the PMHC data, this study also used the Index of Relative Socio-economic Advantage and Disadvantage for the census year 2016<sup>21</sup> to derive area-level SES based on the postcodes of those referred to PMHC services.

### Study variables

The outcome variable of this study was first treatment non-attendance, a binary variable classified as either 'did not attend' or 'attended'. If any referral received for psychological treatments ended without at least one treatment session, then that particular referral was classified as 'did not attend'. A series of time variant (some clients were referred more than once during the period of study) and time invariant sociodemographic, diagnostic and referral level variables were investigated as determinants of treatment non-attendance, and were based on available data items. All the variables except gender may be time dependent for those who were referred more than once during the study period.

Sociodemographic variables included gender (male, female), age group (5–11, 12–24, 25–44, 45–64, ≥65),

main language spoken at home (English, other), proficiency of English (not at all/not well, well, very well), area-level SES (population quintiles from least deprived to most deprived), marital status (never married, divorced, separated, widowed, married (registered or de facto)) and employment status (full time, part time, not in the labour force).

Diagnostic factors included presenting diagnosis (anxiety disorders, depressive disorders, both anxiety and depressive disorders, substance use disorders, other) and suicidal risk (yes, no), classified as 'yes' if the presentation followed a suicide attempt or with suicide ideation.

Other referral level variables included referrer profession (GP, psychologist, mental health nurse, social worker, psychiatrist, paediatrician, other), previous history of PMHC service use (irrespective of whether individuals completed treatments or not for a given episode/s during the past 14 years of data availability) (yes, no) or use of any mental health medication during the time of referral (yes, no). Mental health medication included use of any antipsychotics, anxiolytics, hypnotics and sedatives, antidepressants, or psychostimulants and nootropics. The generic term 'PMHC' is used in the current study hereafter to refer to PMHC services.

### Statistical analysis

Descriptive analyses presented counts and percentages for each study factor. Generalized estimating equations (GEEs) were employed with a logit link and exchangeable correlation structure to model the association between time variant and invariant variables and first session non-attendance. Univariate and multivariate analyses adjusting for each of the covariates were conducted and ORs with 95% CIs were presented. Interaction effects between covariates were also examined. Age-specific analyses were also conducted by stratifying models to investigate the associations between study factors and first treatment session non-attendance among younger (≤24 years) and older (>24 years) age cohorts. Marital status and employment status were available as variables in the database since July 2017 (not included in ATAPS MDS) and the effect sizes of these two variables on the outcome were derived from the same GEE models for the period July 2017 to December 2018. Marital status and employment status were not included as covariates in models of those aged ≤24 years.

Missing data were present in some of the covariates in the data set. In order to maximise the use of available information, we employed the Multivariate Imputation by Chained Equation method (MICE) using the MICE package in R,<sup>22</sup> and generated 20 separate imputations using 20 cycles to impute a single missing value of a variable in order to minimise the uncertainty around estimates. Complete case multivariable analyses were based on 76.9% of the total sample for all ages, 77.1% for the younger age group (≤24 years), and 76.8% for the older age group (>24 years). All statistical analyses were

