Patient Characteristics in GP Referrals to the Better Outcomes in Mental Health Care ATAPS Program: A Case-Control Study

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I hereby certify that the work embodied in this thesis is the result of original research and has not been submitted for a university degree or other similar qualification to any other University or Institution.

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December, 2011

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Synopsis

Background:

The National Survey of Mental Health and Wellbeing (Andrews, Hall, Teeson, & Henderson, 1999) was the first Australian epidemiological study providing population estimates for the prevalence of mental health disorders, associated disability and mental health service use and unmet need for mental health care. Subsequently, the rates and types of mental health disorders presenting to primary care were identified through General Practice audits (the BEACH studies) (Britt et al., 2010). Furthermore, the Australian General Practice depression screening program (SPHERE: a national depression project) (Hickie, Davenport , Naismith, & Scott, 2001) illuminated the high prevalence of mental disorders in General Practice and unmet need for mental health care.

Mental illness continues to be a leading cause of morbidity, accounting for 13% of Australia's burden of illness (Australian Institute of Health and Welfare, 2010a), with around 20% of the Australian adult population experiencing clinically relevant symptoms of mental disorder each year (Australian Institute of Health and Welfare, 2010b). It has been widely recognised that General Practitioners (GPs) play a pivotal role in the recognition and treatment of mental illness (Hickie & Groom, 2002) and that mental disorders in General Practice are common; Around 50% of patients have mental illness (Hickie, Davenport, Naismith & Scott, 2001). Despite this, GPs have encountered barriers accessing quality mental health care for their patients.

The Australian Commonwealth Government introduced the Better Outcomes in Mental Health Care (BOiMHC) Access to Allied Psychological Services (ATAPS) program in 2003 to increase access to mental health care. Guidelines for these programs stipulated that evidence based non-pharmacological mental health care should be provided by suitably qualified allied

health professionals, for a population of General Practice patients with recent onset, mild to moderate mental health disorders, who were unable to afford private mental health services.

New services should be evaluated so that service delivery and clinical outcomes are optimised. National evaluations revealed the uptake of the ATAPS program was considerably greater than had been expected and that patient characteristics are generally consistent with stipulated guidelines. This thesis seeks to explore the issue of how GPs select patients for referral to ATAPS from within the population of patients attending primary care who are known to have high frequency of mental illness and related disability. The specific question to be answered is: which patient characteristics identify referrals to ATAPS (cases) compared to General Practice patients (controls)?

Method:

A case-control design was used at a Division of General Practice; 63 cases (ATAPS patients), and 64 controls (general practice patients never referred to ATAPS). Unadjusted and sequentially adjusted logistic regressions were used to identify independent predictors of being an ATAPS case based on official referral guidelines: ICD-10 diagnosis of mental illness (depression or anxiety) and scores on the K-10 (psychological distress) and DASS-21 (psychological symptoms). A forward stepwise multivariable logistic regression was also used to determine the best minimum set of predictor variables.

Results:

In unadjusted models, Any Mood Disorder, OR 7.68, (95%CI: 3.47, 17.01), Any Anxiety Disorder, OR 2.88, (95%CI: 1.37, 6.05), higher K-10 score, OR 1.06 (95%CI: 1.04, 1.14) and higher DASS-21 score, OR 1.06, (95%CI: 1.03, 1.09), were each significantly associated with being a case. Any Mood Disorder, Any Anxiety Disorder, K-10 score and DASS-21 scores remained significant in most adjusted analyses, although all models showed change when adjusted for mental disability and physical disability. Three variables predicted cases in the

multivariable regression: greater mental (psychiatric) disability lesser physical disability and greater number of substances misused in the past 3 months.

Conclusion:

GPs generally selected cases in keeping with the ATAPS referral guidelines. Cases selected had higher levels of mental disability and greater substance misuse, whereas GPs were less likely to select cases with greater levels of physical disability.

Thesis Structure

According to the instructions for the Clinical Doctorate thesis as set out by the University of Newcastle, School of Psychology, the thesis has been structured as follows:

Synopsis

Chapter 1 - extended literature review

Chapter 2 - journal article written for the current study and accepted for peer review in an academic journal

Chapter 3 - extended discussion

Appendices:

1. Glossary
2. Full methodology
3. Full results
4. Structured literature review for BOiMHC publications
5. Structured literature review for National ATAPS evaluation
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7. Attachments of instruments used
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Chapter 1: Introduction

1.1 Structure of Literature Review

This introductory chapter is structured into seven sections (plus subsections). The first section examines the importance of using epidemiological results to support mental health policy development. This is directly relevant to the current study, which uses a case-control design to inform clinical decision making and mental health policy development. The second outlines the history of psychiatric epidemiological studies in the USA and Britain that preceded the development of similar studies in Australia. The results from two large-scale cross-sectional surveys, the Australian National Survey of Mental Health and Wellbeing (NSMHWB) in 1997 and 2007 were used to illustrate community mental disorder prevalence estimates, service use, perceived need and unmet need for treatment and the relationship between disability and mental disorder. The third reviewed studies of mental illness frequency and treatment in Australian primary care; the Bettering the Evaluation and Care of Health (BEACH) studies 1998-2010, and the SPHERE (Somatic and psychological health report): National Depression Project in 2001. The findings from the second and third sections helped to guide my selection of additional predictor (and potential confounder) variables, including many of the standardised measures used in the current study. The fourth section outlined the shortfall and lack of readily available mental health services, especially in primary care in the past decade, which led to the development and implementation of the Better Outcomes in Mental Health Care (BOiMHC) program and the Access to Allied Psychological Services (ATAPS). The guidelines for referral to the ATAPS program were explicitly used to determine the primary (Any Mood Disorder and Any Anxiety Disorder) and secondary predictor variables (K-10 and DASS-21), including the measures used for the secondary predictors. The fifth section reviewed national evaluations of the ATAPS service, which were used to contextualise the characteristics of the study participants (cases) in the light of these national samples. The sixth section summarises the relevant issues from the preceding literature review, and the seventh section states the research questions.

1.2 Mental Health Policy Development

Mental health service provision and related health policy directions should be developed based on epidemiological evidence; including the prevalence and incidence rates of mental disorders, associated disability, patterns of service use and unmet need in a representative community population (Andrews, Henderson, & Hall, 2001; Jenkins, Bebbington, et al., 1997). Prior to 1997, there were several Australian studies (Andrews, Schonell, & Tennant, 1977; Henderson, Duncan-Jones, Byrne, Scott, & Adcock, 1979; Krupinski & Stoller, 1971; Krupinski et al., 1967), which provided estimates of mental disorder prevalence. However, they were methodologically flawed, using either small sample sizes or limited geographical sampling, which was not representative of the Australian population (Henderson, Andrews, & Hall, 2000).

In the absence of sound data, estimates for the Australian population were drawn from the US (Eaton, Regier, Locke, & Taube, 1981; Kessler, 1994) and British (Jenkins, Bebbington, et al., 1997) psychiatric epidemiological studies (Henderson, et al., 2000). Ultimately, these international studies were used as models to develop research methodologies for the first large scale representative Australian community study in 1997, The National Survey of Mental Health and Well Being (NSMHWB), (Andrews, et al., 2001).

1.3 Psychiatric Epidemiological Studies

1.3.1 United States: the Epidemiologic Catchment Area (ECA) Program and the National Comorbidity Survey (NCS)

In 1981, the National Institute of Mental Health (NIMH USA) conducted the Epidemiologic Catchment Area (ECA) study (Eaton, et al., 1981). The goals were to estimate the prevalence and incidence of mental health disorders from both institutional and community settings to support health care service planning and implementation (Eaton, et al., 1981). This study combined new methodological strategies that formed the basis for the development of the

next major US epidemiological study, the National Comorbidity Survey (NCS) in 1994 (Kessler, 1994).

The NCS improved on the ECA in a number of ways. The new design was refined to target both prevalence and risk factors for mental illness in a representative community sample, this time excluding clinical or institutional populations to maximise the homogeneity of the sample and increase the power and validity of the study (Kessler, 1994). The diagnostic instruments were more recent, relating to the Diagnostic and Statistical Manual version III Revised (DSM-III-R) (American Psychiatric Association (APA), 1987), in place of the DSM-III (American Psychiatric Association (APA), 1980) and also allowing some comparisons with the DSM-IV(American Psychiatric Association (APA), 1994) and the International Classification of Disease - version 10 (mental disorders) (World Health Organisation (WHO), 2010).

The NCS showed that 48% of the U.S. population met criteria for a minimum of 1 psychiatric disorder over their lifetime and 29% met criteria in the past 12 months (Kessler, 1994). Individual mental disorder were grouped into broader diagnostic categories, that is Any Anxiety Disorder, Any Affective Disorder and Any Substance Use Disorder. Anxiety disorders and substance use disorders were more prevalent (1 in 4) than affective disorders (1 in 5). In the NCS, anxiety disorders were conceptualised as a more chronic illness compared with affective disorders.

Gender differences were associated with diagnostic categories. Females were more likely to have anxiety and affective disorders, whilst males were more likely to have substance use disorders. Co-morbidity of individual disorders and major groups of disorder was high. Co-morbid mental disorders occurred in 79% of people with a lifetime history of any mental disorder. Service use increased with the number of co-morbid mental disorders, but was generally low. In the 12 months preceding the survey, only 1 in 5 people with a mental disorder

sought any professional help and only 1 in 9 sought specialist mental health services (Kessler, 1994).

1.3.2 The National Psychiatric Morbidity Surveys (NPMS) of Great Britain

Outside of the US, there was recognition that mental health policy required an evidence base, not only of mental disorder prevalence rates, but also the "social and economic consequences of psychiatric morbidity" (Jenkins, Bebbington, et al., 1997 , p. 765). The National Psychiatric Morbidity Surveys (NPMS) of Great Britain (Jenkins, Bebbington, et al., 1997) consisted of a series of 4 large scale epidemiological studies. The rationale for these studies was four-fold: identify people with symptoms of mental ill-health who do not reach criteria for a disorder (sub-threshold disorder); map existing service availability and service use; estimate mental disorder prevalence rates, possible causal factors and unmet need; and develop a replicable strategy for later surveys so mental health trends and outcomes could be monitored longitudinally. The survey covered both general and clinical populations (Jenkins, Bebbington, et al., 1997).

Results of the NPMS household survey were not easily comparable with the NCS. Different classifications of disorders, such as "neurotic disorders" (Jenkins, Lewis, Bebbington, Brugha, Farrell, Gill, et al., 1997 p. 33) and individual mental disorder diagnoses were reported in the NPMS rather than broader groupings of anxiety, affective and substance use disorders, as in the NCS. The NPMS also measured sociodemographic characteristics such as stratification of social class (Jenkins, Lewis, et al., 1997), which had not been evaluated in the US, and was not determined in later Australian studies.

Since the ECA, each subsequent survey (the NCS and the NPMS) has become more methodologically sophisticated (Jenkins, Lewis, et al., 1997), demonstrating that suitable instruments and epidemiological methodology has been developed to allow the investigation of

representative stratified community samples to give contextual estimates of the prevalence of mental disorders, associated disability and service use patterns in developed countries.

1.3.3 The Australian National Survey of Mental Health and Wellbeing (NSMHWB)

The first Australian NSMHWB was conducted in 1997 (Henderson, et al., 2000) and a second in 2007 (Slade et al., 2009). These two large-scale cross-sectional surveys provided community mental disorder prevalence estimates as well as information about service use, perceived need and unmet need for treatment and the relationship between disability and disorder for Australia. From a policy perspective, it was expected that the results would assist in improving the co-ordination of mental health services. Three main questions were posed: What was the current prevalence of common mental disorders (affective, anxiety and substance use disorders) in the general population? What was the relationship to disability? What were the current service use patterns (i.e.: how many people used which services and was there unmet need) (Andrews, Hall, Teeson & Henderson, 1999).

In the 1997 NSMHWB survey, 10, 641 general population participants aged over 18 years old were interviewed. The response rate (78%) was comparable to the US NCS (82.4%) and the British surveys (79.4%) (Henderson, et al., 2000; Jenkins, Lewis., et al., 2003; Kessler, 1994). The 2007 NSMHWB closely replicated the aims and methodology of the 1997 study. In the 2007 study 8,841 participants aged between 16 and 85 years were interviewed with a response rate of 60% (Slade, et al., 2009).

The instruments used in both interviews were similar. The 1997 interview included a modified version of the Composite International Diagnostic Interview (CIDI) (World Health Organisation (WHO), 1997), the Mini-Mental State Examination (cognitive impairment) (Folstein, Folstein, & McHugh, 1975), screening questions for psychosis (Andrews, et al., 1999) and 8 personality disorders assessed by the International Personality Disorders Examination (Loranger, Janca, & Sartorius, 1997). Disability was assessed using the self-reported number of

days out of role, the Short-form 12 item version (SF-12) developed from the SF-36 Health Survey (Ware, Kosinski, & Keller, 1996) and the General Health Questionnaire 12 item version (GHQ-12) (Goldberg & Williams, 1988). Other measures included the Service Utilisation Instrument (Carter, 1998), Perceived Need for Care Questionnaire (PNCQ) (Meadows, Harvey, Fossey, & Burgess, 2000,) psychological distress (K10) (Kessler et al., 2002), demographic details and general wellbeing (Andrews & Slade, 2001; Henderson, et al., 2000).

For both Australian studies, as with the NCS study, mental disorders were collapsed into three groups. Anxiety disorders included the six individual diagnoses of: Social Phobia, Agoraphobia, Panic Disorder, Generalised Anxiety Disorder, Obsessive Compulsive Disorder and Post-traumatic Stress Disorder. The Affective disorders group included five disorders: Major Depressive Episode, Dysthymia, Mania, Hypomania and Bi-polar Affective Disorder. Substance use disorders included alcohol abuse/harmful use and dependence or abuse/harmful use of cannabis, opioids, sedatives and stimulants (Andrews, et al., 1999). A single disorder not included in the above groups was Neurasthenia, which was defined as "a condition characterised by fatigue after quite minor mental or physical effort" (p.29) associated with symptoms of dizziness, non-specific aches and pains, tension headaches, sleep problems, inability to relax and irritability (Andrews, et al., 1999). The relevant findings from the two NSMHWB surveys are reviewed here.

1.3.4 NSMHWB Prevalence, Co-Morbidity and Disability Data: 1997 and 2007

1.3.4.1 Results of the 1997 NSMHWB

The 1997 survey results showed that 17.7% of the Australian population met criteria for at least 1 mental disorder in the previous 12 months; whilst lifetime prevalence was not reported (Andrews, et al., 1999). Anxiety disorders occurred in 9.7%, affective disorders in 5.8% and substance use disorders in 7.7% of respondents. Neurasthenia prevalence was 1.5% (Andrews, Henderson, et al., 2001, p.12). Although Neurasthenia was not reported in the 2007 survey, it is

included here because a similar cluster of symptoms called Somatoform Disorder were measured and described in the SOMA-6 subscale of the SPHERE (Somatic and Psychological Health Report): National Depression Project, which will be discussed later (Hickie, Davenport , Naismith, & Scott, 2001). Overall, the 12 month prevalence of any Anxiety, any Affective and any Substance Use disorders, Neurasthenia, Somatoform Disorders, Personality Disorders, Psychoses and Dementia was estimated to be 20% (Henderson, et al., 2000).

Demographically, participants who met criteria for a mental disorder were more likely to be separated/divorced or never married, unemployed or not in the labour force and living alone. Females were more likely than men to have a mental disorder, particularly anxiety and affective disorders; while more males met criteria for substance use disorders (Andrews, Henderson, et al., 2001). Mental disorder co-morbidity was the highest for women who met criteria for an Affective disorder (57%) or an Anxiety disorder (40%) (Henderson, et al., 2000).

Disability was found from highest to least in Affective, Neurasthenia, Anxiety, Substance Misuse and Personality Disorders (Andrews, Henderson, et al., 2001). Those with co-morbid mental or physical disorders reported greater disability; more than two mental disorders were associated with intermediate disability whilst three or more mental disorders were associated with severe disability (Andrews, Henderson, et al., 2001).

Overall services were only sought by 38% of people with mental disorders (Henderson, et al., 2000), and hence, a staggering 62% of those with mental disorders did not seek any treatment in the 12 months preceding the survey (Andrews, Henderson, et al., 2001). Those with Affective disorders most commonly sought treatment (40%), compared Anxiety disorders (28%) and Substance Use (14%) disorders.

GPs were the most frequently consulted health professionals (65%) by people with mental disorders who sought any help (Henderson, et al., 2000) followed by psychiatrists (16%)

and psychologists (16%) (Meadows, et al., 2000). Those with Affective disorders seeking specialist treatment consulted psychiatrists (8.4%) and clinical psychologists (6.2%).

