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The delay between symptom onset and seeking professional treatment for anxiety and depressive disorders in a rural Australian sample

Amanda C. Green · Caroline Hunt ·
Helen J. Stain

Abstract

Background Epidemiological research has revealed that the utilisation of professional mental health services is low among rural Australians, despite a similar prevalence of mental illness to urban communities. However, the extent of this unmet need and the length of delay to first seek treatment in rural communities remain unclear. The aim of this study was to investigate the delay among rural Australians in seeking treatment for anxiety and depressive disorders.
Method A total of 124 participants with an anxiety or depressive disorder according to the Composite International Diagnostic Interview (CIDI) who were participants of the Australian Rural Mental Health Study (ARMHS) were included in this study. Multivariate methods examined the contribution of clinical (onset age, disorder type and comorbidity), attitudinal/demographic (perceived stigma and current age) and structural (rurality) variables to the delay to first seek help.
Results The average length of the delay was 18.7 years across disorders (range 0–67). The shortest delays were in depressive disorders (10.41 years) and the longest for social phobia (28.02 years). Multivariate analysis indicated that younger onset age, older current age, diagnosis of panic disorder or depressive disorder, and living in a remote (R) or very remote area (VR) were associated with delays of more than one year.

Conclusion Delays to first seek treatment for anxiety and depressive disorders appear to be far more prolonged in rural compared to urban Australia. This is particularly the case for Australian residents living in R and VR areas. This is of particular concern due to the significant mental health needs of rural Australians.

Keywords Anxiety disorders · Depressive disorders · Help seeking · Rural

A. C. Green · C. Hunt (✉)
School of Psychology, The University of Sydney,
Brennan MacCallum Building (A18), Camperdown,
NSW 2006, Australia
e-mail: caroline.hunt@sydney.edu.au

H. J. Stain
Centre for Rural and Remote Mental Health,
University of Newcastle, Bloomfield Hospital,
Orange, NSW 2800, Australia

Introduction

Depressive and anxiety disorders are among the most common and disabling psychiatric conditions, both overseas and in Australia [1–3]. Despite the availability of effective treatments, the majority of people suffering from anxiety and depressive disorders do not access professional treatments [1]. This discrepancy between the number of people diagnosed with mental disorders who access services and those who do not has been termed the *unmet need* for treatment [4]. This paper will define the term treatment as professional treatment provided by either health professionals (e.g. General Practitioner, psychologist and psychiatrist) or non-health care professionals (e.g. spiritual advisors, herbalists and healing professionals), whereas the broader term of help seeking includes, attitudes to seeking help, consultations with non-professionals (e.g. friends or family), help lines, the internet, as well as professionals [5].

According to the 2007 National Survey of Mental Health and Wellbeing (NSMHWB), 65.1% of Australians with high prevalence mental disorder had not sought treatment from a health professional within a 12-month period [6]. This level of unmet need is consistent with the USA (68.9%) [7], UK (75%) [8] and New Zealand (61.1%)

[9]. A large-scale cross-sectional study, as part of the European Study of Epidemiology of Mental Disorders, conducted across six European countries (Belgium, France, Germany, Italy, The Netherlands and Spain), reported that only 25.1% of participants with a disabling mental disorder had seen a mental health specialist within the 12 months prior to the study [10].

In Australia, 31% of the population lives in rural areas generally defined as those areas outside of cities with populations greater than 250,000 people [11, 12]. The 1997 and 2007 NSMHWB have consistently found no overall differences in the prevalence of anxiety and depressive disorders across rural and urban areas [e.g. 1, 13. However, higher levels of psychological distress and disability associated with mental disorders have been found in males living in rural Australia compared to their age and gender-matched urban counterparts [13]. It is important to note that the NSMHWB had a poor representation of individuals living in remote areas of Australia. Research conducted in the UK and Europe has found higher prevalence rates in urban compared to rural areas [14, 15]. Overall, studies show mixed findings regarding rural–urban differences; however, poorer outcomes have consistently been found in rural areas [16]. This suggests that the mental health needs of rural residents are significant.

The 1997 and 2007 Australian NSMHWB have not been informative regarding the unmet need for treatment in rural areas due to a poor representation of individuals living in remote areas of Australia within these surveys [3]. Twelve-month mental health service for anxiety, depressive and substance use disorders, however, has been investigated in a cross sectional study of 391 residents living in three locales: a large regional centre, medium sized towns (5,000–20,000 population) and small towns (<5,000 population) in north-west Victoria [17]. The level of unmet need for treatment found in rural Victoria (63%) was consistent with the 1997 NSMHWB [1]. Epidemiological research conducted in Canada (The Supplement to the Ontario Mental Health Survey) and the USA (National Comorbidity Survey-Replication) has investigated the association between rurality/urbanicity and the unmet need for treatment. These studies found that living in a rural area, defined as areas outside of metropolitan areas or large urban centres, was associated with higher levels of unmet need for treatment [7, 15, 18].