**Table 1** Sociodemographic, diagnostic and referral information

Characteristics	Attended N=7389 (80.68%)	Did not attend N=1769 (19.32%)	Total N=9158 (100%)
Gender (data missing for 20 (0.22%) referrals)			
Male	2904 (39.38)	734 (41.61)	3638 (39.81)
Female	4470 (60.62)	1030 (58.39)	5500 (60.19)
Age*			
≥65	508 (6.88)	80 (4.52)	588 (6.42)
45–64	1792 (24.25)	315 (17.81)	2107 (23.01)
25–44	2353 (31.84)	601 (33.97)	2954 (32.26)
12–24	1733 (23.45)	498 (28.15)	2231 (24.36)
≤11	1003 (13.57)	275 (15.55)	1278 (13.96)
Proficiency of English (data missing for 395 (4.31%) referrals)			
Very well	5420 (76.69)	1304 (76.89)	6724 (76.73)
Well	1379 (19.51)	313 (18.46)	1692 (19.31)
Not well	268 (3.79)	79 (4.66)	347 (3.96)
Main Language at home (data missing for 321 (3.51%) referrals)			
English	6586 (92.42)	1622 (94.8)	8208 (92.88)
Other	540 (7.58)	89 (5.2)	629 (7.12)
Socioeconomic status† (data missing for 73 (0.8%) referrals)			
5 (least deprived)	1707 (23.27)	330 (18.86)	2037 (22.42)
4	1752 (23.89)	386 (22.06)	2138 (23.53)
3	1650 (22.49)	408 (23.31)	2058 (22.65)
2	488 (6.65)	65 (3.71)	553 (6.09)
1 (most deprived)	1738 (23.69)	561 (32.06)	2299 (25.31)
Marital status‡ (data missing for 1326 (27.95%) referrals)			
Never married	1093 (39.13)	269 (43.04)	1362 (39.85)
Divorced	328 (11.74)	52 (8.32)	380 (11.12)
Separated	363(13)	92 (14.72)	455 (13.31)
Widowed	115 (4.12)	16 (2.56)	131 (3.83)
Married (registered and de facto)	894 (32.01)	196 (31.36)	1090 (31.89)
Employment status‡ (data missing for 1429 (30.12%) referrals)			
Full time	306 (11.25)	85 (14.29)	391 (11.79)
Part time	420 (15.44)	78 (13.11)	498 (15.02)
Not in the labour force	1994 (73.31)	432 (72.61)	2426 (73.18)
Diagnosis (data missing for 269 (2.94%) referrals)			
Anxiety disorders	1550 (21.59)	387 (22.63)	1937 (21.79)
Affective (mood) disorders	1863 (25.95)	442 (25.85)	2305 (25.93)
Anxiety and affective disorders	2838 (39.53)	625 (36.55)	3463 (38.96)
Substance use disorders	234 (3.26)	87 (5.09)	321 (3.61)
Other	694 (9.67)	169 (9.88)	863 (9.71)
Suicide risk (data missing for 242 (2.64%) referrals)			
No	6185 (85.68)	1491 (87.86)	7676 (86.09)
Yes	1034 (14.32)	206 (12.14)	1240 (13.91)
Referrer type (data missing for 54 (0.59%) referrals)			
General practitioner	6668 (90.8)	1520 (86.36)	8188 (89.94)
Psychologist	55 (0.75)	18 (1.02)	73 (0.8)
Mental health nurse	131 (1.78)	42 (2.39)	173 (1.9)
Social worker	79 (1.08)	37 (2.1)	116 (1.27)

Continued



Table 1 Continued

Characteristics	Attended N=7389 (80.68%)	Did not attend N=1769 (19.32%)	Total N=9158 (100%)
Psychiatrist	46 (0.63)	8 (0.45)	54 (0.59)
Other	189 (2.57)	76 (4.32)	265 (2.91)
Paediatrician	176 (2.4)	59 (3.35)	235 (2.58)
Psychotropic medication (data missing for 1295 (14.14%) referrals)			
No	3720 (58.25)	840 (56.87)	4560 (57.99)
Yes	2666 (41.75)	637 (43.13)	3303 (42.01)
Previous service use*			
No	5559 (75.23)	1468 (82.98)	7027 (76.73)
Yes	1830 (24.77)	301 (17.02)	2131 (23.27)

N—number of referrals.

Those who attended versus did not attend the first treatment session.

\*No missing values recorded.

†Area socioeconomic status, based on Index of Relative Socio-economic Advantage and Disadvantage.

‡Counts and denominator included those referred between July 2017 and December 2018 and age≥18.

conducted using Stata V.14.0 (Stata Crop, 4905 Lakeway Dive, College Station, TX77845, USA) and R V.3.6.0.

## RESULTS

There were 9158 referrals received for 8031 patients for the period of July 2016 to December 2018. Of these referrals, 1769 (19.3%) referrals did not result in any subsequent service session attendance. Nearly 60% of the referrals were for females, more than two-thirds for those aged ≤44 years, (table 1). Nearly 40% of the referrals for those were never married and 73% for those were not in the labour force. Depression or anxiety was the main reasons for referrals to the PMHC services. Over 40% of those referred used psychotropic medication at the time of referral and approximately 14% of those presented with suicide risk (table 1). GPs were the predominant type of health professional (90%) referring clients to PMHC services, and nearly a quarter of clients had previously commenced at least one service session related to the same or different diagnostic conditions to PMHC services (table 1).