When treatment was sought from GPs, counselling was the most commonly reported and expected mental health care need by consumers (Meadows, et al., 2000). However evidence based treatment, Cognitive and Behavioural Therapies (CBT) and Anti-depressant Treatment (ADT), was uncommon with non-pharmacological treatments being rarely accessed (Issakidis & Andrews, 2002).

1.3.4.2 Results of the 2007 NSMHWB

Results from the official report of the 2007 survey showed that the lifetime prevalence of mental health disorders in the general population was 45%. In the 12 months preceding the 2007 NSMHWB interview, 20.0% met criteria for at least 1 mental disorder (Slade, et al., 2009). Anxiety prevalence estimates for major groupings were (14.4%), Affective (6.2%) and Substance Use disorders (5.1%). Anxiety disorders were more common, in females, and Substance Use disorders in males (Slade, et al., 2009). Demographic characteristics associated with mental disorders included not being in an intimate relationship, being less educated and being unemployed (Slade, et al., 2009).

Affective and Anxiety disorders were the most common co-morbid mental disorders, accounting for 25% of mental disorder co-morbidity. Greater level of co-morbidity was associated with higher rates of service use (Slade, et al., 2009); two or more comorbid mental disorders (57%) compared with a single mental disorder (27.3%). Affective disorders were more strongly associated with disability than Anxiety Disorders. People with affective disorders were more disabled and had more severe disorders (51.1%) compared with people experiencing anxiety disorders (22.2%). Co-morbid physical and mental disorders were common. Mental disorders occurred in 28% of those with chronic physical illness (Teeson, Slade, & Mills, 2009).

Greater service use and greater severity of disorder were associated with co-morbidity (Teeson, et al., 2009).

Services for mental health problems were accessed by only 34.9% of those with mental health disorders in the 12 months preceding the interview (Burgess et al., 2009). As in the 1997 survey, the majority with mental disorders (63%) did not access any services in the preceding 12 months (Slade, et al., 2009). Service use for groups was Affective disorders (58.6%), Anxiety disorders (37.8%) and Substance Use disorders (24%). As in the 1997 survey results, service use increased with the number of psychiatric co-morbidities, the highest service use being associated with co-morbid affective and anxiety disorders. GPs were the most frequently consulted for mental health symptoms (27%), followed by psychologists (13.2%) and psychiatrists (7.9%) (Burgess, et al., 2009).

1.3.4.3 Comparison of NCS, 1997 NSMHWB and 2007 NSMHWB results

The NCS used different diagnostic criteria and there were some changes between the 1997 and 2007 NSMHWB surveys (e.g.: diagnostic criteria in the 1997 survey were more stringent) which means results have to be compared and interpreted with care (Burgess, et al., 2009).

Lifetime prevalence of mental disorders was similar in the US NCS (48%) and the 2007 NSMHWB (45%). The 12 month prevalence of mental disorders was the highest in the NCS (29%), while the two NSMHWB studies had lower but similar rates 1997 (17.7%) versus 2007, (20.0%). In the US, anxiety and substance misuse were more common than affective disorders and anxiety was considered to be a chronic lifetime presentation compared with depression, which was thought to be an acute and remitting presentation. Similarly, for the 1997 NSMHWB study, Anxiety disorders (9.7%) and Substance Use disorders (7.7%) were more prevalent than affective disorders (5.8%). In the 2007 study, the prevalence of Anxiety Disorders (14.4%) was higher than Affective Disorders (6.2%) and Substance Use Disorders were lower (5.1%).

There were a number of consistent results. Females were more likely to have a mental disorder overall and more likely to have anxiety or affective disorders; whilst males had higher substance misuse. Demographically, people with a mental disorder were less likely to be in an intimate a relationship, employed or living with others. Females sought more services for mental health problems than males. People with affective disorders experienced the greatest disability, sought more services and had higher levels of distress compared to people with other mental disorders.

Comorbid anxiety and affective disorders remained the most common co-morbidity pattern. Co-morbidity of mental disorders or mental and physical disorders was associated with greater service use. Approximately 60% of people with mental health disorders did not access any mental health care in the 12 months preceding both the NSMHWB surveys suggesting that in Australia, unmet need for mental health care was quite high and enduring.

GPs were the most commonly consulted health professionals and provided the greatest number of episodes of care. The proportions seeking care from psychologists and psychiatrists were lower in 2007 than in 1997, although in 2007 there was a shift toward patients seeking care from psychologists rather than psychiatrists. This may have been influenced by with the introduction of programs to increase accessibility to psychological care through GP referral in 2003, Better Outcomes in Mental Health Care (BOiMHC) and in 2006, Better Access to Mental Health Care (BAMHC). These programs are discussed in detail later.

1.4 Mental Disorders in General Practice

1.4.1 Bettering the Evaluation and Care of Health studies (BEACH) in Australia

The BEACH studies are annual cross sectional national surveys providing information on the activities undertaken during General Practice (primary care) clinical encounters, beginning in April 1998. Whereas the NSMHWB survey data provided a snap shot of patient's self-reported attendance to general practice for mental health problems, the BEACH studies offered an

assessment of the proportion of primary care contacts that were specifically for mental health from General Practice data recorded by GPs. There have been 12 annual reports, and seven BEACH summary reports comparing data across years (a literature review table of BEACH studies is provided in appendix 6) (Britt, et al., 2010).

BEACH aims to engage around 1000 GPs each year to each record the details of 100 consecutive clinical encounters using standardised forms. Areas of investigation include: characteristics of GPs, the funding source of encounters (e.g.: Medicare, Veteran's Affairs and Work Cover), demographic characteristics of patients, the number of reasons given for the encounter by patients, the types of problems managed by the GPs, management actions, that is medications prescribed, referrals made (including to allied health professionals and psychologists), admissions to hospital made, other treatments (clinical or procedural), tests and investigations ordered, practice characteristics, practice nurse activity and patient risk factors (substudies of obesity, smoking and alcohol use) (Britt, et al., 2010).

Mental disorder presentations in General Practice were reasonably consistent over the 12 years of reporting. It was estimated that 85% of the general population visit a GP in a 12 month period (Britt et al., 2007). Depression was the fourth most frequently managed problem from 1998 until 2006 when it became the fifth most frequently managed problem and when included in the ratings of chronic disorders, rated the second most common chronic disorder (Britt, et al., 2007). The conceptualisation of depression as a chronic illness has support in the literature (Andrews, 2001), but contrasts with the earlier assumptions made in the NCS that depression is usually an acute (albeit relapsing) disorder with onset and remission in a 12 month period.

It is remarkable that anxiety was not identified for reporting at all as a presenting problem until 2008 (Britt et al., 2009). In 2009-2010, anxiety was identified as the 12th most common presenting issue, representing only 1.2% of presentations (c.f. 4% for depression). Sleep disturbance, commonly associated with, and sometimes symptomatic of, mental disorders

such as depression (American Psychiatric Association (APA), 2000), was the 14th most common problem accounting for 1% of presentations (Britt, et al., 2010). This data, whereby anxiety was not listed as a presenting issue until 2008, is consistent with community data showing that although anxiety is the most common mental disorder, in the community, it is associated with less help-seeking or service use (Issakidis & Andrews, 2002) or is less often recognised by GPs.

Treatment and management trends were stable over time. In 2009-2010, anti-depressant treatment (medication) represented 4.2% of all prescriptions, Anxiolytics and Hypnotics 2.4% of all prescriptions and Antipsychotics 1.4% of all prescriptions (Britt, et al., 2010). Psychological counselling by GPs ranged between 5.8% and 6.4% of all non-pharmacological treatments, except for 2002-2003 when the rate of psychological counselling by GPs was only 2.9% (Britt et al., 2004).

A notable change in trend across time was the referral rate to psychologists. Between 1998 and 2010, the proportion of all referrals made to allied health professionals moved between 2.3% and 3.7%. However, of those referrals made to all allied health professionals, referrals to psychologists doubled from 1998 to 2006 (4.8% to 9.7%). In 2006-2007, the proportion of allied health professional referrals made to psychologists jumped to 28% and then steadied to around 20% between 2008 and 2010. The decrease in psychological counselling by GPs in 2003 is not clearly explained but may have been related to the introduction of the Better Outcomes in Mental Health Care ATAPS program in 2003. The substantial increase in referrals to psychologists in 2006 to 2007 coincided with the introduction of Better Access to Mental Health Care program in 2006. This idea is supported by research that examined changes in patient management and referral patterns following the introduction of BOiMHC (McGarry, Hegarty, Johnson, Gunn, & Blashki, 2009), which found that although GPs management strategies for depression remained unchanged and consisted of supportive counselling and medication, rates of

referral to psychological care significantly increased in the year 2006 compared with the year 2002.

There were a limited number of peer reviewed papers identified, which measured GP referral behaviour to Psychologist treatment. In one study of six countries (Spain, Israel, Australia, Brazil, Russia, and the United States), research based screening for depression was reported to GPs. Patient characteristics were not consistently associated with subsequent pharmacotherapy or specialty mental health care. Out-of-pocket cost was the most commonly reported barrier to treatment for depression; from 24% in Barcelona to 75% in St. Petersburg. No papers were identified that specifically addressed patient characteristics influencing GP referral decision in a publicly funded Psychology treatment program (Simon, Fleck, Lucas & Bushnell, 2004).

Whereas the NSMHWB studies elucidated population prevalence rates of mental disorders for the community, the BEACH studies estimated the frequency of mental disorder and treatment patterns in General Practice as identified by GPs. The next study examined is the SPHERE National Depression Project which identified mental disorder using standardised screening of clinical General Practice populations and hence provided a direct estimate of frequency of common psychopathology in general practice, an issue relevant for the current study.

1.4.2 Screening for Mental Disorders in Clinical General Practice Populations: The SPHERE (Somatic and Psychological Health Report): National Depression Project (Australia 2001)

The SPHERE project was a large scale study conducted in Australian General Practices in 2001 (Hickie, Davenport, Naismith & Scott, 2001). A national sample of 10,752 ambulatory patients attending 386 GPs were screened for common mental illness symptoms. As well as identifying the frequency of common mental disorders, a further aim of the SPHERE study was

to improve collaboration between GPs, psychologists and psychiatrists by improved identification, management and treatment of common mental illness through training, education and practice support (Hickie, Davenport, Naismith & Scott, 2001). This was important because GPs are the most frequent initial point of health care contact for the general population and for people seeking help for mental health problems (Andrews, et al., 1999; Andrews, Issakidis, & Carter, 2001; Britt & Miller, 2000; Henderson, et al., 2000; Hickie, Davenport, et al., 2001; Slade, et al., 2009).

One aspect of the study was to develop and validate a short screening tool, the *Somatic and Psychological Health Report* or *SPHERE*, to detect (rather than diagnose) cases with common mental disorders including Depression, Anxiety, Substance Abuse and Somatoform Disorders, and screen out non-cases in general practice. Furthermore, the study identified the proportion of cases not identified by GPs (Hickie, Davenport, et al., 2001).

Items on the SPHERE loaded on two factors: A *PSYCH* factor (psychological symptoms), consistent with formal diagnoses of depression and anxiety, and a *SOMA* factor (somatic symptoms), which closely resembled neurasthenia and chronic fatigue syndrome. Mixed presentations of psychological and somatic symptoms and alcohol and substance misuse were also assessed (Hickie, Davenport, et al., 2001).

The frequency of a positive screen for mental disorders in general practice was 49%. Combined psychological and somatic symptoms were identified in 25% of General Practice patients and 24% met criteria for either psychological or somatic symptoms (Hickie, Davenport, et al., 2001). Of all the patients screened (some of whom also met screener criteria for mood psychological or somatic symptoms), 11% also met criteria for possible substance misuse and another 8% reported probable substance misuse (Hickie, Koschera, Davenport , Naismith, & Scott, 2001). Rates of detection using the SPHERE were compared with GP rates of detection,

which showed that GPs recognised less than half of those identified by the SPHERE, including 46% of those with high severity mental disorders (Hickie, Davenport , Scott, et al., 2001).

Rates and predictors of service use and mental health care provided in General Practice were assessed (Hickie, Davenport , Naismith, et al., 2001). Of the 10,752 individuals screened 27% received at least one episode of care in some form. Of those receiving any form of mental health care, only 12% received evidence based treatment (Hickie, Davenport , Naismith, Scott, et al., 2001). Psychoactive medications were prescribed for 12%, and 21% were provided with non-pharmacological care, most often non-specific counselling (Hickie, Davenport , Naismith, Scott, et al., 2001). Evidenced based non-pharmacological treatment (CBT) was provided to a minority of patients (between 3% – 22%; the variation due to between General Practice differences) (Davenport , Hickie, Naismith, Hadzi-Pavlovic, & Scott, 2001). Treatment rates were higher for those presenting with both somatic and psychological symptoms compared with those presenting with either somatic or psychological symptoms (Hickie, Davenport , Naismith, Scott, et al., 2001). Non-specific somatic symptoms (such as fatigue, headaches and pain) were associated with GPs not making a diagnosis or offering treatment (Hickie, Davenport , Naismith, Scott, et al., 2001).

Demographically, people meeting screener criteria for mixed psychological and somatic symptoms were more likely to be: female, less than 25 years old, educated to the equivalent of secondary (or lower) school, unemployed, not in an intimate a relationship but having children (Hickie, Davenport, et al., 2001). People who met criteria for psychological symptoms only were: comparatively older females, more educated (tertiary level), employed and not in a relationship but with children (Hickie, Davenport, et al., 2001). Patient factors associated with GPs not detecting mental disorders included: being male, younger or older adults, employed, in a relationship and presenting with mixed somatic and psychological, or only somatic symptoms (Hickie, Davenport , Scott, et al., 2001; Wilhelm, Finch, Davenport, & Hickie, 2008).

Higher levels of disability were associated with having mixed psychological and somatic symptoms and, to a lesser extent, psychological symptoms only (anxiety and depression). Disability was also high in the 12% of patients who met criteria for co-morbid substance misuse and mental disorders (Hickie, Koschera, et al., 2001). Hickie et al., (2001) suggested that somatic symptoms in a mixed presentation might indicate co-morbid physical illness that is associated with an increased risk for mental illness or non-specific physical symptoms that are symptoms of mental disorders (e.g.: agitation, sleep problems, chest pain in anxiety).

Hickie et al. (2001) claimed that the SPHERE screening tool had high sensitivity and specificity for identifying formal psychiatric diagnoses as compared with DSM criteria and was even more relevant to General Practice that does not lend to more formal psychiatric diagnostic procedures, and so these high rates (49% c.f. around 20% in the general population) were not considered to be overestimates.

In summary, although training and education in mental health has been shown to improve rates of GP detection and management of mental illness (Hickie, Pirkis, Blashki, Groom, & Davenport, 2004; Holmewood, 2001; Naismith, Hickie, Scott, & Davenport 2001), the accurate identification of common mental disorders by GPs remains suboptimal. In the SPHERE study almost half of people attending general practice met screener criteria for some common mental disorder, whilst GPs identified less than half of these cases. In addition, those presenting with non-specific physical (somatic) symptoms were less likely to be identified by GPs as benefiting from referral to psychological care, even in the presence of psychological symptoms of mental illness.

There is also considerable disability and hence reduced function in patients attending their GPs with symptoms of mental illness, particularly co-morbid mental disorders and / or co-morbid substance use disorder. Treatment was presumably not offered when mental distress or disorders are not identified. When treatment was offered, it was commonly not evidence based

treatment. This may have been partly due to the limited availability of mental health services in 2001. However, where services were provided there was no measure of effectiveness for clinical outcomes in the SPHERE studies.

The results of the SPHERE study have influenced the outcomes measures and variables selected in the current study. The frequency of psychiatric diagnosis using a structured and standardised measure, demographics, substance use, disability, mental health service use, psychological distress and symptoms of depression, anxiety and stress amongst a number of other outcomes (threatening life events and suicidal ideation) that might identify characteristics of those selected for psychological treatment.

1.4.3 Clinical and Socio-Demographic Factors Associated with Mental Illness in General Practice in Australia: a Literature Review

Several smaller studies have been conducted that were specific to features associated with mental illness in Australian General Practice. Several themes arose such as the under-recognition of mental disorders (including substance use), factors associated with mental illness and disability (for example, socio demographics, suicidal ideation and stressful life events) and disability associated with mental illness.

Under-diagnosis of depression and anxiety and the co-morbidity of mental disorders by GPs has also been identified in research comparing GP's recognition of mental illness with cases identified using a range of standardised instruments whereas GPs only identified 56.4% of patients with mental illness in the past 12 months (Bushnell et al., 2004) as well as another smaller General Practice study (McCall, Clarke, Trauer, Piterman, & Ling, 2007). It has been suggested in the literature that psychiatry in General Practice differs from specialist psychiatry services in that GPs do not view mental illness, particularly depression or anxiety, through a formal diagnostic filter, such as those outlined in the DSM-IV or ICD-10 classification systems (Wilhelm, et al., 2008). It is not unusual for depression or anxiety to be misclassified as an

"understandable" (p. 42) stress reaction to difficult situational events, resulting in under diagnosis, or when patients present with primarily physical symptoms (Turner & Raphael, 1997).