Long delays between individuals' onset of symptoms, and first seeking professional treatment are thought to be largely responsible for the high level of unmet need for mental health care in epidemiological samples that, as nationally representative samples, include both urban and rural communities [7, 19]. Research in Australia and overseas has found that the delay to seek help for anxiety and depressive disorders is both pervasive and extensive, with median delays of between 1 and 30 years [7, 19–23]. Furthermore, the probability of initial treatment contact has shown consistently to be highest in the year of onset, relative to each subsequent year, with the likelihood of treatment contact decreasing across time for all disorders [7, 19, 22]. However, the majority of respondents do not seek treatment from a professional in the first year following symptom onset. Recent research into the delay to seek treatment in an Australian urban sample found that only 28% of participants with an anxiety or depressive disorder had sought treatment from a health professional within their first year of symptom onset, with average delays of 8.2 years [22]. The most commonly cited reason for the delay was 'I thought it would go away by itself' (60%) [24].

The studies outlined above have found consistently that younger age of onset and older current age predict longer delays to seek treatment [7, 19–22]. Variables such as disorder type and slower problem recognition have also been identified as predictors in some studies [20, 22]. Specifically, a diagnosis of generalised anxiety disorder (GAD), specific phobia or social phobia has been found to be associated with longer delays and slower problem recognition compared to panic disorder.

Very little is known about initial delays between onset of symptoms and first seeking treatment in rural areas. Of the studies investigating the delay to first seek treatment, only one study has investigated the association between the delay and rurality/urbanicity. Kessler and colleagues [19] using data from the USA, National Survey of Comorbidity, found no association between rurality/urbanicity and the delay to first seek treatment. The use of three broad categories (metropolitan, urban and rural), however, fails to account for the heterogeneity within urban and rural areas [25, 26] and may have masked an association. Furthermore, the make up of rural communities is highly variable in different countries. It is for these reasons that it is important to investigate the delay to first seek treatment in rural Australia.

Studies investigating service utilisation and help seeking for mental health problems in rural Australia have found additional variables associated with service utilisation and a willingness to seek help, including living in a medium sized town, lower levels of perceived stigma and stoicism [17, 27–29]. However, as yet there is no direct evidence that these variables associated with service utilisation can also predict the delay to first seek professional treatment in rural Australia.

In conclusion, individuals with mental disorders delay accessing health services, despite effective treatments being available. While there have been Australian studies of the delay to seek treatment in metropolitan areas, and studies of help seeking behaviour in rural Australia (e.g., [22, 27, 29]), it remains important to examine the length of the delay to first seek treatment for mental health problems

in an Australian rural population. This will help to understand the mental health needs of rural residents regarding access to appropriate and timely mental health treatment, thus reducing the poorer mental health outcomes for rural residents. Furthermore, these data will provide means of comparison with data from metropolitan Australia and overseas, which are important because of the unique geographical and cultural aspects of rural and urban areas, which may influence treatment seeking.

Aims of study

The aim of this study was to investigate the delay to first seek treatment in an Australian rural sample. Specifically, we aimed to determine the length of the delay to first seek treatment and identify variables that can predict the length of the delay, which included clinical variables (onset age, disorder type and comorbidity), attitudinal/demographic variables (perceived stigma and age), and structural variables (rurality/accessibility). We also aimed to explore the most commonly cited reasons for people not getting as much help as they needed from health professionals.

Method

Participants

The sample for this study was drawn from participants in the Australian Rural Mental Health Study (ARMHS) cohort. A detailed description of ARMHS is provided elsewhere [30]. Briefly, a stratified sample design was used based on the Australian Standardised Geographic Classification (ASGC) Remoteness classification system, which uses the Accessibility/Remoteness Index of Australia, Plus (ARIA +) to group areas according to remoteness. The sample was recruited from inner regional (IR), outer regional (OR), remote (R) and very remote (VR) areas of New South Wales. A sub-set of participants completed the Composite International Diagnostic Interview (Version 3.0; CIDI-3.0). Eligibility for the CIDI-3.0 was based on participants Kessler-10 (K-10) scores. The use of a diagnostic interview for mental disorder extends evaluation of mental health from symptom level through to patterns of disorder, a critical measure to assess clinical severity and likely service need, as well as mapping the factors that influence incidence of disorder over time. However, this is a resource intensive process for epidemiological research such as the ARMHS study. Therefore, the CIDI sampling strategy was based on the K10 clinical cut points indicative of high, moderate and low likelihood of mental health disorder. Thus, the participants were selected for CIDI interview based on total K10 scores: 75% of those in the

'Moderate' range (16–24), and 100% of those in the 'High' range (>24). In addition, we selected a 1/6 random sample of those scoring in the K10 'Low' range (<16) as a check for the validity of our targeting high K10 scores. This paper presents data only from respondents who met criteria for depressive and anxiety disorders as measured by the CIDI-3.0. This study was approved by the Human Research Ethics Committee of the University of Sydney.

Measures

Diagnostic assessment

The telephone-administered CIDI-3.0 was used to identify participants with a lifetime diagnosis of depressive disorders (major depressive disorder (MDD) or dysthymia), social phobia, generalised anxiety disorder (GAD) or panic disorder. The CIDI has been found to have good inter-rater reliability, test–retest reliability and validity [31]. Clinical reappraisal studies conducted across four countries with a total sample of 468 have shown that the CIDI-3.0 has good concordance with blind re-interviews. The area under the receiver operator characteristics curve ranged between 0.71 and 0.93 for lifetime mood and anxiety disorders [32]. Primary DSM-IV diagnoses are reported using hierarchy rules for depressive disorders, GAD and social phobia, but not for panic disorder.