Multivariable analysis indicated poor proficiency of English compared with those who speak English very well (OR=1.64, 95% CI: 1.23 to 2.20), those who resided in the lowest SES areas compared with the highest SES quintile (OR=1.57, 95% CI: 1.34 to 1.83), and those aged 25–44 (OR=1.63, 95% CI: 1.26 to 2.11), 12–24 (OR=1.92, 95% CI: 1.47–2.49) and ≤11 (OR=1.69, 95% CI=1.26–2.28), compared with the older age group (age≥65), were more likely to not attend treatment sessions. Those who spoke a language other than English were less likely to not attend first psychological treatments (OR=0.65, 95% CI=0.51–0.84). In addition, those with substance use disorders compared with anxiety disorders (OR=1.55, 95% CI=1.17, 2.06), and those use psychotropic medication at the time of referral (OR=1.20, 95% CI=1.06–1.36) were more likely to not attend treatments, while those

with a risk of suicide were less likely to not attend treatments (OR=0.70, 95% CI=0.59–0.84). Those referred by a social health worker (OR=2.04, 95% CI: 1.36 to 3.05), other professionals (OR=1.72, 95% CI: 1.30 to 2.29) or a mental health nurse (OR=1.49, 95% CI: 1.03 to 2.16) compared with a referral by a GP were more likely to not attend psychological treatments, whereas those who previously used PMHC services (OR=0.66, 95% CI: 0.58 to 0.76) were less likely to not attend to the first treatment session. Gender, marital status and employment status were not significantly associated with treatment non-attendance (table 2; model 4 and online supplemental tables 1,2; model 4 and figure 1).

Similar associations were evident in age-specific analyses for younger (age≤24 years), and older (age >24 years) age groups (table 2 and online supplemental tables 1 and 2). Among the older age-group (>24 years) individuals at risk of suicide, and those with poor English proficiency, were more likely to not attend first treatment session compared with the younger age cohort (aged≤24 years) (online supplemental table 2). In contrast, the younger aged cohort (aged≤24 years) who did not attend their first treatment session were more likely to be using psychotropic medications, present with substance abuse, and be referred by a social worker or a mental health nurse, compared with older aged cohorts (aged >24 years) (online supplemental table 1).

## DISCUSSION

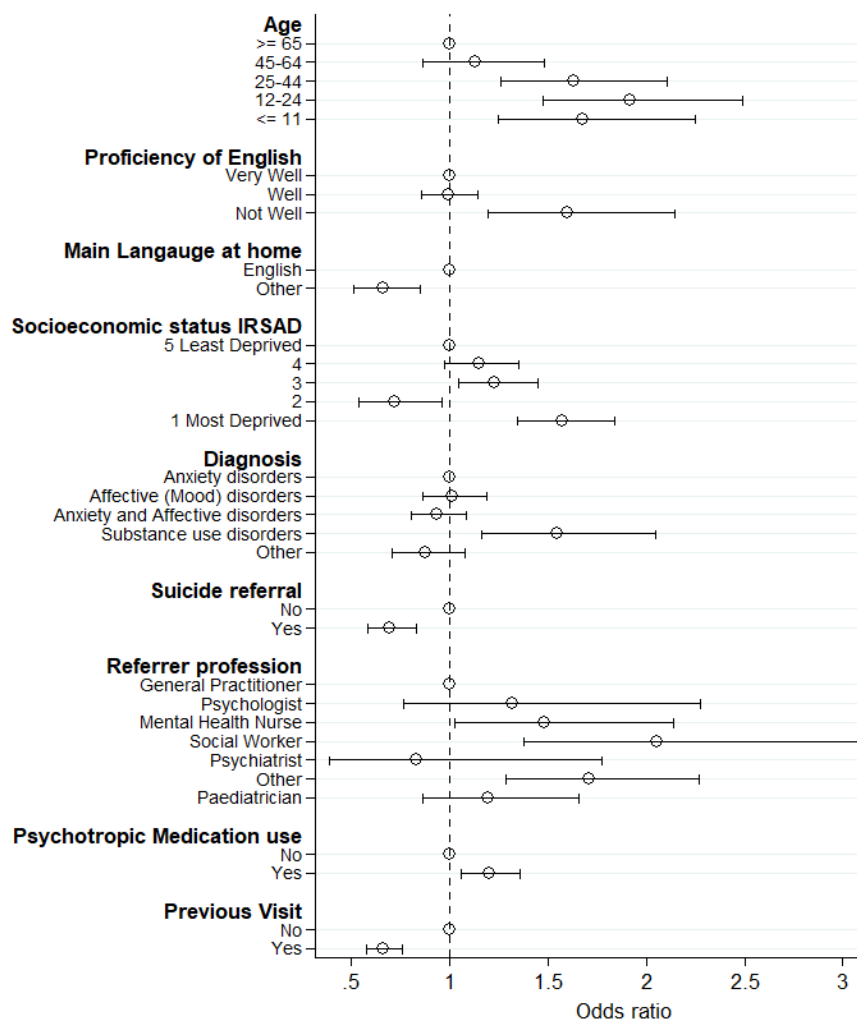
The current study investigated the determinants of first treatment session non-attendance among those referred to PMHC services in Western Sydney (Australia). Overall, 19.3% of referrals did not result in subsequent service attendance, a percentage within the range (16%–48%) of similar studies investigating first treatment session non-attendance,<sup>5 6 12 13 23</sup> and slightly lower compared with the national ATAPS figure of 21% based on data between 2003 and 2012.<sup>24</sup>