GPs may also use heuristic concepts to determine an overlapping diagnosis of depression with anxiety as either an "anxious depression (stress)" characterised by worry and anxiety, versus "hopeless depression (demoralisation)" characterised by helplessness and hopelessness (Clarke, Cook, Smith, & Piterman, 2008, p. S111). This apparent overlap between anxiety and depression symptoms in General Practice patients has been noted in other studies. An example is the *Diamond* longitudinal study of Depression in Primary Care that showed 49% of patients who met criteria for Depression also met criteria for an "anxiety syndrome" (Gunn et al., 2008, p. S119).

Several socio-demographics characteristics have been found to be consistently associated with mental illness and psychological distress (McCall, et al., 2007). Female gender has been associated with higher rates of mental illness, specifically anxiety and depression (but not substance use), and is also associated with higher rates of consultation for mental health care (Issakidis & Andrews, 2002). Unemployment has also been associated with higher rates of mental illness, but lower GP consultation rates (Comino et al., 2003). Stressful life events, including employment problems, financial pressure, relationship breakdown and bereavement or illness, may precede or accompany the onset of mental illness (Turner & Raphael, 1997).

Psychological Distress, measured by Kessler – 10 (K10) (Kessler, 2002) scores (a measure of psychological distress), was found to be positively associated with gender (female), being divorced or separated, unemployed or on a low income (Winefield, Taylor, Gill, Pilkington, & Koster, 2009), having a more severe mental illness and profound / severe disability (Australian Bureau of Statistics, 2011), and has a stronger association with depression and co-morbid anxiety and depression than other mental disorders. At least one day out of role

was reported by 91.4% of people with an affective disorder and 91.9% of people with co-morbid affective and anxiety disorders (Andrews, et al., 2001; Meadows et al., 2002).

Disability is a particularly important characteristic in studies of mental illness. Disability is associated both with mental illness (Mitchell, 1997) and the increased likelihood of seeking consultation with a health professional (Issakidis & Andrews, 2002). A number of authors have suggested that mental disorder caseness alone is not necessarily sufficient to result in patient's perceiving a need for care or for the justification of service use (Burgess, et al., 2009; Henderson, et al., 2000; Holmewood, 2001). In data from the 1997 NSMHWB survey, a relationship was found between disability that was associated with mental illness and a higher perceived need for care (OR 2.91, CI = 2.01 – 4.23) (Meadows, et al., 2002). Understanding the interaction between caseness and disability, particularly in a primary care setting, provides a more clinically relevant assessment of need for treatment (Goldney, Fisher, Wilson, & Cheok, 2000). Disability measures avoid the potential for over-sensitive measures of psychiatric disorder yielding a high case ratio and provides a clearer picture of those who are distressed and disabled, and who therefore, require services.

It is well established that there has been an unmet need for care for those suffering mental disorders, as well as insufficient access to evidence based psychological care (Andrews, Henderson, et al., 2001; Australian Institute of Health and Welfare, 2010b; Hickie & Groom, 2002; Whiteford, 2008). This is particularly the case for people who have anxiety disorders. Data from the 1997 NSMHWB survey showed that the majority of people (77%) who met criteria for anxiety did not perceive the need for care (Issakidis & Andrews, 2002). The most commonly cited reason for not seeking consultation was that individuals would rather manage themselves, they were afraid to ask for help, or that they did not think treatment would help. Those with Panic Disorder and Generalised Anxiety Disorder were more likely to consult a health care provider, compared with other anxiety disorders. The authors concluded that better

identification of both clinical and sub-threshold symptoms of anxiety, and the subsequent effective treatment of anxiety directly by GPs and by referral to mental health specialists were essential (Issakidis & Andrews, 2002). There was an even greater perceived need for care demonstrated in the 2007 NSMHWB and it was suggested that this is due to increased awareness of mental health disorders in the community linked to efforts to improve mental health literacy (Meadows & Burgess, 2009).

It has been demonstrated here that there are multiple factors associated with mental health help seeking and the detection of mental illness in General Practice. Mental illness is under-diagnosed in around 50% of cases. In some cases, particularly when symptoms of mental illness are detected and some presenting symptoms are physical (for example when there is co-morbid anxiety and depression), there is evidence that mental illness is minimised and dismissed as normal and psychological treatment is hence not offered. Gender is associated with particular diagnoses and patterns of help seeking, as are employment status, stressful life events and general psychological distress and disability. These findings have influenced the choice of variables measured in the current study, particularly socio-demographic characteristics, service use patterns, psychiatric diagnoses, psychological symptom severity, threatening life events, general psychological distress and both mental and physical disability.

1.5 Mental Health Service Use and Service Availability

1.5.1 Mental health service use in Australian general practice patients

Perceived need for care does not necessarily translate into service use. The 1997 NSMHWB study showed only 22.7% of people with a mental disorder (in the previous 12 months) presented to a GP, psychiatrist, psychologist, mental health team or other health professions for mental health care. Half of these (11.6%) saw GPs. Greater physical (physical component scale: PCS) and mental disability (mental component scale: MCS), measured using the SF-12, was associated with the decreased likelihood of consultation (OR 0.87, CI 0.78, 0.97)

and (OR 0.63, CI 0.53, 0.73), for one unit on each score respectively (note that higher scores on the SF-12 indicated lesser disability) (Andrews, Issakidis, et al., 2001).

Of the 37% of respondents who had current symptoms of mental illness in the past month and who sought treatment, only 22% received evidence based treatment (that is, CBT or ADT) (Andrews, Issakidis, et al., 2001).

A further example of low service use was provided by the Longitudinal Study of Women's Health that used Medicare claims data to show that between 88% and 99% (depending on the age range of the participants) did not make any mental health claims through Medicare despite reporting mental health problems. This was particularly true for those with lower socio-economic status, and mental health problems with higher levels of disability (Byles, Dolja-Gore, Loxton, Parkinson, & Stewart Williams, 2011).

There has been a long-standing push to integrate mental health care into General Practice, a move away from institutionalisation care to mainstreaming mental health into collaborative mental health care between primary care and specialist mental health care, with GPs central to this format (Whiteford, 1995, 1998). However, according to some authors, GPs have struggled to develop adequate skills in psychiatric assessment and evidence based non-pharmacological and psychological interventions (Hickie, 1999; Hickie, Davenport , Naismith, & Scott, 2001). Alternatively, a major study suggested that psychological disorders require increased consultation time and it is this lack of GP time and workforce shortages that force GPs to seek additional service providers for these patients (Hutton & Gunn, 2007). There may be a combination of causes but, either way, GPs have faced considerable barriers to obtaining specialist mental health input for patients with mental health needs.

1.5.2 Australian mental health services prior to 2001

Prior to 2001, access to public specialist mental health services was largely inaccessible. Inpatient and outpatient Mental Health and Community Health Services were seen as a failing

system that had become particularly unresponsive to GP referral and requests for assistance (Hickie & Groom, 2002). Waiting lists were long and responsiveness was geared towards patients already engaged in the system, those needing acute care or those who had more severe mental illness and required high levels of service use.

State run public services had long been under-resourced and overwhelmed with demand so that people who were experiencing low to moderate severity mental health problems, or in the early stages of disorder onset had difficulty accessing services (Rosenberg, Hickie, & Mendoza, 2009). Only approximately 7% of health care expenditure per year in NSW was dedicated to mental health services which were of variable quality (Department of Health and Aged Care, 2010), despite increasing rates of mental illness (Whiteford, 1998), and a demonstrated need for increased access to services (Andrews, Issakidis, et al., 2001).

Other avenues for care were provided by Psychologists and Psychiatrists in private practice; however this fee-for-service system was inequitable and inaccessible for most people with mental illness because they are more likely to be disabled and socially and financially disadvantaged (Andrews, et al., 1999; Hickie & Groom, 2002; Sanderson & Andrews, 2002). Communication difficulties between GPs and secondary specialist services reduced the prospects of collaborative care. General Practice came to provide front line mental health care in parallel to public state-managed and private sector services, with ineffective interaction between the two systems (Hickie & Groom, 2002). The Commonwealth Government therefore looked to develop a new service model.

1.5.3 Better Outcomes in Mental Health Care program (BOiMHC)

In 2001, the Australian Government, through the Department of Health and Ageing (DoHA), planned new mental health initiatives to increase community access to mental health services, to improve the detection of mental illness in General Practice and to facilitate collaborative mental health care between GPs and specialist secondary care provided by allied

health psychological services (primarily delivered by Psychologists) and Psychiatrists (Hodgins, Judd, Davis, & Fahey, 2007; Jasper, Rawlin, & Thomas, 2006; Pirkis et al., 2004). The *Better Outcomes in Mental Health Care* (BOiMHC) program had five components (Hickie, et al., 2004; Jackson-Bowers, Holmwood, & Wade, 2002; Jasper, et al., 2006), each of which are outlined below and illustrated in Figure 1.

The first stage was the education and training for GPs to introduce the three-step mental health treatment plan (MHTP) process: to conduct mental health assessments, develop mental health treatment plans and to conduct regular mental health reviews. Secondly, the development of a MHTP attracted a new Medicare Benefits Schedule billing item. This was to encourage GPs to take the time needed to make a thorough mental health assessment and plan treatment. The third component was the delivery of focussed psychological strategies by GPs, including Cognitive Behavioural Therapies (cognitive strategies, behavioural strategies, relaxation strategies and skills training) and Interpersonal Therapy. The fourth was access to Psychiatrists to provide advice to GPs through a new Medicare Benefits Schedule billing number. The last component, receiving the most attention, funding and uptake, was Access to Allied Psychological Services (ATAPS), the referral of patients to Allied Health Professionals (AHPs: mostly Psychologists and Clinical Psychologists) (Hickie, et al., 2004; Jasper, et al., 2006; Pirkis, et al., 2004; Pirkis et al., 2006). For the first time in Australian health care policy, patients referred by registered GPs could access psychological treatment for their patients funded by the Federal Government (Littlefield, Storer, & Mathews, 2004; Mathews, 2004).

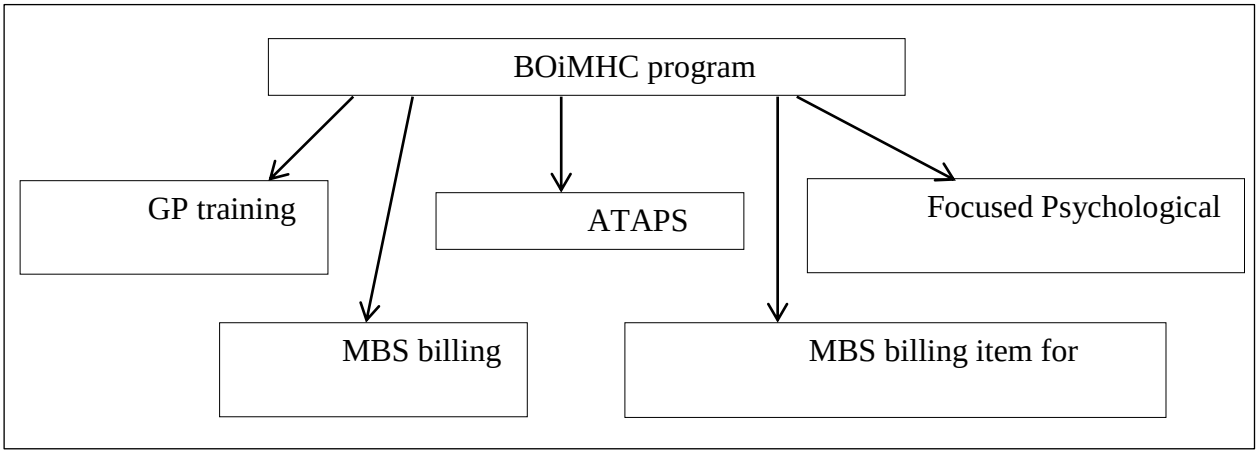

Figure 1: Structure of ATAPS 2001 - 2006

"By the end of the pilot period in 2006, the 3 step mental health plan became an independent process called the GP mental health treatment plan with an independent MBS item and GP education and Psychiatrist consultation support were dropped (Australian Government Department of Health and Aging, 2009). The services remaining under BOiMHC were the ATAPS service and a new service called "GP Psych Support" (a telephone advice line for GPs). Currently ATAPS is funded by tiers to include a number of pilot programs on the second tier, including the Additional Support for Patients at Risk of Suicide and Self Harm, Child and Family and Perinatal funding, as illustrated in the Figure 2).

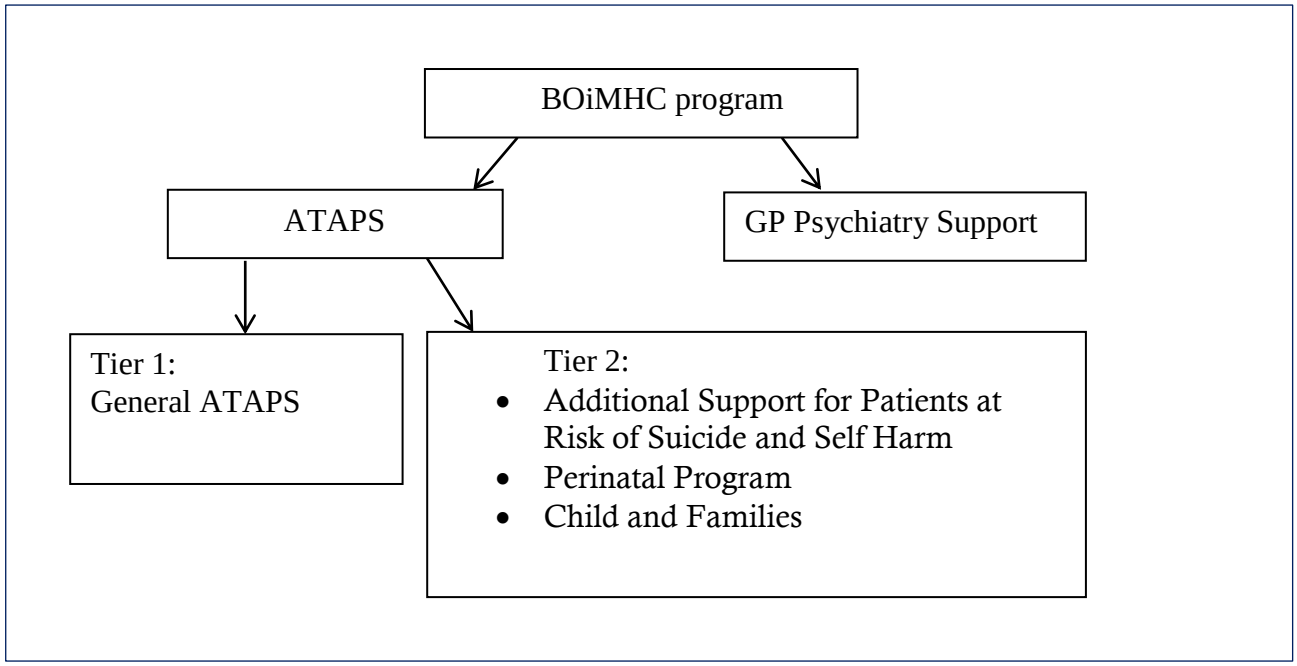

Figure 2: Structure of ATAP 2006 - 2011

1.5.4 Access to Allied Psychological Services (ATAPS)

ATAPS was piloted in 16 selected Divisions of General Practice in 2002. A further 13 sites were funded in 2003 with second round funding for a further 41 sites (Hickie, et al., 2004). All Divisions of General Practice have now hosted ATAPS services through a range of service delivery models (Morley et al., 2007; Naccarella et al., 2008; Pirkis, et al., 2004).

ATAPS services were to be short term, initially six sessions and a possible additional six after a mental health treatment plan review and a further six (18 total sessions) in exceptional circumstances (Australian Government Department of Health and Aging, 2010). Eligibility for referral to ATAPS was based on patients presenting with recent onset, mild to moderate, common (high prevalence) mental disorders (primarily anxiety and depression) according to the World Health Organisation (WHO) International Classification of Diseases version 10 (ICD-10) (Australian Psychological Society (APS), 2008; Pirkis, et al., 2006). A mental disorder was defined in the ICD-10 as causing "...significant impairment of an individual's cognitive, affective and/or relational abilities which may require intervention and may be a recognised,

medically diagnosable illness or disorder" (World Health Organisation (WHO), 2007). Services were also asked to prioritise financially disadvantaged patients unable to afford a gap payment.

The introduction of BOiMHC and ATAPS was a watershed event for the mental health care for Australians. In 2003 the Australian Government allocated $120 million for BOiMHC services for 4 years from July 2001 to July 2005. In July 2005, $145 million was committed for the continuation and expansion of BOiMHC over the next 4 to 5 years. For ATAPS, $27 million dollars has been allocated per year with a total of $80.7 million dollars spent between 2003 – 2010 (Australian Government Department of Health and Aging, 2010). The program has been very successful in terms of uptake but also in terms of positive clinical outcomes for patients (see details later) (Naccarella, et al., 2008; Pirkis et al., 2010).