Demographics and perceived stigma

Sociodemographic information (age, sex, education, marital status and rurality) was obtained. Participants' level of education was coded into three categories: high school or less, diploma/certificate or trade, and university or higher degree. Marital status was coded into two categories: married/de facto or not married/de facto. The ASGC/ARIA + mean score was used as a measure of rurality. These scores were then used to group participants into inner regional, outer regional, remote and very remote areas of NSW. Remote and very remote groups were combined due to small cell sizes.

The Perceived Stigma Scale (PSS) [29] was used to measure perceived stigma. The PSS is a 16-item scale, which was adapted from the Devaluation and Discrimination Scale (DDS) [33, 34]. Responses are assessed using a four point Likert scale ranging from 'strongly agree' to 'strongly disagree'. Higher scores indicate lower perceived stigma. Wrigley and colleagues [29] reported good internal reliability (Cronbach's alpha = 0.80).

Treatment seeking history

Age at symptom onset and treatment seeking history was obtained from the relevant sections of the CIDI-3.0.

Participants' first professional contact was obtained by asking; "did you ever in your life talk to a medical doctor or other professional about your (*relevant symptoms*)?" Professional was then clarified by stating; "by professional we mean psychologists, counsellors, spiritual advisors, herbalists, acupuncturists and other healing professionals." Participants gave their age in years. Time of first treatment contact was assessed by asking; "how old were you the first time you talked to a professional about your (*relevant symptoms*)?"

Delay to seek treatment was then calculated by subtracting the reported age of onset from the age at which respondents reported they first contacted a professional. When participants had not sought treatment from a professional, the delay was calculated by subtracting the reported age of onset from their current age.

Participants who reported that they did not get as much help as needed from a health professional were then asked the Perceived Need for Care Questionnaire [35]: "why didn't you get more help from health professionals?" Respondents were asked to endorse one option of seven responses, given in forced choice format. Response options were: 'I preferred to manage myself', 'I didn't think anything could help', 'I did not know where to get help', 'I was afraid to ask for help', 'I could not afford the money', 'I asked but did not get the help' and 'I got help from other sources'.

Statistical analyses

Frequency data were tallied to determine the distributions of sociodemographic characteristics (age, sex, marital status, education and rurality), utilisation of professional treatment, length of delay to seeking professional treatment and reasons for not getting more help from a health professional. Similar to previous studies [19, 22, 36], the dependent variable (total length of delay to seek treatment) was significantly skewed and, therefore, coded into a dichotomous variable for further analysis. The data and previous research suggested that the probability of seeking treatment decreases dramatically after 1 year. Therefore, the 1-year split point was chosen to compare minimal delay, defined as help seeking within 1 year with delayed help seeking (greater than 1 year).

First, univariate analyses were conducted to investigate the relationship between the delay to seek treatment and a number of variables, with Chi square tests for categorical variables (disorder type, comorbidity, sex, rurality) and t tests for continuous variables (current age, age at onset and stigma). Hierarchical logistical regression analysis was then performed to determine predictors of length of the delay to seek treatment (no delay vs. delay). Finally, using only data from participants who delayed seeking treatment

for more than 1 year (1+; $n = 95$) a hierarchical multiple regression analysis was performed to determine predictors of longer delays. Predictor variables were entered into both analyses following the commonly used model of help seeking, which categorises barriers into three categories: clinical, structural and attitudinal [24, 37, 38]. Age and age at onset of symptoms were entered in step 1, as they have consistently been found to predict the delay to seek treatment (e.g. [7, 22]). Clinical variables (disorder type and comorbidity) were entered in step 2, followed by the structural variable (rurality) in step 3 and an attitudinal variable (perceived stigma) in step 4. Categorical variables were dummy coded for ease of interpretation. GAD was chosen as a reference group for disorder type because it was identified as the middle group with medium delays. Inner regional was chosen as a reference group for the variable rurality because inner regional areas are most accessible.

Results

Sample

In total, 2,639 individuals completed the ARMHS postal survey from rural and remote New South Wales (response rate of 27%). Of the 2,639 participants, 885 (33.35%) participants were eligible for the telephone-based CIDI-3.0. Of those eligible, 646 (72.99%) participants completed the CIDI interview, 228 (25.76%) refused and 23 were not evaluated for eligibility for the CIDI and were, therefore, not offered CIDI interviews. A total of 251 (38.26%) participants met criteria for a lifetime diagnosis of depressive or anxiety disorders. A total of 127 (50.60%) participants were excluded because they did not report either, age of symptom onset or age first sought professional help, required to calculate the delay to seek help ($n = 119$), had sought help prior to the reported age of onset ($n = 2$) or had a lifetime diagnosis of alcohol dependence ($n = 6$).