**Table 2** Generalized estimating equation models to predict first treatment session non-attendance

Characteristics	Unadjusted model1	Unadjusted model 2	Adjusted model 1 n=6179 (76.9%)	Adjusted model 2 n=8031 (100%)
<b>Gender</b>				
Male	Ref	Ref	Ref	Ref
Female	0.92 (0.82 to 1.02)	0.92 (0.82 to 1.02)	1.00 (0.88 to 1.13)	0.97 (0.87 to 1.09)
<b>Age</b>				
≥65	Ref	Ref	Ref	Ref
45–64	1.12 (0.85 to 1.46)	1.12 (0.85 to 1.46)	1.14 (0.83 to 1.57)	1.13 (0.86 to 1.48)
25–44	1.61 (1.25 to 2.07)	1.61 (1.25 to 2.07)	1.67 (1.23 to 2.26)	1.63 (1.26 to 2.11)
12–24	1.81 (1.40 to 2.34)	1.81 (1.40 to 2.34)	1.91 (1.40 to 2.61)	1.92 (1.47 to 2.49)
≤11	1.71 (1.30 to 2.25)	1.71 (1.30 to 2.25)	1.93 (1.36 to 2.75)	1.69 (1.26 to 2.28)
<b>Proficiency of English</b>				
Very well	Ref	Ref	Ref	Ref
Well	0.95 (0.82 to 1.09)	0.95 (0.83 to 1.09)	1.01 (0.85 to 1.19)	1.00 (0.87 to 1.16)
Not well	1.21 (0.93 to 1.57)	1.22 (0.94 to 1.58)	1.72 (1.21 to 2.44)	1.64 (1.23 to 2.20)
<b>Main language at home</b>				
English	Ref	Ref	Ref	Ref
Other	0.67 (0.53 to 0.84)	0.70 (0.56 to 0.88)	0.62 (0.46 to 0.83)	0.65 (0.51 to 0.84)
<b>Socioeconomic status*</b>				
5 (least deprived)	Ref	Ref	Ref	Ref
4	1.14 (0.96 to 1.34)	1.13 (0.96 to 1.33)	1.19 (0.99 to 1.45)	1.14 (0.97 to 1.35)
3	1.27 (1.08 to 1.49)	1.27 (1.08 to 1.49)	1.33 (1.10 to 1.61)	1.23 (1.04 to 1.45)
2	0.70 (0.52 to 0.93)	0.69 (0.52 to 0.93)	0.82 (0.59 to 1.13)	0.71 (0.53 to 0.95)
1 (most deprived)	1.65 (1.42 to 1.93)	1.65 (1.41 to 1.92)	1.68 (1.40 to 2.01)	1.57 (1.34 to 1.83)
<b>Diagnosis</b>				
Anxiety disorders	Ref	Ref	Ref	Ref
Affective (mood) disorders	0.95 (0.82 to 1.11)	0.96 (0.82 to 1.11)	1.07 (0.88 to 1.30)	1.02 (0.86 to 1.19)
Anxiety and affective disorders	0.88 (0.77 to 1.02)	0.89 (0.77 to 1.02)	1.07 (0.89 to 1.29)	0.94 (0.80 to 1.09)
Substance use disorders	1.47 (1.13 to 1.93)	1.48 (1.13 to 1.94)	1.78 (1.28 to 2.46)	1.55 (1.17 to 2.06)
Other	0.96 (0.79 to 1.18)	0.95 (0.78 to 1.16)	0.94 (0.73 to 1.21)	0.87 (0.70 to 1.07)
<b>Suicide referral status</b>				
No	Ref	Ref	Ref	Ref
Yes	0.84 (0.71 to 0.99)	0.83 (0.71 to 0.98)	0.76 (0.62 to 0.93)	0.70 (0.59 to 0.84)
<b>Referrer profession</b>				
General practitioner	Ref	Ref	Ref	Ref
Psychologist	1.45 (0.85 to 2.47)	1.45 (0.85 to 2.47)	1.38 (0.73 to 2.62)	1.32 (0.77 to 2.27)
Mental health nurse	1.42 (0.99 to 2.01)	1.41 (0.99 to 2.01)	1.75 (1.15 to 2.65)	1.49 (1.03 to 2.16)
Social worker	2.02 (1.36 to 3.01)	2.02 (1.36 to 3.00)	2.01 (1.20 to 3.37)	2.04 (1.36 to 3.05)
Psychiatrist	0.79 (0.38 to 1.67)	0.78 (0.37 to 1.64)	0.60 (0.21 to 1.70)	0.81 (0.38 to 1.74)
Other	1.72 (1.31 to 2.26)	1.72 (1.31 to 2.26)	1.61 (1.14 to 2.26)	1.72 (1.30 to 2.29)
Paediatrician	1.44 (1.06 to 1.95)	1.44 (1.07 to 1.95)	1.34 (0.89 to 2.01)	1.20 (0.87 to 1.67)
<b>Psychotropic medication use</b>				
No	Ref	Ref	Ref	Ref
Yes	1.06 (0.95 to 1.19)	1.06 (0.95 to 1.18)	1.19 (1.04 to 1.37)	1.20 (1.06 to 1.36)
<b>Previous service use</b>				
No	Ref	Ref	Ref	Ref
Yes	0.67 (0.58 to 0.76)	0.67 (0.58 to 0.76)	0.66 (0.56 to 0.77)	0.66 (0.58 to 0.76)