1.5.5 Better Access to Mental Health Care (BAMHC)

Following the success of BOiMHC, BAMHC, a similar model allowing direct referral of patients by GPs to approved AHPs, mainly Psychologists, under Medicare, was introduced in 2006 (Rosenberg, et al., 2009). Psychologists were able to operate as other medical specialists traditionally had done using a fee-for-service model (Littlefield & Giese, 2008). In practice the model was less collaborative for psychologists and GPs than its predecessor BOiMHC (Rosenberg, et al., 2009) and Psychologists reported the remuneration for services was inadequate. It thus became common practice to charge a gap payment (Littlefield & Giese, 2008). This resulted in further inequitable access for the financially disadvantaged. For disadvantaged patients, ATAPS services remained the most accessible. There was some expectation that BAMHC would replace ATAPS (McGarry, et al., 2009), but demand for ATAPS and BAMHC services continued to be high and both programs have continued to attract funding to date (Bassilios et al., 2010; Fletcher et al., 2008; Whiteford, 2008).

1.6 ATAPS Service Evaluations

1.6.1 ATAPS evaluation unit

ATAPS has regularly been evaluated by the official evaluation group headed by Jane Pirkis and colleagues at the Centre for Health Policy, Programs and Economics at the University of Melbourne. Since inception, 16 interim biannual evaluation reports have been produced. The reports have used data collected through a national compulsory minimum data set (MDS) providing information from Divisions of General Practice hosting ATAPS. These data included descriptions of patient characteristics (demographics), clinical measures, for example the Kessler-10 (K10) (Kessler, Andrews, et al., 2002) and the Depression Anxiety and Stress Scale (DASS) (Lovibond & Lovibond, 1995), service uptake and performance data (appointment attendance, how many sessions provided), types of therapy used (e.g.: CBT, Interpersonal therapy, skills training) and format of therapy (face-to-face, individual or group).

The University of Melbourne has used other data sources including local evaluation reports, surveys by ATAPS project officers and focus groups with key stakeholders to, for example, identify models of infrastructure and service delivery, advantages and disadvantages of the program. Other evaluations have included one government report and at the time of writing this literature review, 17 peer reviewed publications reporting various aspects of the ATAPS program. For a complete review of the University of Melbourne's evaluation literature see appendix 5.

1.6.2 ATAPS interim reports

ATAPS service uptake has been very high. In the first 12 months (2003) of the project conducted at 15 pilot sites across Australia, 136 AHPs (69 were psychologists) provided care for 2,036 patients referred by 387 GPs (Pirkis, Blashki, Headey, Morley, & Kohn, 2003). By 2010, cumulative figures were reported which showed that 4,402 AHPs provided care for 174,675 patients for 709,684 therapy sessions (a mean of 5.3 sessions per patient) with referral by 15,251

GPs. This rate of uptake was maintained after the introduction of the potentially competing BAMHC in 2006 (Fletcher et al., 2010). Minimum Data Sets tend to be incomplete due to entry errors and the lag between service delivery and data entry and therefore service provision figures are considered to be underestimates.

Models of service delivery have varied across project sites depending on the service landscape and the Division's infrastructure (Jackson-Bowers, et al., 2002). The most common model has been a contract model engaging private practice Allied Health Professionals, more than 90% psychologists (Australian Government Department of Health and Aging, 2010), by Divisions of General Practice who acted as administrators and fund holders (Jackson-Bowers, et al., 2002). There has been a trend away from this model to an increasingly popular direct employment model, although mixed models have also been used (Pirkis, et al., 2010).

The 2010 report showed that most sessions were 1 hour long, almost all sessions were individual (versus group) and the majority provided evidence based treatment; cognitive therapy (44%) and behaviour therapy (58%) (Fletcher, et al., 2010). Therapy was not limited to one modality per session, for example, any one session could include both CBT or another type of evidence based therapy such as interpersonal therapy.

Clinical outcomes have been very positive, with improved outcomes in 86% of cases. The most improved were those who were older, of higher socio economic status, who have had no history of previous mental health care but higher baseline K10 psychological distress scores (Australian Government Department of Health and Aging, 2010; Pirkis, et al., 2011). Nine outcome measures were used across all of the Divisions including the DASS and K10. The K10 has been the most extensively used (Pirkis, et al., 2010).

Patient characteristics were fairly consistent over the duration of the project (Fletcher et al., 2009). Seventy per cent of patients were female. The most frequent age bracket was 25-44 years (42.5% of patients). Low incomes (<$50,000) were recorded for 65.6% of patients. Mixed

depression and anxiety was the primary presenting issue for 26% and depression only in 29.8% and anxiety only in 15.6%. There was no previous history of specialist mental health care for 45.2% of patients (Pirkis, et al., 2010).

1.6.3 Peer reviewed evaluations of ATAPS

A call for research into the way in which GPs interact with and are supported by new specialist mental health services (ATAPS) accompanied the BOiMHC policy development (Blashki, Hickie, & Davenport 2003). There have since been three small research studies of ATAPS published in peer reviewed journals.

The first study examined the characteristics of referring GPs and those patients referred to and seen under ATAPS at the Adelaide Hills Division of General Practice in 2008 (Barton et al., 2008). The analysis utilised routine data collected by the Division regarding descriptive and demographic details of those referred, the referring GPs and the reasons for referral as well as a clinical measure, the mean K10 score, at the point of first contact. Like the national ATAPS evaluation results, the majority of patients seen under ATAPS were female (77%), had high prevalence mental disorders (depression 74%, anxiety 55% or comorbid anxiety and depression 47%) and often had not previously accessed mental health care. Sessions were usually 1 hour of individual CBT. Data from another concurrent program delivered by the same Division, the More Allied Health Services (MAHS), was also assessed and results included reasons for referrals, such as life events and non-diagnostic characteristics (e.g.: anger management).

Limitations to this evaluation include that data was not assessed using standardised instruments and relied on clinician's subjective assessment of presenting issues and diagnosis. The study would also have benefited from the assessment of a greater range of variables, for example, more detailed demographics and reasons for referral (as assessed for the MAHS program).

The second study evaluating ATAPS, this time in the Southern Highlands and Illawarra Divisions, was published in 2006 (Vagholkar, Hare, Hasan, Zwar, & Perkins, 2006). This study investigated program administration processes as well as patient and referral characteristics and clinical outcomes. Results for the Illawarra Division are given first and the Southern Highland Division second. Again, consistent with the national evaluations and the results from the Adelaide Hills Division, patients were primarily women (71% and 75%). The majority were aged between 30 to 49 years. The main reason for referral was depression (66% and 79%) followed by anxiety (55.4% and 51.2%), alcohol and drug use disorders (8.1% and 2.0%), unexplained somatic illnesses (1.4% and 0.4%) and other problems including: bereavement, bi-polar affective disorder, eating disorders and personality disorders (11.5% and 44.4%). Limitations of this study were the absence of a structured and validated diagnostic instrument and the use of data subjectively reported by AHPs and GPs.

The third study was conducted in 2006 to evaluate ATAPS services in relation to GP and patient satisfaction with ATAPS services and to measure any reduction in patient's distress, disability and service use (Winefield, Turnbull, Seiboth, & Taplin, 2007). Results showed that GP and patient satisfaction with ATAPS treatment was high and that patients who attended 3 or more sessions reported reduction in distress and disability and that these gains were maintained after 3 months. It was also found that acceptance of referral to ATAPS resulted in less health service use. Limitations included the absence of a control group and missing data, as reported by the authors.

All of these studies had limitations. All used archival data consisting of clinician's subjective assessment of patient diagnostic characteristics. There was also no control group in the third study. Finally, data used in these studies and hence the results are now relatively dated and there continues to be a gap in research that addresses GPs referral behaviour and hence the interface between GPs and ATAPS services.

1.6.4 ATAPS services in Newcastle, Lake Macquarie and Lower Hunter Valley, NSW (Hunter Urban Division of General Practice)

In the Newcastle region, the Hunter Urban Division of General Practice, trading as GP Access, has administered the BOiMHC program since 2005. The GP Access Psychology Service is a well-established, large service, directly employing up to 20 psychologists and clinical psychologists. This service particularly aims to assist GPs in the care of their patients with recent onset, high prevalence mental disorders who are financially disadvantaged and therefore unable to access psychological services through private practice psychologists who charge a gap payment (K. Delamothe, GP Access Psychology Service Manager, personal communication, July 2008).

1.6.5 ATAPS: Service uptake and demand management

With the extraordinary uptake of ATAPS have come limitations to available services due to finite funding. There has been a risk of unmet need occurring within the ATAPS system, despite the massive increase in mental health resources available in the new system. Demand management strategies were used by 85% of Divisions (at least one strategy) with 5.6 strategies used on average (Naccarella, et al., 2008). Strategies including: GP education and feedback concerning the referral numbers, referral guidelines and making appropriate referrals, using a central administrative system for referrals, monitoring and limiting referrals, encouraging collaboration with specialist mental health services, managing session delivery (limits on number of sessions and regulating patients' engagement with services following referral), restricting intake criteria, increasing workforce, using strategic funding arrangements and using a referral priority strategy (triaging and using wait lists).

One of the successful strategies was informing and training GPs to make appropriate referrals consistent with the mandated criteria (Naccarella, et al., 2008). If GPs make appropriate

referrals then the services will be more likely to provide better access to and better outcomes for those who have been identified as needing mental health care.

1.7 Conclusion

There was no Australian datum showing the prevalence of mental illness in the Australian community prior to 1997 and estimates were being drawn from epidemiological studies in the US and the UK. In 1997, the first Australian psychiatric epidemiological study was conducted with a second survey in 2007. The surveys answered 3 questions: what was the current prevalence of mental disorders, what was the relationship to disability and what were the patterns of service use.

Mental disorders were common in the general population (20%) and in primary care populations (49%) and depression was recorded as the 4th or 5th most common clinical presentation in General Practice. Despite this, recognition of mental disorders has remained sub-optimal; GPs identified around half of the patients with a positive screen for mental illness.

GPs also faced barriers in access to specialist mental health care for their patients prior to 2001. Informed about the high prevalence of mental illness in both community and clinical populations, the high perceived need for mental health care and the considerable unmet need for mental health care, the Australian Federal Government introduced new mental health services intended to improve collaborative mental health care for GPs and their patients.

In 2001 the BOiMHC program was initiated and in 2003 ATAPs services became available providing non-pharmacological evidence based care to patients with mental disorder diagnoses referred by their GPs. To further improve access to mental health care, the BAMHC program was initiated in 2006. The unexpected very high uptake of both programs resulted in continued funding for both ATAPS and BAMHC. It is essential that a program designed to make mental health services accessible remains responsive. One aspect of this is to ensure that demand

is managed appropriately. One demand management strategy is to assess the appropriateness of referrals made by referrers, that is, GPs.

Consistent results in both epidemiological studies and General Practice studies have shown that there are some particular characteristics of people with an unmet need for mental health care. General Practice patients are more likely to be female, with co-morbid anxiety and depression, anxiety / depression and substance use disorders and single presentation anxiety or depression, with high levels of mental and physical disability and psychological distress. National evaluations of ATAPS have shown that the characteristics of people accessing ATAPS services are consistent with those identified above. ATAPS patients are commonly female, have comorbid anxiety and depression (depression is more common than anxiety) and almost half are first time service users. Therefore, it appears that GPs are broadly following ATAPS referral guidelines.

Since mental illness is frequent in primary care and GPs are expected to select patients for referral to ATAPS, this study investigates the basis upon which GPs select patients for referral to ATAPS.

1.8 Research Question

Do patients referred to ATAPS conform to guidelines and what characteristics distinguish referred patients from GP controls.

1.8.1 Aims of this research

Primary aim

Determine the likelihood of ATAPS cases meeting ICD-10 criteria for Any Mood or Any Anxiety Disorder compared to controls.

Secondary aims

1. Determine the likelihood of ATAPS cases having higher psychological distress scores (K-10) and psychological symptom scores (DASS-21) compared to controls.

2. Develop a multivariable explanatory model of patient characteristics predicting GP referral to the ATAPS program compared to controls.

Patient characteristics associated with GP referral to the Access to Allied Psychological Services program: a case-control study

Running title: Who do GPs refer to ATAPS?

Manuscript re-submitted following peer review to the

Australian and New Zealand Journal of Psychiatry

19th December, 2011

Abstract

Background:

GPs have referred patients for psychological treatment under the Better Outcomes in Mental Health Care, Access to Allied Psychological Services (ATAPS) program since 2003. It is not known how GPs might select patients for referral. We explored which characteristics identified ATAPS patients compared to usual GP patients.

Method:

The study was conducted in GP Access, a Division of General Practice (Newcastle and Lower Hunter) in NSW. A case-control design; 63 cases (ATAPS patients), and 64 controls (GP patients never referred to ATAPS). Unadjusted and sequentially adjusted logistic regressions were used to identify independent predictors of being an ATAPS case based on official referral guidelines: ICD-10 diagnosis of depression or anxiety and scores on the K-10 (psychological distress) and DASS-21 (psychological symptoms). A multivariable logistic regression was also used to determine the best minimum set of predictor variables.

Results:

83% of ATAPS cases had anxiety or depression. In unadjusted models, Any Mood Disorder, OR 7.68, (95%CI: 3.47, 17.01), Any Anxiety Disorder, OR 2.88, (95%CI: 1.37, 6.05), higher K-10 score, OR 1.06 (95%CI: 1.04, 1.14) and higher DASS-21 score, OR 1.06, (95%CI: 1.03, 1.09) were associated with being an ATAPS case. Any Mood Disorder, Any Anxiety Disorder, K-10 score and DASS-21 scores remained significant in most adjusted analyses and all models showed change when adjusted for mental disability and physical disability. Three variables predicted being an

ATAPS case in the multivariable regression: greater mental disability lesser physical disability and greater number of substances misused.

Conclusion:

Cases had higher levels of mental disability and greater substance misuse, but lower levels of physical disability. This may reflect GP referral decision making and have implications for policy development.

Keywords:

Access to Allied Psychological Services, Better Outcomes, General Practice, Mental Illness, Depression, Anxiety

Introduction

In the first Australian National Survey of Mental Health and Wellbeing [1], 13.6% of the population met criteria for anxiety or depression; each associated with significant disability. More than 50% who met criteria for anxiety or depression received no treatment [1]. Since 2001, the Australian Federal Government has funded access to mental health services via *Better Outcomes in Mental Health Care*, a five component program detailed elsewhere [2, 3]. The *Access to Allied Psychological Services* (ATAPS) component (2003) enabled eligible patients to access Medicare rebates for psychological services from Allied Health Professionals [4, 5].

ATAPS guidelines mandated services to be short term (6 -12 sessions), low cost and aimed at mild to moderate, high prevalence mental illnesses, particularly anxiety and depression, as defined by the International Classification of Diseases (ICD-10) [6]. To refer to ATAPS, GPs conduct a Mental Health Treatment Plan, which includes a clinical diagnosis and another measure, most commonly the Kessler 10 (K-10) [7] or the Depression, Anxiety and Stress Scale (DASS-21) [8], which are used in the assessment of national program effectiveness [5]. GPs have keenly adopted the initiative, which has increased access to mental health services and evidence-based treatments [10]; 110 of 111 Divisions of General Practice generated 150,945 referrals for 113,107 patients in 2005-2010 [5].

National ATAPS evaluations showed 70% of patients met criteria for anxiety or depression [5] and K-10 or DASS-21 scores demonstrated improvements after treatment [5, 9]. Despite the frequency of anxiety and depression in the ATAPS population, anxiety and depression often go undetected in primary care, which may prevent eligible patients accessing ATAPS [11].

This study was designed to determine to what extent GP referrals of patients resulted in patient characteristics conforming with the ATAPS referral guidelines, and to explore what other variables mediated GPs' selection of patients for referral to ATAPS.

Method

Aims

Primary:

Determine the likelihood of ATAPS cases meeting ICD-10 criteria for Any Mood or Any Anxiety Disorder compared to GP controls.

Secondary:

Determine the likelihood of ATAPS cases having higher psychological distress scores (K-10) and psychological symptom scores (DASS-21) compared to GP controls.

Develop a multivariable explanatory model of patient characteristics distinguishing ATAPS cases from GP controls.

Setting

GP Access is the trading name of the Hunter Urban Division of General Practice, which supports 450 GPs in 145 General Practices (population 447,254). GP Access Psychology Service delivered the ATAPS program, employing 20 Psychologists, Clinical Psychologists in Training or Clinical Psychologists. From July 2005 to December 2010, approximately 6,929 patients used 24,045 ATAPS sessions [GP Access Psychology Service, Executive report for service delivery. Newcastle: 2010].