The mean age of the 124 participants was 53.38 years (SD = 13.34), ranging from 19 to 85 years; 29% were male and 71% were female. Table 1 presents demographic and diagnostic characteristics of the current sample. Thirty-five percent of the sample were married/de facto, 64.8% were not married/de facto and two participants failed to report their marital status. On the basis of their stated level of education, 39.5% had completed high school or less, 30.6% had completed a diploma/certificate or trade and 29.8% had completed a university or higher degree. According to the ASGC/ARIA + Categories, 48.5% of participants lived in IR, 40.3% in outer regional and 11.3% in remote or very remote areas.

Table 1 Demographic and diagnostic characteristics of the sample

	n	Percentage (%)
Gender		
Female	88	71
Male	36	29
Marital status		
Married/de facto	43	35.2
Not married/de facto	79	64.8
Education status		
High school or less	49	39.5
Diploma/certificate or trade	38	30.6
University or higher degree	37	29.8
ASGC/ARIA+		
Inner regional	60	48.5
Outer regional	50	40.3
Remote and very remote	14	11.3
Diagnosis		
Depressive disorder	41	33.1
GAD	21	43.5
Panic disorder	8	6.5
Social phobia	54	16.9
Comorbidity		
Single disorder	82	66.1
Comorbid disorder	42	33.9

Diagnosis

Majority of participants (66.1%) had a single disorder, while the remainder (33.9%) had two or more disorders. The primary anxiety or depressive disorder diagnoses as measured by the CIDI-3.0 were depressive disorders (33.1%), GAD (16.9%), panic disorder (6.5%) and social phobia (43.5%).

Perceived stigma

The PSS mean score was 41.63 (SD = 6.47), which is consistent with studies previously conducted in rural communities in Australia [27, 28]. Wrigley and colleagues [29], however, reported a slightly lower mean score of 37.51 (SD = 4.93). In the current sample, the Cronbach's alpha was 0.89, which suggests good internal reliability.

Help seeking history

The majority of the participants' (68.5%) had talked to a medical doctor or professional about their anxiety or depressive symptoms. Seeking treatment from a medical doctor or professional differed significantly between depressive disorders, social phobia and GAD as seen in
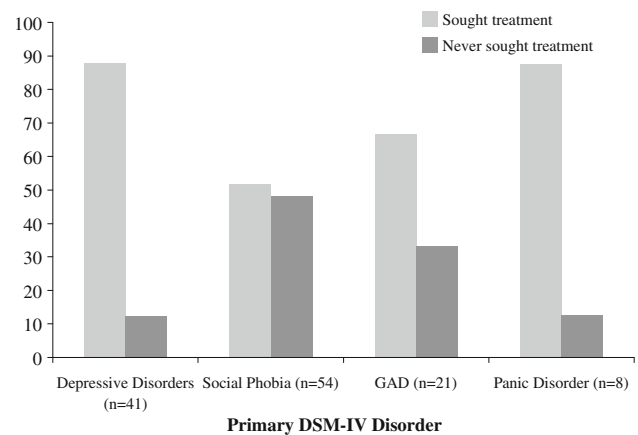

Fig. 1 Percentage of participants seeking treatment from a medical doctor or professional according to their primary DSM-IV diagnosis

Fig. 1 ($\chi^2 = 13.68$, df = 2, $p < 0.01$). Panic disorder was excluded from the analysis due to small numbers ($n = 8$).

The mean age of symptom onset across all disorders in the total sample was 22.79 years (SD = 13.85). This varied between disorders. Social phobia had the youngest mean onset age (15.43 years), followed by panic disorder (25.25 years), depressive disorders (25.78 years) and GAD (34.95 years).

Length of the delay

Length of the total delay between symptom onset and first seeking professional treatment ranged from 0 to 67 years. The average delay was 18.70 years (SD = 18.70), and the median was 15 years. The distribution is shown in Fig. 2. The pattern of the delay was a positively skewed J-shaped curve. About 23.4% of the current sample sought professional treatment within the first year of symptom onset; however, this varied between disorders. Fifty percent of people with panic disorder sought professional treatment in the first year, compared to 39% with depressive disorders, 19% with GAD and 9.3% with social phobia. Of those who did not seek treatment in their first year of symptom onset, the average delay was 24.41 years (SD = 16.62), with a median delay of 22 years ($n = 95$).

The longest overall delays to seek treatment were reported by participants with social phobia (28.02 years, median = 29 years), and the shortest delays were in depressive disorders (10.41 years, median = 4 years). Moderate average delays were found for GAD (13.19 years, median = 15 years) and panic disorder (12.75 years, median = 4 years).

Predictors of delayed treatment seeking

Univariate analysis indicated that age of onset of symptoms ($t = 5.19$, df = 122, $p < 0.01$) and rurality ($t = -2.57$,