ORs and 95% CIs were presented as effects; n—number of clients; Unadjusted model1—univariate model based on non-imputed data; Unadjusted model2—univariate model based on imputed data; Adjusted model1—multivariate model based on non-imputed data; Adjusted model2—multivariate model based on imputed data.

\*Area-level socioeconomic status based on Index of Relative Socio-economic Advantage and Disadvantage.



**Figure 1** ORs and 95% CIs of covariates predicting first treatment non-attendance. Note: The 95% CI for a covariate category not crossing the vertical dash line with OR=1 indicates that the OR for that category is significantly different from 1, and vice versa. IRSAD, Index of Relative Socio-economic Advantage and Disadvantage.

Younger age groups (age <45) were more likely to not attend follow-up treatment sessions compared with older age cohorts (age ≥45), which was also consistent with previous similar studies.<sup>5 9 12</sup> A higher likelihood of treatment non-attendance among younger age groups may reflect negative perceptions about the mental health support they receive, and a greater reliance on support from peers.<sup>25</sup> It is also possible, especially among children aged 5–11 years, that support from parents or guardians in facilitating treatment access may not be sufficient.<sup>26</sup>

Gender and marital status were not consistently associated with treatment non-attendance in the present study. Previous studies also found inconsistent associations between these sociodemographic factors and first treatment session non-attendance to mental health services. Di Bona *et al* found gender was not associated with treatment non-attendance,<sup>13</sup> whereas Simon and Ludman found females were more likely to not attend first treatment session.<sup>12</sup> Similarly, Lester and Harris found those who were divorced were more likely to not attend a first treatment session<sup>27</sup> and Matas *et al* found that those who were single were more likely to not attend the

first treatment session,<sup>10</sup> whereas Cheng *et al.* and Fenger *et al* found no association between marital status and first treatment session non-attendance.<sup>25</sup> In the present study, univariate analyses found those who were divorced were more likely to attend treatments compared with those married, never married or separated, but associations were not strong following adjustment for other covariates.