Study Design and Participants

A case-control design was used. Cases and controls were aged 18-65 years and drawn from the underlying population of patients attending a GP in the Hunter Division.

Cases were drawn from patients who were referred by their GP and subsequently attended GP Access Psychology Service for ATAPS January 2009 to March 2010. Cases came from North / Westlakes (n = 7), Eastlakes (n= 6), Newcastle (n = 16) Newcastle West (n =29) and Maitland networks (n=5). Cases were "incident" (first referral to ATAPS). There was no random selection of cases. Hunter New England Human Research Ethics Committee (HNEHREC) required the initial approach to be made by GP Access reception staff on the patient's second or subsequent attendance. We have no data on number of eligible patients, invitations by reception staff or, subsequent acceptance of contact with the researcher. We have no data on referrals to ATAPS who never attended at all or who only attended for a single appointment.

Controls were drawn from patients who attended their GP for any reason in the period January to February 2010 and had never been referred to any GP Access ATAPS program. There was no random selection of controls. Controls were recruited from participating GPs, who had responded to a written invitation; 20 GPs in 5 practices, from 4 of the 5 GP Access networks. Two practices were located in the North / Westlakes (n=25) and one each in Eastlakes (n=15), Newcastle (n=12) and Newcastle West (n=12) networks. A maximum of four patients for each GP were recruited from any one GP practice and recruitment in each network was spread across multiple days of the week. Consecutive patients were initially approached by GP reception staff and invited to speak with the research psychologist. We have no data on number of eligible patients, approaches by reception staff or acceptance of contact with the researcher.

Sample Size

We estimated 30% of controls would have an ICD-10 diagnosis (Mood or Anxiety Disorder). To detect the least extreme odds ratio of 2.8 for cases, power 0.8 and alpha = <.05, required 64 cases and 64 controls.

Instruments

Demographics (age, gender, relationship, education, employment, household income), GP network, and GP treatment (mental health visit past month, current antidepressant treatment).

List of Threatening Experiences (LTE) [12]: 12 experiences (past 6 months), scored by summation for a score 0 -12. Question 1 (LTE Q1) asked has there been a "serious accident, illness or injury", used as a binary variable for current physical illness.

12 item Short-Form Health Survey version 2 (SF-12) [13]: 12 items measuring physical disability (SF-12 PCS) and mental disability (SF-12 MCS), scored as a continuous variable using the brief rounded integer scorer [14], yielding mean scores of 50 (SD 10), with higher scores indicating lower disability.

Alcohol, Smoking and Substance Involvement Screening Test V3.0 [15]: 8 item screener for problem use of alcohol and other drugs in primary care. Total number used (past 3 months) as continuous variable.

Depression, Anxiety and Stress Scale 21 item version (DASS-21) [16]: three subscales of seven items rating mental health symptoms (depression, anxiety and stress), summation for continuous "composite negative affect score" 0 - 62 [17].

Kessler 10 (K-10) [7]: 10-item measure of distress associated with mental illness, scored 10 – 50, higher scores indicating greater distress.

The Mini International Neuropsychiatric Interview (M.I.N.I) [17]: standardised diagnostic interview for ICD-10 mental disorders. Any Anxiety Disorder included Agoraphobia, Panic Disorder, Social Phobias, Obsessive-Compulsive Disorder, Post-Traumatic Stress Disorder and Generalised Anxiety Disorder. Any Mood Disorder included Depressive Episode, Manic or Hypomanic Episode, Dysthymia and Cyclothymia.

Analyses

The dependent variable for all comparative analyses was ATAPS case versus GP control.

Descriptive statistics used for socio-demographic, clinical and GP treatment characteristics of participants. Comparisons used two tailed t-tests, Chi square and Fisher's exact test.

Four unadjusted logistic regression analyses were used to test the two categorical (Any Mood or Any Anxiety Disorder (Table 2) and two continuous variables (K-10 and DASS-21 (Table 3), expressed as Odds Ratio (OR) and 95% Confidence Intervals (CI 95%), for the association with ATAPS caseness. Initial unadjusted models were adjusted for several potential confounders (and effect modifiers) to examine the change in magnitude on the effect for each of the four main predictor variables. Standard errors and interaction terms used to test for multi-collinearity.

Specifically, regression models for Any Mood or Any Anxiety Disorder as main predictors were adjusted in separate analyses for: demographics, number of threatening experiences, physical illness and physical disability, mental disability, psychological distress, GP treatment (mental health visit in past month, current antidepressant treatment), and co-morbidity of mental illness including: Any Mood Disorder,

substance misuse and substance misuse or Any Mood Disorder (for Any Anxiety Disorder), and Any Anxiety Disorder and substance misuse or Any Anxiety Disorder (for Any Mood Disorder). Results were expressed as Odds Ratios (ORs) with 95% Confidence Intervals (CI95%) in predicting case versus control with the referent group being no mood and no anxiety disorders, respectively. (Table 2)

Similarly, regression models for K-10 and DASS-21 as main predictors were adjusted for: demographics, number of threatening experiences, physical illness and disability, co-morbidity of mental illness and GP mental health treatment (mental health visit in the last month, current antidepressant treatment, substance misuse, Any Anxiety Disorder), Any Mood Disorder and mental disability. Results were expressed as ORs with CI95% for each rise of one point on K-10 or DASS-21 in predicting case versus control. (Table 3)

To develop an explanatory multivariable model a forward stepwise logistic regression analysis used the predictor variables; relationship status, household income, Any Mood Disorder, Any Anxiety Disorder (categorical), age, number of threatening experiences, mental disability, physical disability and total number of substances misused (continuous). Variables with significant multi-collinearity were excluded (e.g. DASS-21, K10) and no interaction terms were included in any models. Variables were retained in the model with a $p < .05$ and removed if $p > .10$. The Hosmer-Lemeshow test examined "goodness of fit" for all logistic regression models. Model summary statistics are reported for the final iteration: -2 Log Likelihood and Nagelkerke R^2 statistic.

The multivariable logistic regression model yielded three continuous predictors. Since the sample size was relatively small and non-linear distributions of continuous variables may produce a number of "cells" with zero or low counts, a *post hoc*

confirmatory forward stepwise regression model was tested. This model included Income level, Any Mood Disorder, Any Anxiety Disorder, and continuous predictor variables were transformed into quartiles based on distributions of scores (mental disability, physical disability) or a three level categorical variable, none, one, two or more (number of threatening experiences and substances misused), with the model limited to seven predictor variables to avoid over fitting.

In order to explore the relatively high proportion of GP controls having Any Anxiety Disorder, a *post hoc* analysis was conducted, reporting number and percentage with recent mental health visits, current antidepressant treatment or both.

Predictive Analytic Software (PASW statistics 18, copyright 1993 – 2007 Polar Engineering and Consulting, IBM, New York, USA, http://www.winwrap.com) was used for analyses.

Ethics

The HNEHREC approved the project. Each participant's results were provided to the GPs with consent. Five cases and one control declined to have results reported to their GP.

Results

Characteristics of cases and controls

ATAPS cases were predominately female, mean age 40 years, married, year 12 or tertiary qualified, employed, with annual household income < $50K, attending a Newcastle area GP. Relationship status, income level, GP network and employment were significantly different for cases and controls. Employment was non-significant when tested *post hoc* as employed versus unemployed or support benefits.

ATAPS cases had significantly more life events, mental disability, psychological distress and psychological symptoms, and were more likely to have antidepressant treatment and recent GP mental health care. Cases were more likely to have Any Anxiety or Any Mood Disorder, although these disorders were also common in controls. Any Anxiety or Any Mood Disorder occurred in 52 (82.5%) cases and 33 (51.6%) controls.

There was no difference for current physical illness; although physical disability was significantly lower in ATAPS cases (Table 1).

Table 1: Characteristics of cases and controls

	Cases (*n* = 63)	Controls (*n* = 64)	Statistics
Categorical Variables	**n (%)**	**n (%)**	**Chi Square (*df*)**
Gender			
Female	41 (65.1)	42 (65.6)	0.004 (1)
Relationship Status			
Never Married	20 (31.7)	10 (15.6)	
Married / De Facto	24 (38.1)	43 (67.2)	10.85 (2) **
Previously Married	19 (30.2)	11 (17.2)	
Education Level			
Year 10	18 (28.6)	19 (29.7)	
Year 12 or TAFE	22 (34.9)	29 (45.3)	2.23 (2)
Tertiary Qualifications	23 (36.5)	16 (25.0)	
Employment Status			
Employed (FT / PT)	34 (54.0)	49 (76.6)	
Unemployed	17 (27.0)	3 (4.7)	12.50 (2) **
Benefits / Pension	12 (19.0)	12 (18.8)	
Income Level			
< $50,000	43 (68.3)	27 (42.2)	
$50,000 - $99,000	13 (20.6)	20 (31.3)	9.30 (2) **
≥$100,000	7 (11.1)	17 (26.6)	
GP Network			
Newcastle	45 (71.4)	24 (37.5)	14.73 (1) **
Other	18 (28.6)	40 (62.5)	
Illness			
LTE Q1	16 (25.4)	20 (31.3)	0.54 (1)
Any Mood Disorder	43 (68.3)	14 (21.9)	27.61(1) **
Any Anxiety Disorder	46 (73.0)	31 (48.4)	8.03 (1) **
GP Treatment			
Antidepressant treatment	35 (55.6)	18 (28.1)	9.82 (1) **
Mental health visit	26 (41.3)	14 (21.9)	5.54 (1) *
Continuous Variables	***M (SD)***	***M (SD)***	***t (df = 125)***
Age (yrs)	39.97 (13.82)	45.13 (12.17)	2.23 *
Number of LTE	2.35 (1.70)	1.34 (1.68)	3.35 **
SF-12 MCS	33.97 (11.96)	47.88 (11.40)	6.71 **
SF-12 PCS	47.92 (11.43)	43.89 (11.04)	-2.02 *
K-10	23.97 (8.75)	18.25 (7.99)	3.85 **
DASS-21	25.19 (14.30)	13.98 (13.96)	4.47 **
Substance Misuse (number)	1.27 (1.52)	0.55 (0.87)	3.29 **

Note: GP Network = Referring GPs practice location. LTE Q1 = A serious physical injury, illness or assault in past 6 months. Mental health visit = GP visit for mental health in the past month. Number of LTE = Total number of Threatening Experiences in past 6 months. SF-12 MCS = Mental Disability Score. SF-12 PCS = Physical Disability Score. Substance misuse = Number of substances used in the past 3 months.

*$p < 0.05$ ** $p < 0.01$ ***$p<0.001$

Regression Models

Any Mood Disorder was significant in the unadjusted model (OR 7.68, CI 95% 3.47, 17.01), and remained significant after adjustment in all nine models. Any Anxiety Disorder was significant in the unadjusted model (OR 2.88, CI 95% 1.37, 6.05), but became non-significant in models adjusted for: demographics, mental disability, psychological distress, and Any Mood Disorder (Table 2). Higher (incremental) K-10 and DASS-21 scores predicted case versus control and these models became non-significant only when adjusted for Any Mood Disorder or mental disability (Table 3).

Overall, Any Mood Disorder was a strong independent categorical predictor for being a case. Adjustment for mental disability reduced the odds ratios for all four main predictor variables whilst current physical illness combined with higher scores SF12 Physical Disability (indicating less physical disability) increased the odds ratios for all four main predictors.

Table 2: Unadjusted and Adjusted Models for Any Mood and Any Anxiety Disorder associated with being an ATAPS case.

	Any Mood Disorder		Any Anxiety Disorder	
	[6]OR	CI 95%	[7]OR	CI 95%
Unadjusted	7.68	3.47, 17.01***	2.88	1.37, 6.05**
Adjusted Models				
Demographics[1]	5.50	2.26, 13.36***	1.53	0.65, 3.62
Number of LTE[2]	6.35	2.80, 14.39***	2.40	1.11, 5.17*
Physical Illness and Disability[3]	10.65	4.30, 26.34***	3.38	1.55, 7.36***
Mental Disability	2.72	1.01, 7.34*	1.07	0.43, 2.70
K-10 total score	7.26	2.47, 21.29***	1.72	0.75, 3.97
GP Treatment Variables[4]	6.95	2.93, 16.47***	2.35	1.07, 5.18*
Co-Morbidity				
Substance misuse[5]	6.38	2.82, 14.44***	2.62	1.22, 5.65**
Substance misuse and Any Mood Disorder	----	----	1.27	0.52, 3.12
Any Mood Disorder	----	----	1.24	0.51, 3.03
Substance misuse and Any Anxiety Disorder	5.75	2.33, 14.15***	----	----
Any Anxiety Disorder	7.00	2.89, 16.84***	----	----

Note:

[1] Age, Income, Relationship Status, GP Network

[2]Total number of Threatening Experiences

[3]LTE Q1 (a serious physical illness, injury or an assault in the past 6 months) and SF-12 PCS

[4] GP Treatment (Mental Health visit in the past month and current Antidepressant Treatment)

[5]Substance misuse = Number of substances used in the past 3 months.

[6]Referent group = No Mood Disorder

[7]Referent group = No Anxiety Disorder

*$p < 0.05$ ** $p < 0.01$ ***$p<0.001$

Table 3: Unadjusted and Adjusted Models for K-10 and DASS scores associated with being an ATAPS case.

	K-10 scores		DASS	
	OR	**CI 95%**	**OR**	**CI 95%**
Unadjusted	1.06	1.04, 1.14***	1.06	1.03, 1.09***
Adjusted Models				
Demographics[1]	1.06	1.01, 1.12*	1.05	1.01, 1.08**
Number of LTE[2]	1.07	1.02, 1.12**	1.05	1.02, 1.08***
Physical Illness and Disability[3]	1.11	1.06, 1.17***	1.08	1.04, 1.11***
Co-Morbidity and GP treatment[4]	1.06	1.00, 1.11*	1.04	1.01, 1.07*
Any Mood Disorder	1.01	0.95, 1.07	1.02	0.98, 1.05
Mental Disability[5]	0.93	0.86, 1.00	0.99	0.95, 1.03

Note:

[1] Age, Income, Relationship Status, GP Network

[2]Total number of Threatening Experiences

[3]LTE Q1 (a serious physical illness, injury or an assault in the past 6 months) and SF-12 PCS (Physical Disability Score)

[4] Co-morbidity (Any Anxiety Disorder and Substance misuse) and GP Treatment (Mental Health visit in the past month and current Antidepressant Treatment).

[5]SF-12 MCS = Mental Disability Score

*$p < 0.05$ ** $p < 0.01$ ***$p<0.001$

The forward stepwise regression model yielded three predictive variables: greater mental disability had higher likelihood of ATAPS caseness (OR 0.90 CI95% 0.97-0.94 for each unit increase on SF12 MCS), greater physical disability had lower likelihood of ATAPS caseness (OR 1.07 CI95% 1.02-1.11 for each unit increase on SF12 PCS) and more substances misused had higher likelihood of ATAPS caseness (OR 1.63 CI95% 1.08-2.46 for each additional substance misused). This -2 Log likelihood for the model was 124.04 and $R^2 = 0.45$. The *post hoc* confirmatory stepwise regression model yielded four predictive variables (see Table 4): Any Mood Disorder, 2 or more threatening experiences and greater mental disability, (higher likelihood of ATAPS caseness); and greater physical disability (lower likelihood of ATAPS caseness). This model had $R^2 = 0.61$ and -2 Log likelihood was 112.31.

Table 4: Univariate and Confirmatory Multivariable Forward Stepwise Logistic Regression Model associated with being an ATAPS case.

		n	Univariate Analysis		Forward Stepwise Model	
		Case/control	OR	CI 95%	OR	CI 95%
Income				**		
<$50,000		43/27	1.00		----	----
$50,000 - $99,000		13/20	0.41	0.18, .095*	----	----
>$100,000		7/17	0.26	0.10, 0.71**	----	----
No Mood Disorder		20/50	1.00		1.00	
Any Mood Disorder		43/14	7.68	3.47, 17.01***	4.42	1.39-14.03*
No Anxiety Disorder		17/33	1.00		----	----
Any Anxiety Disorder		46/31	2.88	1.38, 6.05**	----	----
No Substance misuse		26/42	1.00		----	----
1 Substance		17/12	2.29	0.94-5.55	----	----
2+ Substances		20/10	3.23	1.31-7.97*	----	----
No TLE		11/27	1.00		1.00	
1 TLE		6/16	0.92	0.29-2.97	0.42	0.08-2.08
2+ TLE		46/21	5.37	2.25-12.84**	3.86	1.33-11.21*
SF-12 MC	(10-30)	28/8	1.00		1.00	
SF-12 MCS	(31-39)	19/9	0.60	0.20-1.84	0.71	0.19-2.73
SF-12 MCS	(40-54)	12/24	0.14	0.05-0.41***	0.26	0.7-1.08
SF-12 MCS	(55+)	4/23	0.05	0.01-0.19***	0.06	0.01-0.34 **
SF-12 PCS	(10-36)	14/20	1.00		1.00	
SF-12 PCS	(37-48)	14/16	1.25	0.46-3.37	2.09	0.58-7.53
SF-12 PCS	(49-56)	18/20	1.29	0.51-3.27	10.82	2.56-45.67**
SF-12 PCS	(57+)	17/8	3.04	1.03-8.97*	8.30	1.66-41.51*

TLE – Threatening Life Events, SF-12 MC = Mental Disability Quartiles. SF-12 PC = Physical Disability Quartiles.
*$p < 0.05$ ** $p < 0.01$ ***$p<0.001$

In the *post hoc* analysis of controls 31 (48.4%) met criteria for Any Anxiety Disorder. Of these 14 (45.2%) were not receiving any mental health care, whereas 5 (16.1%) were only receiving anti-depressant treatment, 4 (12.9%) only GP mental health care and 8 (25.8%) were receiving both.