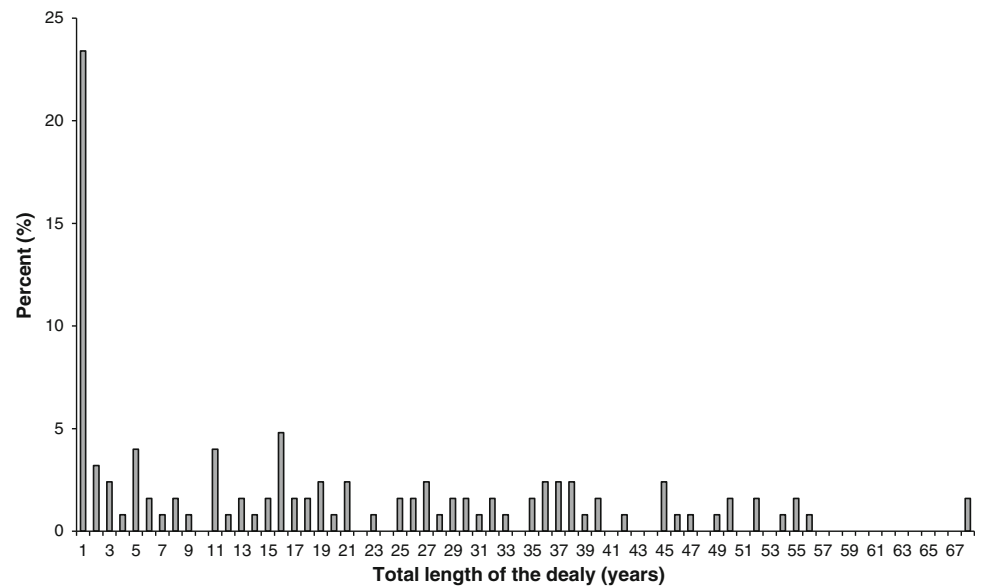**Fig. 2** Distribution of the total length of the delay to seek treatment

Table 2 Predictors of delayed treatment seeking (1+ years) from a medical doctor or professional (n = 116)

Regression step	Predictors	OR	95% CI	Wald χ^2	p
1.	Age	1.1	1.0–1.1	5.728	0.017
	Age at onset	0.9	0.9–1.0	18.744	<0.001
2.	Age	1.1	1.0–1.2	5.432	0.020
	Age at onset	0.9	0.9–.9	17.550	<0.001
	Disorder type				
	GAD	1.0	–		
	Depression	0.1	0.0–0.5	7.534	0.006
	Social phobia	0.4	0.1–0.3	0.777	0.378
	Comorbidity	0.7	0.2–2.3	0.423	0.515
3.	Age	1.1	1.1–1.1	6.526	0.011
	Age at onset	0.9	0.8–0.9	18.524	<0.001
	Disorder type				
	GAD	1.0	–		
	Depression	0.1	0.1–0.4	8.210	0.004
	Social phobia	0.3	0.1–2.4	1.154	0.283
	Rurality				
	IR	1.0	–		
	OR	0.8	0.25–2.81	.080	0.778
	R and VR	19.4	1.3–299.6	4.521	0.033
4.	Age	1.1	1.0–1.2	7.048	0.006
	Age at onset	0.8	0.8–0.9	19.527	<0.001
	Disorder type				
	GAD	1.0	–		
	Depression	0.1	0.1–0.4	8.248	0.075
	Social phobia	0.3	0.1–2.4	1.195	0.027
	Rurality				
	IR	1.0	–		
	OR	0.9	0.3–3.0	0.046	0.803
	R and VR	21.3	1.4–318.5	4.897	0.027
	Perceived stigma	0.9	0.9–1.0	1.645	0.200

Panic disorder was excluded from the analysis due to small numbers

$df = 122$, $p = 0.01$) was significantly associated with the delay to seek treatment. Panic disorder was once again excluded from the analysis of disorder type due to small numbers. Disorder type was also significantly associated with the delay to seek treatment ($\chi^2 = 12.31$, $df = 2$, $p < 0.01$). Comorbidity ($\chi^2 = 0.28$, $df = 1$, ns), age ($t = -1.21$, $df = 122$, ns) and perceived stigma ($t = -0.26$, $df = 122$, ns) were not significantly related to the delay to seek treatment.

The results of the hierarchical logistic regression analysis, examining predictors of delayed treatment seeking are presented in Table 2. Once again panic disorder was excluded from the analysis due to small numbers. The model at step 1 was significant ($\chi^2 = 26.21$, $df = 2$, $p < 0.01$). Younger age of onset (OR $= 0.11$, $p = 0.017$) and being older (OR $= 1.058$, $p < 0.01$) were significantly associated with delayed treatment seeking. The addition of clinical variables to the model in step 2 was significant ($\chi^2 = 12.294$, $df = 3$, $p = 0.006$). Disorder was the only clinical variable that significantly predicted the length of the delay to seek treatment. Having a diagnosis of a depressive disorder was significantly associated with seeking treatment in the year of onset compared to the reference group, GAD (OR $= 0.009$, $p = 0.006$). The addition of the structural variable, rurality at step 3 made a significant contribution to the model ($\chi^2 = 7.259$, $df = 2$, $p = 0.027$). People living in remote or very remote areas were 19.44 times more likely to delay seeking treatment by more than 1 year compared to people living in inner regional areas (OR $= 19.44$, $p = 0.033$). The addition of the attitudinal variable, perceived stigma in the final step of the model, was not significant ($\chi^2 = 1.73$, $df = 2$, $p = 0.189$).