Employment status was not associated with treatment non-attendance in the present study, which was also consistent with a previous similar study in Denmark<sup>5</sup> which showed no association for first treatment non-attendance, but did find that unemployment was associated with treatment dropout over subsequent sessions. In contrast, the present study found that those from lower SES areas were more likely to not attend the first treatment session compared with those residing in higher SES areas, except the second lowest quintile of SES but the effect on treatment non-attendance after combining the lowest and second lowest quintiles was significantly greater compared with the highest SES quintile ((OR=1.39, 95% CI: 1.20 to 1.62); this result was not shown in tables). This may, however, reflect differences in the level

of mental health service availability, the material resources among those residing in lower SES areas and the location and distance to travel for services.<sup>28 29</sup>

Interestingly, individuals who spoke languages other than English were more likely to attend treatments compared with English language speakers, whereas individuals with a poor English proficiency (perhaps more common among those with a non-English speaking background) were more likely to not attend first treatment session. A possible interpretation of this finding may reflect duration of residence in Australia in migrant communities in Western Sydney (a variable not available on the PMHC dataset), and recent migrants within these communities may have poorer English language proficiency that may present a barrier to initially accessing these mental health services. However, there are established culturally and linguistically diverse communities in Western Sydney (predominantly Indian, Chinese, Filipinos and Sri Lankan)<sup>17</sup>, with corresponding mental health services that can be provided by professionals of similar cultural backgrounds.

Those presenting with a (comorbid) substance use disorder were less likely to attend subsequent treatments. Substance use disorders present additional complexity to remain in treatment when comorbid with other conditions,<sup>1</sup> but behavioural engagement strategies may have the potential to increase treatment engagement.<sup>30</sup> In contrast, those assessed to be at risk of suicide were more likely to attend treatment services, which differs from previous studies suggesting that those at risk of suicide were less likely to attend follow-up treatments,<sup>13 31</sup> and may reflect the current PHN requirements to provide immediate access (within 7 days of the date of referral) to treatments for those with risk of suicide.<sup>32</sup>

In comparison, those who were newly referred to PMHC services, and those using psychotropic medication at the time of referral were more likely not to attend follow-up treatment sessions. The latter findings suggest that there may be perceptions that psychological treatments in combination with psychotropic medication are not helpful. Additionally, clients who were referred by a source other than a GP had higher non-attendance rates compared with those referred by a GP and this may likely reflect established relationships between clients and an existing GP, and different referral processes and levels of existing communication between GPs and specific PMHC services than for other non-GP referrers.

There are a number of methodological limitations when interpreting findings from the present study. First, the current study was unable to include a number of factors that may be important determinants of treatment non-attendance. Level of psychological distress or severity of illness,<sup>33 34</sup> waiting time between the initial presentation and the first follow-up service<sup>15</sup> and transportation barriers or travel distance<sup>27 35</sup> have previously been shown to be associated with treatment non-attendance. The PMHC MDS, however, did not collect information on these factors. Baseline psychological distress (as a proxy measure of illness severity) measured by the Kessler 10 (K10) Score is collected in both ATAPS and PHMC MDSs, but it is not entered by service providers with much consistency (K10 scores were missing on ~83% of referrals during the study period). However, findings from the current

study are generally consistent with the findings of previous research, and it is unlikely that estimates would substantially change in the presence of these unmeasured covariates. Second, it is possible that those individuals who did not attend any treatment sessions may have accessed other fee for service mental health services not captured by the PMHC MDS. This would represent a small proportion of all services delivered, given the PMHC services described are provided at a no cost (or low cost). Thirdly, exclusion of low intensity interventions may reduce the generalisability of findings to those at risk or experiencing mild mental health conditions, in that the services captured in the current study would likely reflect slightly more severe cases than mild conditions of mental disorders who may be less likely to engage and attend mental health interventions.<sup>36</sup>

## CONCLUSION

Findings of the current research can help to identify vulnerable groups at risk of treatment non-attendance at the time they are being referred to PMHC services, and can inform local policy makers in the development of relevant policies and guidelines to enhance the delivery of PMHC services. Youth-specific treatment approaches that aim to improve attendance and follow-up, and behavioural engagement strategies, such as, motivational interviewing techniques especially for those experiencing substance use disorders, are important areas for future enquiry. Additionally, for those of culturally and linguistically diverse backgrounds the provision of treatment services with a provider of similar cultural background, and improvements in capacity for mental health training arrangements among allied health professionals are areas of focus for primary care service and policy responses to improve mental health outcomes in Western Sydney.

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**Data availability statement** Data may be obtained from a third party and are not publicly available. The primary mental health care (PMHC) Minimum Data Set (MDS) and Access To Allied Psychological Services MDS are owned by the Australian Government Department of Health. Western Sydney Primary Health Network (PHN) has access to this data for Western Sydney PHN's population catchment area. Data model, variables and variable labels of PMHC MDS can be found via <https://docs.pmhc-mds.com/projects/data-specification/en/v1/data-model-and-specifications.html#data-model>.

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