Discussion

Strengths and limitations

The study was adequately powered for the primary predictors but caution should be used in interpreting the specific estimates in the multivariable models. An unmatched case control design was appropriate for the study questions. The internal validity of studies of this type depends on the degree of bias (especially selection and information biases) and confounding. There may have been substantial selection bias for several reasons. ATAPS cases were recruited from within the ATAPS service and across the five GP Access networks, whilst controls were recruited from 20 participating GP practices in 4 of the 5 networks. There was no random selection of cases or controls and the underlying populations are very large compared to the number selected. There was a different time frame for sampling the cases and controls and a differential non-participation rate was possible.

Instruments were validated for Australian primary care, with the same administration for cases and controls. However, administration was by a single rater, not masked to group status. Study results were usually reported to the GP, which may have affected responses, however results were only communicated with consent, which may then limit response bias. There may unknown confounders not included in our study.

Patient characteristics

The National Survey of Mental Health and Wellbeing [1] reported a community prevalence of 13.6% for anxiety or depression, much lower than GP controls (52%) and ATAPS cases (83%) in our study. However, GP controls (52%) were similar to Australian General Practice populations [20], (49% anxiety or depression), whilst ATAPS cases (65% female, 68% low income and 83% anxiety or depression), were

similar to national ATAPS patients (70% female, 66% low income and 70% anxiety or depression). [5].

ATAPS guidelines

ATAPS cases were generally suitable for the ATAPS program and this must in part represent successful selection and referral by GPs. The majority of ATAPS cases had anxiety or depression and had low household income in keeping with the ATAPS guidelines. We did not explore the issue of mild to moderate severity.

To the extent that the pattern of results might indirectly indicate GP decision making in selecting patients for referral to ATAPS we offer some speculative explanations. There are other "filters" that affect referral and attendance at ATAPS; patient, family and social factors, data which were unavailable. Patients with anxiety or depression might decline referral or fail to attend an ATAPS appointment for fear of stigma or believe treatment is not useful. Patients with mild or self-limiting depression or anxiety might not attend because they no longer require treatment, whilst more severe enduring cases might not attend because of negative cognitions and difficulties with the motivational requirements for making and attending appointments.

Any Mood Disorder was the stronger categorical main predictor. Any Anxiety Disorder had a smaller odds ratio as a predictor of ATAPS caseness due to the relatively high frequency of anxiety in controls and was more likely to be made non-significant by adjustment.

Anxiety was common in GP controls. GPs might differentially under-recognise anxiety or consider anxiety to be a chronic condition not requiring specific treatment [22], may prefer to manage anxiety in primary care [23], or consider anxiety to be transient or an "understandable" response to life circumstances that will resolve without

intervention [20]. Patient factors might include a lower perceived need for care or a preference to manage anxiety themselves [1, 21], believe treatment will not help [24, 25] or that the very symptoms of anxiety are an obstacle to help-seeking [25].

The *post hoc* analysis showed that around half of the controls with Any Anxiety Disorder were not accessing any mental health treatment, suggesting these were not recognised by GPs or considered unresponsive to treatment. Conversely, half had recent GP treatment suggesting a preference for GP treatment of anxiety, perhaps by both patients and GPs.

GPs are asked to provide one other measure for referral to ATAPS; the K-10 and some form of the DASS the most commonly used nationally [5]. K-10 and DASS-21 scores were significantly higher for cases, suggesting that GPs may have used these continuous measures in addition to their clinical diagnosis, to determine referral. Both measures showed similar results for all adjusted models, with an unadjusted relative increase in the likelihood of referral to ATAPS of 6% for each increased point on either scale. For practical use, the K10 has the advantage of fewer items whilst the DASS-21 has the advantage of greater coverage of psychological symptoms and stress.

The ATAPS guidelines [6] also say services should be prioritised for patients for "whom Medicare based services are not affordable or appropriate", that is, patients who are financially disadvantaged. There were significant differences in terms of income suggesting GPs were selecting financially disadvantaged patients. Most cases (68%) had annual household incomes of < $50,000 with a substantial minority either unemployed or on other benefits (46%).

We suspect GPs may be influenced by additional factors in the selection of patients for referral.

Other factors potentially affecting GP referral decisions

Given that 17% of cases did not have either anxiety or depression whilst 52% of controls did, GP referrals to ATAPS were influenced by factors in addition to the presence of anxiety or depression. Only speculative inferences can made from the pattern of patient characteristics that differentiate cases from controls.

Demographic variables (combined) substantially reduced the odds ratios for Any Mood and Any Anxiety Disorder as predictors. Specifically, cases were younger, had lower proportions in a relationship (38%) and had less distance to travel to the ATAPS service.

Mental disability for cases was in the moderate (30-40) and controls in the mild range (40-50), with substantial effects in all adjusted models. Conversely, cases had lower levels of physical disability than controls (both mild range 40-50), which also affected all adjusted models. The multivariable regression model results were consistent with the adjusted models; cases had significantly higher mental disability and lower physical disability compared with controls. This suggests GPs might be differentially selecting patients with psychological symptoms plus substantial mental disability, which seems appropriate. However, it also suggests that GPs tend not to refer those with psychological symptoms if they have associated higher levels of physical disability, which needs explanation and future exploration.

There are several possible explanations. GPs may not easily recognise mental illness in the presence of physical disability [26], or feel that physically disabled patients might reject psychological treatments [25] or believe psychological treatment is ineffective with higher physical disability. They may also consider that physical disorders take treatment priority over mental disorders and psychological distress.

However, physical and mental disorders are not mutually exclusive and response to treatment is good [27].

Substance misuse is also a valid mental disorder for referral to ATAPS. Locally, patients with primary drug or alcohol dependence are referred to specialist services. Despite this, the greater number of substances currently misused, affected the risk in the four predictors in adjusted models and was a significant independent predictor of caseness in the first multivariable model (OR 1.63, CI 1.08, 2.46). This suggests that substance misuse might be a more important reason for referral to ATAPS than previously thought.

Clinical utility of standardised measures and screening instruments

Short, standardised instruments have been successfully utilised in primary care in Australia to detect common mental illnesses and problematic drug and alcohol use [28]. This study has demonstrated the potential utility of measures like K10 or DASS in helping GPs make referral decisions to ATAPS. Similarly, the SF-12 is a short instrument that could be used in GP settings to provide information about mental and physical disability levels, in the presence of common mental illness. [29].

The U.S. Preventive Services Task Force recommended screening adults for depression in primary care, only when professional supports are in place to assure accurate diagnosis, effective treatment and follow-up [30]. The availability, general acceptability and effectiveness of the ATAPS program [9] means that this level of support is now widely available especially to the financially disadvantaged. So the development of effective screening for common mental illness, distress and disability at the primary care level, integrated with ATAPS referral, could become a reality for future patients.

Policy Implications for the ATAPS program

To the extent that results of this study are generalisable to the national population, several issues may have an impact on the policy development and review of the ATAPS program.

The presence of current physical illness and lesser physical disability increased the odds ratios for Any Mood Disorder or Any Anxiety Disorder to predict ATAPS caseness in the adjusted models. ATAPS cases had lower levels of physical disability even when controlling for Any Anxiety and Any Mood Disorder in the multivariable model. GP patients with depression or anxiety but with higher levels of physical disability might be differentially excluded from access to the ATAPS program, which is probably not intended in current ATAPS policy.

The Chronic Disease Management program is delivered by GPs. It was designed to improve prevention, early identification and best practice management of chronic illnesses that have been "present for at least six months including asthma, cancer, cardiovascular disease, diabetes, musculoskeletal conditions and stroke"; conditions associated with considerable physical and mental disability [31]. Identifying mental and physical disability could be potentially addressed by use of the SF-12 in addition to K-10 or DASS-21 with complementary referral pathways to ATAPS and Chronic Disease Management programs.

ATAPS cases misused more substances than controls. Further investigation of the nature and extent of substance misuse in ATAPS patients and appropriate treatment availability is warranted. 17% of cases did not meet diagnostic criteria for anxiety or depression, similar to 30% in the national ATAPS population [5]. Further investigation

of the symptoms these patients have and whether the ATAPS approved treatments are suitable for them is warranted.

Conclusions

The ATAPS program has made psychological treatments available to many more patients [2]. This study shows that GPs make referrals which are consistent with the ATAPS referral guidelines. In particular, GPs appropriately refer patients with low incomes, anxiety and depression, especially when associated with substantial mental disability. However, patients with higher levels of physical disability are less likely to be referred, even when they meet criteria for anxiety and depression, a result that warrants further exploration. GPs also refer to ATAPS those with greater substance misuse, which may have relevance for service delivery within the ATAPS program.

Since depression and anxiety are common in chronic physical illness and are generally responsive to psychological treatments, limitations on access of these patients for psychological treatment may not be optimal. The potential for using standardised instruments in primary care, combined with an integrated referral pathway to ATAPS and Chronic Disease Programs should be explored.

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Competing Interests

Professor Carter and Professor Startup have no competing interests in relation to this manuscript. Ms Maddock is employed as a Psychologist in the GP Access Psychology Service in Newcastle to provide ATAPS services.

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Discussion

An unmatched case-control design was used to investigate the characteristics of patients referred to ATAPS (Cases) versus patients who attended their GP for any reason but who had never been referred to ATAPS (Controls). This was to understand the patient characteristics presumptively used by GPs to select patients for referral to ATAPS, as well as to determine whether GPs are following the ATAPS mandated referral guidelines. A final aim was to produce an explanatory model using a minimum set of significant independent predictors of referral to ATAPS. Understanding the variables that differentiate cases from controls could be used to inform future clinical, policy and research considerations.

3.1 Limitations and Strengths

The study was adequately powered for the primary predictors but caution should be used in interpreting the specific estimates in the multivariable models. An unmatched case control design was appropriate for the study questions. The internal validity of studies of this type depends on the degree of bias (especially selection and information biases) and confounding. There may have been substantial selection bias for several reasons. ATAPS cases were recruited from within the ATAPS service and across the five GP Access networks, whilst controls were recruited from 20 participating GP practices in 4 of the 5 networks. There was no random selection of cases or controls and the underlying populations are very large compared to the number selected. There was a different time frame for sampling the cases and controls and a differential non-participation rate was possible.

Instruments were validated for Australian primary care, with the same administration for cases and controls. However, administration was by a single rater, not masked to group status. Study results were usually reported to the GP, which may have affected responses, however results were only communicated with consent, which may then limit response bias. There may unknown confounders not included in our study

Cases were recruited from across the full GP Access network, whilst controls were recruited from 20 participating GP practices in 4 of the 5 networks. This may have caused some ascertainment bias albeit with a reasonable coverage of practices. There was also a different time frame for sampling the cases and controls and a differential non-participation rate (case versus control) was also possible.

Measurement for most variables used well validated instruments for Australian primary care, administered by a single rater, who was however, not masked to case and control status. Participants were masked for specific study aims, which should have limited response bias, although a differential response is possible. Results were usually reported to the GP, which may have affected responses, however results were only communicated with consent, which may limit response bias.

Cases were approached for recruitment at their second clinical ATAPS session. At times, there was a considerable delay between the initial approach and interview in order to make a convenient time for the patient and allow for cancelled and rescheduled appointments. The acute symptoms of mental illness, psychological distress and psychological symptoms may have subsided substantially during this elapse of time and possible treatment effects, which may therefore have resulted in an underestimation of these characteristics in cases. This bias would tend to reduce the Odds Ratios and so would not affect the validity of the significant results reported.

A series of analyses were used that accounted for many important possible confounders, although there may be other confounders not included in the analyses. Given that 17% of cases did not have either anxiety or depression whilst 52% of controls did; GPs appear to have made judgements for referral to ATAPS which were influenced by factors additional to the simple presence of anxiety or depression. Cases did have certain characteristics that have been "selected" by GPs. There may also be other "filters" that affect

referral and ultimate arrival for an ATAPS appointment, including patient, family and social factors, information about which were unavailable in this study. There was no direct measure of GPs decision processes in making referrals to ATAPS, and so only inferences about the decisions made can be drawn from the pattern of patient characteristics that differentiate cases from controls. The external validity for populations outside of GP Access is unknown.

3.2 Characteristics of the Sample and External Validity (Generalisability)

The 2007 National Survey of Mental Health and Wellbeing (Slade, et al., 2009) reported a community prevalence of mental illness of 20%, which was a much lower rate than both cases and controls in our study. However, the frequency of Any Mood Disorder or Any Anxiety Disorder in controls was, consistent with Australian General Practice populations (Hickie, Davenport , Scott, et al., 2001; Wilhelm, et al., 2008), in which around 50% were found to have depression or anxiety. Moreover, the frequency of Any Mood Disorder or Any Anxiety Disorder in cases was consistent with national evaluations of ATAPS patients, 70% of whom presented with depression or anxiety or both. Cases were also similar to ATAPS national samples for other variables, for example, female gender (70%) and low annual household income (66%) (Pirkis, et al., 2010).

3.3 Main Findings

3.3.1 Primary aim

ATAPS referral required a current ICD-10 diagnosis of mental illness. The primary aim of this research was to determine the likelihood of cases versus controls of meeting criteria for common mental illness, Any Mood Disorder or Any Anxiety Disorder. Most cases met criteria for Any Mood Disorder (68.3%) and / or Any Anxiety Disorder (73%). Having Any Mood Disorder was the strongest categorical predictor of referral to (and attendance at) ATAPS, remaining significant after adjusting for all variables significant at the univariate level or other variables that were relevant based on previous literature. Any Anxiety Disorder

was also a significant predictor of referral to ATAPS, however it was not as strongly associated as Any Mood Disorder, despite Any Anxiety Disorder (73%) being more frequent amongst cases than Any Mood Disorder (68.3%).

Any Anxiety Disorder was a weaker predictor of referral to ATAPS and had a smaller odds ratio than Any Mood Disorder due to the relatively high frequency of Any Anxiety Disorder in controls (48.4%). The statistical significance of Any Anxiety Disorder as a predictor of referral was therefore also more likely to be affected by adjustment for confounders. While significant at the univariate level, Any Anxiety Disorder became non-significant when adjusted for demographics, mental disability and general psychological distress, co-morbid substance misuse and Any Mood Disorder, and Any Mood Disorder alone.

Possible explanations for the relatively high proportion of controls with Any Anxiety Disorder might include GP factors and patient factors. GPs might differentially under recognise anxiety. Whilst there have been considerable efforts made to educate GPs about the identification and treatment of mental disorders (Jorm, Christensen, & Griffiths, 2005), mental health training for GPs has focused on depression (much less on anxiety) and has been the main focus of educational institutions such as The Black Dog Institute (The Black Dog Institute, 2011) and Beyond Blue (Hickie, 2004).

GPs might also consider anxiety to be a chronic condition not requiring specific treatment (Kartal, Coskun, & Dilbaz, 2010) or may prefer to manage anxiety in primary care (Comino, et al., 2003), or consider anxiety to be transient or an "understandable" response to life circumstances that will resolve without intervention (Wilhelm, et al., 2008).

Possible patient factors might include patient non-recognition of anxiety, where they may not recognise the symptoms as being part of a psychological problem (Andrews, Issakidis, et al., 2001; Thompson, Hunt, & Issakidis, 2004) or there may be a lower perceived

need for care by people suffering anxiety (Andrews, Henderson, et al., 2001; Issakidis & Andrews, 2002). The 2007 NSMHWB showed that only 46% of people who met criteria for an anxiety disorder had a perceived need for care compared with 70% of those with affective disorders (Meadows & Burgess, 2009). Patients may also have a preference to manage anxiety themselves (Andrews, Henderson, et al., 2001; Andrews, Issakidis, et al., 2001; Issakidis & Andrews, 2002; Jorm & Griffiths, 2006; Oleson, Butterworth, & Leach, 2010).