Predictors of longer delays to seek treatment

A hierarchical regression analysis was conducted using data from participants who delayed seeking treatment by more than 1 year ($n = 91$), to examine predictors of longer delays, while controlling for age and age of onset. Panic disorder was also excluded from the analysis due to small numbers. The final results for the hierarchical regression are shown in Table 3. Age and age at onset explained 38.1% of the variance in the length of the delay. The entry of clinical variables, disorder type and comorbidity into the model explained 47.3% of the variance as a whole (F $(5,85) = 17.15$, $p < 0.01$). The clinical variables explained an additional 10.8% of the variance in the delay, after controlling for age and age at onset (F change $(3,85) = 6.14$, $p < 0.01$). The addition of rurality and perceived stigma to the model was not significant. In the final model, comorbidity ($\beta = -0.21$, $p < 0.01$), age ($\beta = 0.43$, $p < 0.001$) and age at onset ($\beta = -0.44$, $p < 0.001$) were statistically significant.

Table 3 Outcomes of the hierarchical regression analysis for longer delays (1+ years) including demographics (age), clinical variables (disorder type, comorbidity), structural variable (rurality) and attitudinal variable (perceived stigma) ($n = 91$)

Regression step	Adjusted R^2	R^2 change	Predictor	Standardised β
1	0.381	0.394	Age**	0.432
			Age of onset**	−0.440
2	0.473	0.108*	Disorder: depression	−0.089
			Disorder: social hobia	0.213
			Comorbidity**	−0.214
3	0.480	0.018	Rurality: OR	−0.009
			Rurality: R or VR	−0.138
4	0.473	0.000	Perceived stigma	−0.000

* $p < 0.01$, ** $p < 0.001$

Panic disorder was excluded from the analysis due to small cell numbers

Reasons for not getting more help from a health professional

Of the 251 participants with depressive and anxiety disorders, 109 completed the perceived need for care questionnaire. Overall 68 reported that they did not get as much help as they needed from a health professional. The frequency endorsements of these 68 participants are reported in Table 4. The majority of respondents (55.88%) endorsed attitudinal reasons for not receiving as much help as they needed. This included the most frequently endorsed reason overall, "I preferred to manage myself" (50%). Fifteen respondents (22.06%) endorsed a structural reason for why they did not get more help; this was primarily "I could not

Table 4 Self-reported reasons for not getting as much help as they needed ($n = 68$)

Reasons for lack of help	n	Percentage (%)
Attitudinal		
I prefer to manage myself	34	50.0
I was afraid to ask for help	4	5.88
Structural		
I could not afford the money	9	13.24
I asked but did not get the help	6	8.82
Lack of knowledge		
I did not think anything could help	9	13.24
I did not know where to get help	3	4.41
Other sources of help		
I got help from other sources	6	8.82

afford the money" (13.24%). Twelve (17.65%) respondents reported a lack of knowledge as the reason they did not get more help. The primary lack of knowledge response was "I didn't think anything could help" (13.24%).

Discussion

Rural Australians reported on average long delays to first seek treatment for an anxiety or depressive disorder. The length of the delay to seek treatment found in this community sample of rural Australians (18.7 years) is more than double the delay reported by Thompson et al. [22] in a clinical sample from urban Australia (8.2 years). However, methodological differences need to be considered when comparing these studies. The urban clinical sample was recruited from a specialist anxiety treatment clinic. As a result, the sample is likely to be skewed towards the more severe cases. Therefore, Thompson et al.'s [22] clinical sample may not be representative of all Australians seeking treatment. However, for most of the participants the initial treatment seeking reported in the study was not their current episode of treatment seeking. Furthermore, the majority of their sample reported that they first sought help from a general practitioner, which is consistent with treatment seeking for mental disorders in the general Australian population [1, 24]. The large difference in the length of the delay between the urban clinical sample and rural community sample suggests that despite these methodological differences the length of the delay is more pronounced in rural compared to urban Australia. However, further research is needed to directly compare the length of the delay in urban and rural communities.

The length of the delay to seek treatment found in the current study is also consistent with the upper bounds of the length of the delay to seek treatment for anxiety, mood and substance disorders found overseas (e.g., [19, 23]). For example, delays of 1–28 years have been found in epidemiological studies conducted in the USA, New Zealand and Europe as part of the World Health Organisations, World Mental Health Survey Initiative (e.g. [23]). The pattern of the delay to seek treatment is also consistent with these studies from urban Australia and overseas (e.g., [7, 9, 22, 23]). That is, the likelihood of seeking treatment was highest in the first year following symptom onset and decreased in subsequent years, with almost one quarter of the sample seeking help within the first year of symptom(s) onset. For example, in an urban Australian clinical sample, 28% sought treatment within the year of symptom onset [22]. Similarly in the USA, the proportion seeking treatment in the year of symptom onset ranged from 37 to 41% for depressive disorders. The proportion seeking treatment in the year of onset for anxiety disorders was

more variable ranging from 3% for social phobia to 33% for panic disorder and GAD [7].

Thirty-one percent of respondents had not sought help for their anxiety or depressive disorders. This level of unmet need is considerably lower than the level of unmet need found in rural Victoria (63%) and in the general population according to the 2007 NSMHWB (65.1%) [6, 17]. These two studies asked about treatment contact with formal health providers such as general practitioners, psychologists, psychiatrists and social workers [6, 17]. However, the CIDI item about treatment contact used in the current study included a broad range of helpers from non-health care services, such as herbalists, acupuncturists, or spiritual advisors. Unlike registered health professionals, these individuals may have variable standards and expertise in mental health care. Furthermore, non-health care professionals such as herbalists, clergy or spiritual advisors have been rated as less helpful in treating mental health problems compared to heath care professionals [39]. Consequently, individuals that sought professional treatment may have accessed non-health care professionals and may have received ineffective treatments. As a result, the level of unmet need may have been underestimated.

The two factors most strongly associated with the delay to seek treatment were current age (older) and younger age of onset. Previous studies to date have consistently found that these two factors predict delayed treatment seeking (e.g., [19, 20, 22, 23]). A number of potential explanations for the finding of younger age of onset have been reported in the literature. These include individuals with early onset disorders interpreting their symptoms as 'normal', rather than a problem that needs treatment [19] and the severity of early onset disorder may interfere with an individual's ability to seek help [22]. Also, the finding that younger generations seek treatment sooner is seen as encouragement for success of public mental health campaigns.

Between-disorder differences in the length of the delay to seek treatment found in this study have also been reported elsewhere [7, 19, 21]. The current study found that treatment seeking in the year of onset was significantly associated with having a diagnosis of depressive disorders or panic disorder compared to GAD. While it is important to note that some cell sizes were small, this finding is consistent with previous studies that have found individuals with panic disorder and depressive disorders are more likely to seek treatment in the year of symptom onset compared with other anxiety disorders such as phobias (e.g., [7, 19]). However, other studies have failed to find disorder type as a significant predictor of the length of the delay [20, 22]. Instead, Thompson and colleagues [22] found that speed of problem recognition differed significantly between disorders, with faster problem recognition observed in panic disorder compared to mood disorders.

They concluded that speed of problem recognition may have accounted for the between disorder differences found in previous studies, as previous studies had not included problem recognition as a potential factor in the delay to seek help [22]. The current study did not investigate problem recognition as a predictor of the delay to seek treatment. Therefore, future research will need to investigate the role problem recognition has in the delay to seek treatment in rural residents.

Individuals living in remote or very remote areas were found to be more likely to delay seeking treatment compared to those living in inner regional areas above and beyond clinical variables and socio demographic factors. This is an important finding as it highlights the heterogeneity of rural areas, and the need to investigate differences between rural areas. A number of factors may explain this finding. This finding may reflect difficulties that residents of remote and very remote areas have in accessing mental health services. In particular, rural residents have limited access to specialist mental health services such as psychiatrists, compared to urban residents [40]. Furthermore, the long distances between services and place of residence affect rural residents' access to mental health services. For example, cost of fuel, lack of public transport and the need to get long periods of time off work to travel reduce accessibility. This is also consistent with recent findings that Australian rural residents have lower utilization of specialist mental health services and less encounters with their general practitioners about mental health problems compared with metropolitan residents [41, 42]. Alternatively, this finding may reflect unique attitudinal, social or community-based factors, which contribute to delayed help seeking. Recent research using the ARMHS cohort, found that rural characteristics, such as community connectedness were predictive of current wellbeing in rural residents [43]. Therefore, factors such as community connectedness and rural adversity (e.g. impact of the drought) may contribute to delayed treatment seeking in rural areas. Future studies investigating differences in help seeking between rural areas are needed to further understand this finding.

It is important to note that the confidence interval around the odds ratio for the remote and very remote variable was large due to small cell sizes. This reduces the confidence that can be placed on this finding. As a result, future research needs to replicate this finding with a larger sample.

The factors associated with delayed treatment seeking appear to be different to those that predict longer delays. Specifically, comorbidity was not a significant predictor of seeking professional treatment in the year of onset. However, of the individuals who delayed seeking treatment by more than 1 year, those with a comorbid disorder were found to seek treatment sooner. Furthermore, research conducted in rural Australia found that individuals with comorbid problems were three times more likely to have sought treatment from a health professional compared to those with a single disorder [17]. Individuals with comorbid disorders have a higher need for treatment, as they are more likely to experience higher levels of psychological distress and disability [1]. Therefore, these findings may be indicative of a symptom threshold for seeking treatment.

Contrary to expectations, perceived stigma was not a significant predictor of the delay to seek treatment in this study. This finding is consistent with research that has failed to find an association between perceived stigma and help seeking in rural communities (e.g., [28, 29]). However, a number of studies have found stigma to be a commonly cited reason for not seeking help [29, 44]. These conflicting findings are thought to be due to the complexity of the concept of stigma and methodological differences in how stigma is measured. As a result, Barney and colleagues [44] have proposed the existence of two types of stigma: perceived stigma and self-stigma. While perceived stigma refers to the stigmatising beliefs held by members of the community and professionals, self-stigma refers to the negative beliefs about oneself as the result of internalising the stigmatising attitudes held by society [44]. Using this definition, both perceived stigma and self-stigma may interfere with individuals seeking help in different ways. Thus, the role of self-stigma in delayed treatment seeking remains unclear.