Other limitations might include being embarrassed or afraid to seek professional help due to stigma (Issakidis & Andrews, 2002; ten Have et al., 2010; Thompson, et al., 2004, Tyrer, 2009), a lack awareness of available treatments (Roy-Byrne & Wagner, 2004), believe that treatment does not help (Andrews & Carter, 2001; Issakidis & Andrews, 2002; ten Have, et al., 2010; Thompson, et al., 2004), be concerned about "addictive" psychoactive medications (Tyrer, 2009) or be held back from help-seeking by the very symptoms of anxiety disorders themselves (Jorm & Griffiths, 2006). For example, patients referred to ATAPS must contact GP Access to arrange appointments, which may be more difficult for anxious patients (rather than for depressed patients).

A *post hoc* analysis showed that of the 31 patients in the control group, who met criteria for Any Anxiety Disorder, 45% were not receiving any mental health care. This is consistent with literature showing that GPs miss making a mental illness diagnosis in about half of cases that screen positively for symptoms of common mental illnesses (Bushnell, et al., 2004; Hickie, Davenport , Scott, et al., 2001; Kessler, Bennewith, Lewis, & Sharp, 2002, Mitchell, Rao & Vaze, 2011; Tyrer, 2009). Of the 55% with mental health treatment from the GP, 12.9% had attended their GP in the past month for mental health care and 41.9% were receiving either anti-depressant treatment or GP mental health care in the past month or both. This is consistent with GPs having some preference for the management of anxiety in primary care.

In conclusion it would appear that GPs are referring patients with Any Mood and Any Anxiety disorder in line with the mandate of the ATAPS guidelines. While many patients referred do have Any Anxiety Disorder, there are many who are not referred to ATAPS who also have Any Anxiety Disorder. There are many possible reasons for this and the explanation is likely to be a combination of factors, however it seems likely that the differential under recognition of anxiety or the consideration of anxiety as not requiring treatment by either GPs, patients or both might be the best explanations. It is also likely that GPs have some preference to treat anxiety in primary care, rather than refer to a psychologist. It would be timely to increase education and training of GPs specifically in the diagnosis and effective treatment of anxiety disorders, although it may not be practical to promote singular recognition of anxiety disorders because of the high co-morbidity between anxiety and depression (Tyrer, 2009).

3.3.2 Secondary aim 1

To make a referral to ATAPS, GPs were also required to provide at least one other clinical measure. Nationally, the K-10 and the DASS-21 are the most commonly used (Pirkis, et al., 2010). The secondary aim 1 was to determine the likelihood of cases versus controls having higher psychological distress scores (K10) and psychological symptoms scores (DASS-21).

The mean K10 and DASS-21 scores were both significantly higher for cases than controls. Both were significant predictors of referral after adjusting for most variables; however both became non-significant when adjusted for Any Mood Disorder or Mental Disability. For all adjusted models, there was a 6% increased likelihood of referral to ATAPS for each increased point on either scale. The association remained significant when adjusted for Demographics, Threatening Events, Physical Illness and Disability and Co-morbidity (Substance Misuse and Any Anxiety Disorder) and Treatment Variables (GP Mental Health

Visit in the past month and current Anti-depressant treatment). Both became non-significant when adjusted for Any Mood Disorder and Mental Disability.

This suggests that GPs could use these continuous measures of psychological distress or psychological symptoms, in addition to their categorical (clinical) diagnosis, in order to choose patients for referral. Either scale could be used by GPs; the K10 has the advantage of fewer items and shorter time to complete and score; whilst the DASS-21 has greater coverage of psychological symptoms and stress, and scores can also be summed to provide a continuous measure of general psychological distress. Scores in the mild-moderate or higher categories could be considered for referral. Choosing just one of these measures for use by GPs and in ATAPS services and for national evaluations would be more economical in terms of time and cost in administration, scoring and program evaluation.

3.3.3 Secondary aim 2

The secondary aim 2 was to develop a multivariable explanatory model of patient characteristics which best predict GP referral to (and attendance at) ATAPS. A forward step-wise regression model was performed to provide the most parsimonious explanation of factors predicting referral to ATAPS. Three independent variables: lower Mental Disability scores (indicating greater mental disability), a greater number of substances misused and greater Physical Disability scores (indicating less physical disability), were retained in the model and predicted 45% of the variance. Cases had greater mental disability, misused a greater number of substances and had less physical disability compared with controls. The -2 log likelihood for the model was 124.04, which indicated the model was a good fit.

Mental disability had substantial effects in all adjusted models. Mental disability for cases was in the moderate range (30-40) and controls in the mild range (40-50). For every one unit increase in mental disability scores (representing less mental disability), cases were 10% less likely to be referred. In terms of substance use, cases were 63% more likely to be

referred for each extra substance misused. Conversely, cases had lower levels of physical disability than controls (albeit both in the mild range 40-50), which also affected all adjusted models. For each unit increase in physical disability, cases were 7% less likely to be referred to ATAPS. The possible reasons that these variables were significant will be discussed here; clinical, policy and research implications will be discussed later.

GPs appear to be differentially selecting patients with greater substance misuse and greater mental disability, which seems appropriate. The ATAPS guidelines state that substance misuse is a reason for referral to ATAPS (Australian Government Department of Health and Aging, 2010). The local clinical practice at GP Access Psychology Service is to assess referrals at intake. When a patient is referred with substance misuse, and where it is a long -term condition unlikely to respond to short-term care, patients are referred to specialist drug and alcohol or dual diagnosis services. Nevertheless, in the current study, a greater number of substances currently misused was associated with being a case in the four adjusted models and was a significant independent predictor of caseness in the multivariable model (OR 1.63, CI 1.08, 2.46).

Lifetime misuse of substances was quite high in cases and controls. Only lifetime opioid misuse was significantly different, with a higher percentage of cases (39.7%) having used opioids compared with a lower percentage (18.8%) of controls. In the past 3 months, there were, however, greater differences in substance misuse. A greater percentage of cases (compared with controls) misused cannabis (17.5% versus 3.1%), amphetamines (11.1% versus 0%) and sedatives (22.2% versus 12.5%). This may indicate an attempt to "self-medicate" symptoms of mental illness or may alternatively contribute to their higher levels of psychological symptoms or mental disability (Leeies, Pagura, Sareen, & Bolton, 2010).

Substance misuse is highly co-morbid with other mental disorders in community populations, with 1 in 5 who have substance misuse also having an affective disorder and 1 in

3 with substance misuse having a co-morbid anxiety disorder (Teeson, et al., 2009). It makes sense clinically that GPs may have some knowledge of patients' substance misuse, even if they are not specifically screening for substance misuse with standardised instruments. GPs may consider substance misuse to be difficult to separate from co-morbid mental disorders, both of which may be expected to benefit from psychological care. Alternatively, GPs may be unaware of the substance misuse and make referrals solely based on the identification of mental illness, which may be being exacerbated by the substance misuse.

It is important that Allied Health Professionals who provide ATAPS services identify substance misuse so that appropriate psychological interventions can be offered or referral to specialist services can be undertaken accordingly. It seems important that substance misuse is not overlooked in favour of addressing affective or anxiety symptoms (Teeson, et al., 2009) and so screening or a diagnostic approach may need to be incorporated into the ATAPS guidelines. It is not clear if patients with substantial current substance misuse are appropriate for referral to ATAPS or not, though substance misuse may be a more important reason for referral to ATAPS than previously thought and this is a question worth further study and refinement of ATAPS policy.

In terms of physical disability, it seems that GPs are less likely to refer those with greater physical disability, which might not be optimal for several reasons. Firstly, there is a strong association between physical illnesses, disability, mental illness and perceived need for care (Peverler, Carson, & Riodin, 2002; Simon & Von Korff, 2006). In the 2007 NSMHWB, 38.3% of women who met criteria for a mental disorder in the 12 months prior to the survey also had a chronic physical condition, which was associated with greater physical disability. Chronic physical conditions included in the National Health Priority Area are Diabetes, Asthma, Coronary Heart Disease, Stroke, Cancer and Arthritis (Australian Institute

of Health and Welfare, 2011). Mental disorders were also more frequent in those with chronic physical conditions (Teeson, et al., 2009).

There are several additional possible explanations for this pattern of reduced likelihood of GP referral of those with higher physical disability. GPs may not easily recognise or prioritise mental illness in the presence of physical disability (Simon & Von Korff, 2006; Tyrer, 2009), or feel that physically disabled patients might reject psychological treatments (Jorm & Griffiths, 2006), or might believe psychological treatment is ineffective with higher physical disability. They may also consider that physical disorders take treatment priority over mental disorders and psychological distress (Tyrer, 2009). If this is the case, it is important for GPs to understand that physical and mental disorders are not mutually exclusive and response to psychological treatment is often good (Peverler, et al., 2002).

For patients, acceptance of referral to ATAPS may be poor because it is not obvious to them to seek mental health care when symptoms are co-morbid with or subsequent to physical illness (Mausbach et al., 2011; Parslow & Jorm, 2001). However, the 1997 NSMHWB found that physical disability (as measured by the PCS on the SF-12) was associated with community subjects seeking mental health specialist services (Andrews, Henderson, et al., 2001). It may be that, while GPs do not prioritise mental health care for patients with greater physical disability, patients themselves may be seeking referral for psychological care. The presence of physical disability and the patient's need for care should therefore be taken into account when determining referral to ATAPS.

3.4 Other Factors Affecting Referral Decisions

There may be other factors that affect GP referral decisions other than simply the presence of common mental illness, low annual household income, psychological distress, psychological symptoms, mental disability or substance misuse. It would be expected that GPs had direct knowledge of at least some of these factors and it is reasonable to speculate

that GPs actively used this information in making referrals to ATAPS in keeping with the guidelines. However, additional variables have been identified that distinguished cases versus controls, and I can speculate about GPs selection of patients for referral.

3.4.1 GP mental health care

General Practice was the most frequent recently attended health service for mental health care used by both cases (41.3%) and controls (21.9%). However, GP visits for any reason in the previous 3 months were significantly more frequent for cases. The majority of cases (71.4%) had attended their GP up to a maximum of 6 visits whilst half of the control (53.1%) group did not attend their GP for any reason (excluding the visit at the time of recruitment). Presumably some visits would have been for mental health care, such as treatment of depression or anxiety including review of anti-depressant treatment. It is unknown how many of these GP visits were for mental health reasons, though, for cases, at least one of the visits would likely have been to obtain a Mental Health Treatment Plan (or referral to ATAPS services) given that case recruitment was close to the time of being referred.

The fact that cases had multiple attendances at a GP may have influenced GP referral decisions. It could have allowed the GP to develop a longitudinal picture of the patient's distress and mental health symptoms informing the referral. Alternatively, initial attendances may have been for physical symptoms or physical disability. In the first instances, GP may have focused on treating the physical complaint or disability, as suggested by results in secondary aim 2. However, it is possible that GPs later made a referral for psychological care as the physical symptoms subsided, unmasking mental health symptoms, psychological distress or mental disability. GPs may also have become aware of physical and psychological co-morbidity over time. Further research should be conducted to establish whether patients with physical disability, who are not initially referred for psychological care even in the

presence of psychological disability and distress, are referred later in the course of their treatment.

3.4.2 Threatening events

On average, cases (M = 2.35) experienced significantly more threatening events in the previous 6 months compared with controls (M = 1.34). The events which were more likely to have occurred in cases included: experiencing a serious illness, injury or an assault of a close relative, being unemployed or seeking work unsuccessfully for more than one month, experiencing a major financial crisis and having problems with the police or a court appearance. This result was consistent with research that has demonstrated a greater number of stressful life events occur shortly before the onset of depression (Paykel, Prusoff, & Myers, 1975).

These events may have influenced GP decisions to refer to ATAPS. On the one hand, GPs may be aware of these issues and feel they have more psychological-social rather than bio-medical components. For example, where a patient presents with concerns about the injury, illness or assault of a close relative or friend, there is most likely no physical problem to treat in the patient. Whereas witnessing the serious illness or injury to another person is associated with mental disorders such as Posttraumatic Stress Disorder, for which depression and other symptoms of anxiety are commonly co-morbid (American Psychiatric Association (APA), 2000; Campbell, et al., 2007). In terms of unemployment, results from the 1997 NSMHWB showed that unemployed people were more likely than employed people to have depression or anxiety or co-morbid depression and anxiety (Comino, et al., 2003). This suggests that where the GP is not aware of these events, they may refer patients because of higher incidence of psychological distress and symptoms of mental illness associated with such events.

3.4.3 Location of referring GP

There was a significant difference between cases and controls in terms of the location of their referring GPs (GP network). Case's GPs were more likely to be geographically closer to the Newcastle ATAPS site. It may be that GPs are more likely to refer patients who are geographically proximal to the ATAPS service in Newcastle. In this case, difficulty accessing transport and living some distance from Newcastle may have been a deterrent to referral for GPs practicing in the more distal areas of the Division.

However, the differences between the GP network on cases and controls may also have been an artefact of the sampling. There were no GPs from the Maitland network who were willing to participate in the recruitment of controls. This meant that more controls had to be recruited from volunteering GPs who happened to be practising in the West/Northlakes areas. Cases were only recruited from the Newcastle office.

Research into the health impacts on urban development has suggested a relationship between access to healthcare, urban location and access to transport (Capon, 2007). It would be helpful for clinical services to be available in multiple locations across the network to improve service access for those locations more removed from the Newcastle area.

3.4.4 Severity of symptoms

The ATAPS guidelines also stipulated that patients who access ATAPS treatment should have "mild to moderate" (rather than severe) mental disorders. The guidelines have not defined or operationalised how disorders may be determined to be "mild to moderate". Whilst guidelines have not been established to determine severity there may be some alternatives; the K10, the DASS-21 and the SF-12 each have severity scoring cut points.

The K10 classified 46.7% of cases as "moderate" with 28.6% in the "severe range". The DASS-21 depression subscale showed that only 28.5% of cases were in the "mild to moderate" range compared with 38.1% of cases in the "severe to extremely severe range".

The DASS-21 anxiety subscale showed that 17.5% were in the "mild to moderate range" compared with 39.7% of cases in the "severe to extremely severe range". The DASS-21 stress subscales showed that fewer cases, 20.6%, were in the "mild-moderate" range whilst 42.9% were in the "severe to extremely severe" range. The SF-12 MCS showed 41.2% of cases were in the "mild to moderate" disability category compared with 44.4% of cases in the "severe" category.

Overall, there were a higher proportion of cases that had severe, rather than mild-moderate severity ratings for depression, anxiety, stress and mental disability. The K10 category had a substantial proportion of cases in the severe range. This raises a number of questions for further investigation. How should "mild to moderate" mental illness best be operationalised in order to determine the number of ATAPS cases in the mild to moderate versus severe range? Second, what are the ATAPS patient characteristics associated with the mild to moderate compared with severe mental illness categories? Finally, is ATAPS the most effective and appropriate service for those in the severe mental illness category and, if not, then where should this patient group be referred?

3.5 Future Directions

3.5.1 Clinical Issues

Short and informative standardised instruments have been successfully utilised in primary care in Australia to detect common mental illnesses and problematic drug and alcohol use (Crawford, Cayley, Lovibond, Wilson, & Hartley, 2011; Hickie, Davenport , Naismith, & Scott, 2001). This study has highlighted the potential utility of continuous measures like the K10 or DASS-21 in helping GPs make referral decisions to ATAPS. Similarly, the SF-12 is a short instrument that could feasibly be used in General Practice settings to provide GPs with information about mental and physical disability levels, which might ultimately be used to improve rates of detection of common mental illnesses and

referral to detect anxiety disorders (Sanderson, Andrews, & Jelsma, 2001) and for those who have physical disability (Sanderson & Andrews, 2002).

The U.S. Preventive Services Task Force has recommended screening adults for depression in primary care, but only when professional supports are in place to assure accurate diagnosis, effective treatment and follow-up (O'Connor, Whitlock, Beil, & Gaynes, 2009). The availability, general acceptability and effectiveness of the ATAPS program (Pirkis, et al., 2011) means that this level of support is now widely available especially to the financially disadvantaged, and so the development of effective screening for common mental illness, distress and disability at the primary care level could become a reality.

3.5.2 Policy implications for the ATAPS service

To the extent that results of this study are generalisable to the national population using ATAPS, three issues may have an impact on the policy development and review of the ATAPS program. These three issues are the lower referral rate of patients with higher levels of physical disability; screening for mental illness, psychological distress and psychological disability in Chronic Disease; and the exploration of symptoms and diagnoses of those attending ATAPS who do not primarily present with depression or anxiety.

Controls were more likely to have higher levels of physical disability while also demonstrating symptoms of depression and anxiety. Patients with depression or anxiety but with higher levels of physical disability might be differentially excluded from access to the ATAPS program, which is probably not intended in the current ATAPS policy.