Self-stigmatising beliefs are thought to interfere with an individual seeking treatment because they fear being weak [44]. This fear of being weak may contribute to people's preference to manage their symptoms on their own. In the current study, the stoic belief 'I preferred to manage myself' was the most commonly reported reasons for not getting more help. This is consistent with the Australian NSMHWB, as well as research conducted in the USA, Canada and the Netherlands [45, 46]. While stigmatising and stoic beliefs exist in the general community, they are thought to be more pronounced in rural communities [28, 47, 48]. Research conducted in rural Australia has found that high levels of stoicism are associated with a decreased likelihood of seeking help from a general practitioner [27]. Consequently, a link between self-stigma and stoic beliefs may exist and together they may be an important factor in the delay to seek treatment and the unmet need for treatment in rural areas. The relationship between self-stigma and stoicism, and the delay to seek treatment needs to be further investigated.

Understanding patterns of treatment seeking is important because extended periods of untreated illness, for depressive and anxiety disorders, of more than 12 months, have been found to result in greater levels of comorbidity, reduced response to treatment, poorer outcome, greater chronicity of the disorder and decrease in quality of life [49–52]. Delayed treatment has also been shown to cause high direct and

indirect financial treatment costs [53] and extensive damages to social networks, which are necessary for long-term quality of life [54]. Consequently, early entry into treatment has been found to relieve personal suffering and allow treatment to be more effective [55, 56]. It has been proposed that internet and phone-based treatments are ideal for rural areas [57]; however, their effectiveness is dependent on rural residents seeking professional help while their symptoms are mild to moderate (e.g. [58–60]). Therefore, it is important for health care providers to understand the factors that contribute to the delay and how the delay can be minimised to meet the need for treatment in rural areas.

Limitations

The results reported here should be interpreted in the light of a number of potential limitations. First, respondents' age of onset and initial treatment seeking were assessed by retrospective self-report. This involved long periods of recall and the ability of individuals to accurately identify their help seeking history such as age of onset and age at first seeking professional help is unclear. Also, participants were required to report age of symptom onset, which is subjective and may not represent onset of the disorder. Barkow and colleagues [61], however, found evidence for the reliability of the self-reported ages of onset using the questions from the CIDI.

Second, due to the retrospective design there was no method of reliably measuring potentially relevant factors at the time of symptom onset and help seeking. These factors include psychological distress, symptom severity, level of disability, comorbidity and demographic variables, which change over time (e.g. martial status). The current status of some of these variables was used, however, these variables may prove to be stronger predictors if accurately measured at the time of symptom onset.

Third, it is possible that the CIDI is over diagnosing depressive and anxiety disorders. As a result those who delayed treatment seeking may have had less serious or sub clinical disorders. However, research has shown that milder disorders left untreated lead to greater severity, comorbidity and social dysfunction [62, 63]. Also, the CIDI items about treatment contact include a broad range of individuals from whom the participants may have sought treatment. No information regarding the type of professional, nature, intensity or adequacy of treatments was obtained in the ARMHS. As a result, the findings presented should be interpreted as upper bounds of cases that accessed treatment and lower bounds of the durations of the delay to accessing treatment.

Fourth, as 31.5% of the sample had not sought treatment, the delay for these participants was calculated by subtracting the participants' onset age from their current age. Consequently, the length of the delay for these participants will be underestimated as they may go onto delay seeking treatment for a number of years. Consequently, these findings should again be interpreted as the lower bounds of the duration of the delay to accessing treatment.

Fifth, the response rate for the ARMHS is low (27%). However, the response rate is similar to other population-based surveys in rural communities [29, 64] and those using telephone-based recruitments [65]. A more detailed explanation of sample bias is reported in Kelly et al. [30, 43]. Of those eligible for the CIDI approximately 26% of participants refused. Non-responders to complete the ARMHS survey as well as individuals who refused to complete the CIDI may use healthcare services differently. Furthermore, 119 of the participants who completed the CIDI were excluded from the analysis because their age of onset or age of first professional contact was missing. However, analysis revealed that there was no significant difference in sex, age, marital status, ASGC/ARIA + or highest education level achieved between those who were included and those who were not.

Sixth, it is possible that the sample is unrepresentative of rural Australia due to its high mean age and high proportion of non-married, female respondents. The older age of the cohort is likely to contribute to lower K10 scores overall, as it is known that general distress and neuroticism reduce with age [66, 67]. The lower representation of younger adults in the cohort and the preponderance of females suggest our analyses underestimate the level of need for mental health services. However, the results are clinically significant in showing that older age was associated with greater delay to seeking treatment as this will impact on services as Australia faces an ageing population in rural areas.

Conclusion/implications

Despite these limitations, this study is the first to report on the delay to seek treatment in an Australian rural sample. It provides a foundation for future research into the delay to seek treatment in rural Australia. In summary, initial delays to seek treatment for anxiety and depressive disorders appear to be far more prolonged in rural compared to urban Australia. This is of particular concern due to the significant mental health needs of residents living in rural Australia. This study also highlights the heterogeneity of rural areas in seeking treatment for common mental disorders. As a result, policy makers and clinicians may need to take different approaches in dealing with low rates of mental health service utilisation across rural areas. Therefore, it is necessary to continue to expand on the current research to

further understand why rural residents delay seeking treatment, what prompts them to seek treatment and what individual, professional and community factors could reduce this delay.

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