The Chronic Disease Management program is currently delivered by General Practices and supported by GP Access and other Divisions of General Practice. It was designed to improve prevention, early identification and best practice management of chronic illnesses that have been “present for at least six months including but not limited to Asthma, Cancer, Cardiovascular disease, Diabetes Mellitus, Musculoskeletal conditions and Stroke”;

As chronic conditions are associated with considerable mental and physical disability, disability may be used as a possible proxy for chronic illness (Department of Health and Aging, 2011). Therefore, we could screen for disability plus symptoms of mental illness in patients managed under the Chronic Disease Management program to improve clinical management and treatment of this population and to develop complementary referral pathways between ATAPS and Chronic Disease Management programs via General Practice. Identifying mental and physical disability could be potentially addressed by requiring the use of the SF-12 as well as the K-10 or the DASS-21 by GPs or practice nurses with patients cared for under the Chronic Disease Management programs.

In our study, cases misused a greater number of substances than controls. It might be helpful to better understand the nature and extent of substance misuse in ATAPS patients so treatment or appropriate referral to specialist drug and alcohol or dual diagnosis services can be tailored to meet patient's needs. There are no drug and alcohol services specific to primary care and outpatient services in the GP Access area are delivered through the state funded Hunter New England Health Service. There may be a case for funding primary care specific drug and alcohol programs, perhaps as an extension of the existing ATAPS services.

There were 18% of cases that did not meet diagnostic criteria for depression or anxiety, similar to 30% in the national ATAPS population. It is worth exploring what symptoms and disorders these patients do have and whether the approved ATAPS treatments (Psycho-education including Motivational Interviewing, Cognitive and Behavioural Interventions, Relaxation Strategies, Skills training, Interpersonal Therapy and Narrative Therapeutic Strategy (Australian Government Department of Health and Aging, 2010) are suitable for them.

3.5.3 Research directions

There are many possibilities for further research. This includes concurrent validity studies, intervention studies and longitudinal studies.

It would be helpful to define the referral criteria of "mild to moderate" mental illness so research could be conducted into whether there are different characteristics in ATAPS patients who present with severe versus mild to moderate symptoms of mental disorders or disability and then assess if ATAPS services are the most appropriate service for the severely disordered or disabled population.

A study could be conducted to identify the characteristics of patients who have been referred to ATAPS but who did not turn up.

Research could be conducted to ascertain the primary presenting problems of the minority of ATAPS patients who do not present with anxiety or depression and whether ATAPS services meet the needs of these patients.

Qualitative and quantitative research could involve interviewing GPs (i.e., collecting GP-specific information) to improve understanding of their ATAPS referral decisions.

A concurrent validity study could help to compare the K10 and DASS instruments to determine whether one instrument could best provide adequate clinical information and hence reduce administration costs and time in both general practice and ATAPS settings.

An intervention study could be conducted to determine whether screening in General Practice changes GP referral behaviour. We could assess whether screening in General Practice for common mental disorders (Any Mood Disorder, Any Anxiety Disorder and Substance Use Disorders) and mental disability improves GP detection of anxiety, mental disability and psychological distress (even in the presence of physical disability). The intervention could involve the education of GPs in identifying psychological distress and anxiety and the benefit of referring those patients to psychological care.

Finally, a longitudinal study could shed light on whether GPs do eventually refer patients with physical disability or chronic physical illness who also have psychological distress and disability for psychological care later in the course of treatment.

3.6 Conclusion

The ATAPS program has now made psychological treatments available to many more patients. This study shows that GPs make referrals which are largely consistent with the ATAPS referral guidelines. In particular, GPs appropriately refer patients with low incomes, anxiety and depression, especially when associated with higher levels of mental disability. However, patients with higher levels of physical disability are less likely to be referred, even when they meet criteria for anxiety and depression, a result that warrants further exploration. GPs also refer to ATAPS those with greater substance misuse, which may have relevance for service delivery within the ATAPS program.

Since depression and anxiety are common in chronic physical illness and are generally responsive to psychological treatments, limitations on access of these patients for psychological treatment may not be optimal and is worth further consideration. The future potential for the use of standardised instruments in the clinical setting of primary care, combined with an integrated referral pathway to ATAPS and Chronic Disease programs should be explored.

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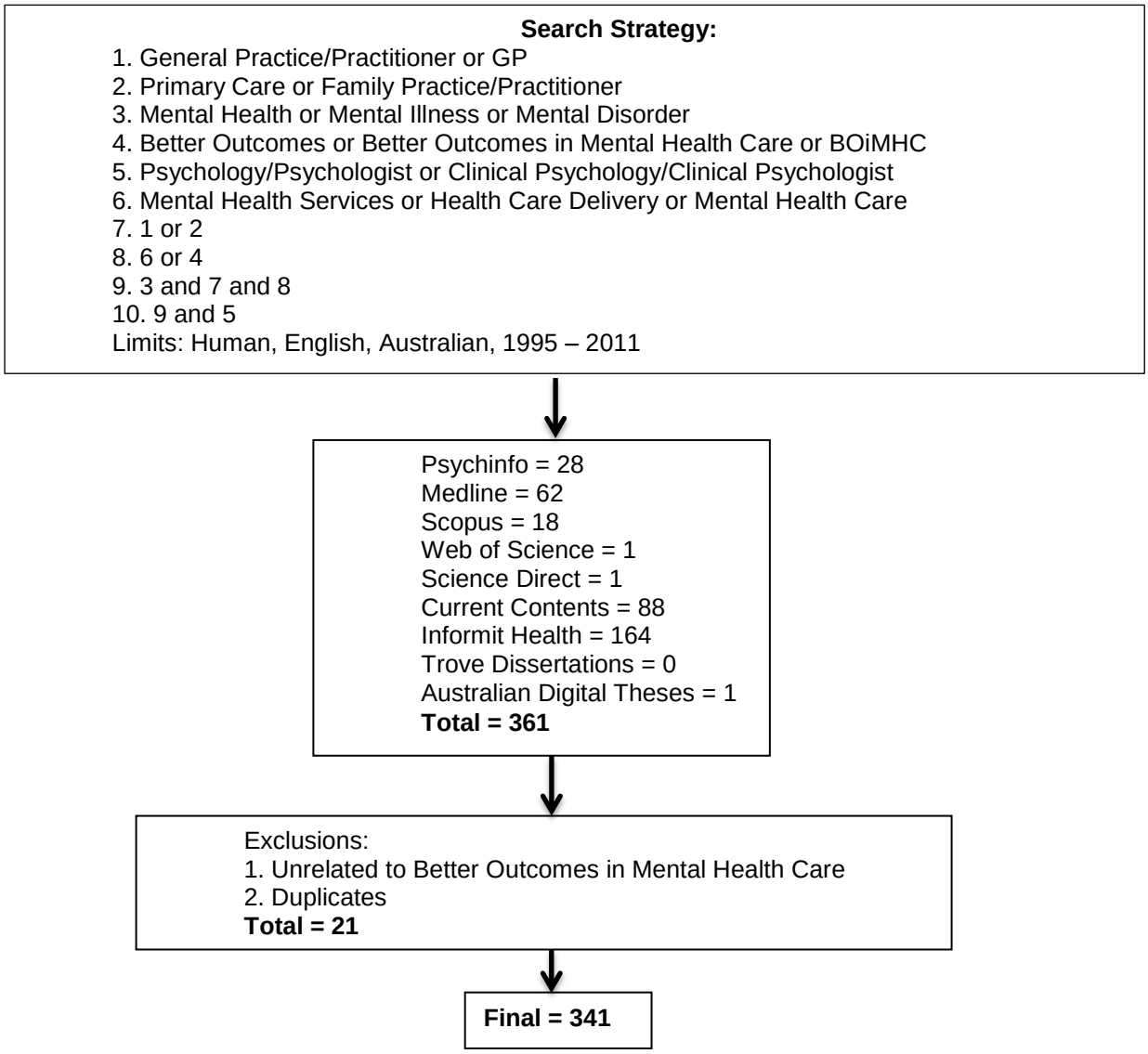
Glossary

ADT	Anti-Depressant Treatment
AHP	Allied Health Professional
ATAPS	Access to Allied Psychological Services
BEACH	Bettering the Evaluation and Care of Health studies (annual since 1998)
BOIMHC	Better Outcomes in Mental Health Care
BAMHC	Better Access in Mental Health Care
CBT	Cognitive and Behaviour Therapy
CIDI	Composite International Diagnostic Schedule
DSM	Diagnostic and Statistical Manual (Versions II, IV & IV Text Revision: American Psychiatric Association)
ECA	Epidemiological Catchment Area Program (United States 1981)
GHQ	General Health Questionnaire
GP	General Practitioner
GP Access	Trading name of the Hunter Urban Division of General Practice
ICD-10	International Classification of Diseases (Version 10: World Health Organisation)
K10	Kessler 10 (measure of psychological distress)
MDS	Minimum Data Set (collected by the University of Melbourne)
MHTP	Mental Health Treatment Plan
NCS	National Co-morbidity Survey (United States 1994)
NPMS	National Psychiatric Morbidity Surveys of Great Britain
NSMHWB	National Survey of Mental Health and Wellbeing (studies in 1997 and 2007)
SF-12	Short Form version 12
SPHERE	Somatic and Psychological Health Report (SPHERE: National Depression Project)
WHO	World Health Organisation

Appendix 2: Method

2.1 Literature Review Strategy

A systematic literature review was conducted to identify material relating to the BOiMHC program. Databases searched included: Psychinfo, Medline, Scopus, Current Contents, Informit Health, Trove Dissertations and Australian Digital Theses. The results are shown in Figure 3.



A literature review of these articles is located in Appendix 4. Articles resulting from the structured literature review are included as a sub table before other articles relevant to the Better Outcomes in Mental Health program located using other methods.

2.2 Research Setting

GP Access (1 of 120 national Divisions of General Practice) covers a population of 447,254 including Newcastle, Lake Macquarie, Lower Hunter and Lower Port Stephens local government areas. GP Access had a Newcastle, Toronto (Lake Macquarie) and Maitland (Lower Hunter) office, including five GP networks: Newcastle, Newcastle West, Maitland, North / Westlake's and Eastlakes taking in the Local Government Areas of Lake Macquarie (population 183,138), Newcastle / Newcastle West (141,752), Port Stephens (60,484), Maitland (61,880); the population pool size was approximately 447,254.

2.3 Research Design

This study used a case – control design. The data was collected from two independent groups of participants. Cases were recruited from the Newcastle office of GP Access Psychology Service and controls were recruited from GP practices in 4 of the 5 network areas within the GP Access Divisional area: North / Westlakes, Eastlakes, Newcastle and Newcastle West (excluding Maitland).

After a power calculation we estimated 30% of controls would have an International Classification of Disease version 10 (World Health Organisation (WHO), 2004) mental illness diagnosis of and so for cases the estimated relative risk of 2.8 with power of 0.8 and alpha = < .05 required around 64 cases and 64 controls.

2.4 Ethics Approval

The research methodology was peer reviewed and approved by the University of Newcastle, Faculty of Science and Information Technology, School of Psychology Ethics Methodology Review Sub-Committee. The Hunter New England Research Ethics Committee approved the project, HNEREC reference: 08/12/17/2.09, on the 23/12/2008 (see appendix 8). A written report of each participant's results was provided to GPs, after participant consent.

2.5 Participants

2.5.1 Cases

Case Sample

Cases (*n* = 63) were patients aged 18-65 years who attended GP Access for ATAPS in the 14 months, January 2009 to March 2010 and had been referred by GPs across all 5 networks: Eastlakes (n = 6), West/Northlakes (n = 7), Newcastle West (n = 29), Newcastle (n = 16) and Maitland (n = 5). It was not possible to enumerate the number of participants initially approached due to the administrative structure of the service.

Recruitment

Cases were recruited from consecutive patients attending the ATAPS Newcastle site. Patients were approached in person at their second clinical ATAPS appointment by usual clinic reception staff and were provided an information sheet explaining the research being conducted by a researcher from the University of Newcastle, who was also a Psychologist working at GP Access Psychology Service. The patient's treating psychologist could rule the patient out of recruitment at the second appointment if they felt the recruitment procedure was not be clinically appropriate.

2.5.2 Controls

Control Sample

Controls (*n* = 64) were aged 18-65 years and were recruited from consecutive patients of participating GPs, between January 2010 and March 2010. The controls were attending their GP for any reason and had never been referred to the GP Access ATAPS program.

Recruitment

Controls were recruited from 20 GPs in 5 General Practices from 4 of the 5 networks: Eastlakes (n = 15), Newcastle (n = 12), Newcastle West (n = 12) and West/Northlakes (n = 25). Recruitment of controls was spread across multiple days of the week. It was not possible

to enumerate the number of participants initially approached to inform them about the study, due to differences in the administrative procedures at the General Practices. Only one control participant declined to continue with the interview after initially electing to participate. Initially, an advertisement to recruit GP practices to the study was sent through the GP Access newsletter to GPs twice in June and then August 2009, to which there was no response (see appendix # for a copy of the advertisement). In January 2010, a random sample of 30 GPs, out of a possible 420, representing each of the five networks was selected to be directly sent information about the study with an invitation to participate (see appendix # for a copy of the letter and information sent). GPs were advised that the General Practice (control) sample would be obtained by sampling a maximum of 4 patients of each individual GP and that sampling would stop once the quota for each GP had been reached in order to yield a total sample of 64 controls.

Many of the practices had multiple GPs who then consented to take part; therefore sometimes less than four participants were recruited for each GP. Unfortunately there were no GPs in the Maitland network who were prepared to take part in the study and so extra GPs were recruited from the Newcastle and West/Northlakes networks as they volunteered. As a result, 21 GPs took part: 4 from the Eastlakes network, 5 from Newcastle, 3 from Newcastle West and 8 from West/Northlakes.

Procedure

Cases

Cases were asked if they were willing to be contacted by the researcher to discuss potential participation. At the phone contact participants were given the opportunity to ask questions and were provided with any additional information they requested. Interviews were conducted at the GP Access Psychology Service, Newcastle office. Participants had the option to consent for results to be reported to their GP and their treating psychologist; five

cases declined to have results reported to their GP. All measures were completed with the researcher who administered all instruments. Responses were reviewed and issues of clinical risk were identified at the time of the interview. A report was generated following the interview and supplied to the relevant GP and treating Psychologist. Any arising issues were managed between the treating Psychologist and GP.

Controls

Upon registering their arrival at the General Practice, consecutive patients between the ages of 18 – 65 years attending their GP for any reason were given an information sheet about the research and were asked if they would be interested in discussing the study further with the researcher, who was present at the time of recruitment. If controls consented to receiving further information, they were seen in a private room and given the opportunity to ask questions before consenting to participate. All participants elected to complete the interviews at the General Practice on the same day and the interview was conducted around the time of their appointment with their GP. One participant declined to participate after initially electing to take part.

With the patient's consent, results were sent to their GP; one control declined to have results reported to their GP. Any identified risk was addressed with the participant and any urgent results were provided to the GP immediately. All other measures were scored following the interview at which time a report was generated and supplied to the relevant GP. The researcher was available to clarify any findings that may have arisen from the report but did not make clinical recommendations.

For both case and control groups, participant's names and an identifying code and interview data were entered into separate password protected Microsoft Excel databases. De-identified interview data were later merged into a Predictive Analytic Software (PASW

statistics 18, copyright 1993 – 2007 Polar Engineering and Consulting, IBM, New York, USA, http://www.winwrap.com) file for analyses.

2.6 Instruments and Variables Used in the Analysis

The criterion variable was the case or control groups. The predictor variables included categorical and continuous variables. A copy of all instruments is included in appendix 7.

2.6.1 Research questionnaire: socio-demographic characteristics, service use and GP treatment variables

Instrument

The instrument was designed by the researcher to record socio-demographic, service use and GP treatment variables.

Variables

Variables included: Gender, Relationship Status, Education Level, Employment Status, Level of Income, Mental Health Service Use, GP attendance, Age and Referring GP Practice location (GP Network).

Categorical coding.

Categorical variables were coded as follows.

- Gender (Male, Female)
- Relationship Status was collapsed from 4 variables (Never Married, Married or De Facto, Separated or Divorced and Widowed) to 3 variables (Never Married, Married or De Facto, Separated or Divorced or Widowed)
- Education was coded as 4 variables (Still at School, Year 10 or equivalent, Year 12 or TAFE/TECH, Tertiary)
- Employment was coded as 3 variables (employed full or part time, unemployed, other benefits or pension)
- Annual household income was coded as 3 variables (<$50,000, $50,000 - $99,000, >$100,000).
- Mental health service use in the past three months included 6 variables (public inpatient, public outpatient, private inpatient, private outpatient, GP visit for

mental health reasons and other mental health care). The GP visit for controls at the time of recruitment and testing was excluded from the count.

- Number of GP attendances for any reason had 5 variables (none, once, 2-3, 4-6, > 6)
- GP Network was the geographical location of treating GP from the 5 GP networks within the geographical boundary of GP Access. This data was determined by matching the treating GP to the network area (not recorded on any instrument but identified when linking coding participant data with their treating GP). The 5 networks were collapsed to two variables; "*Newcastle"* (including Newcastle and Newcastle West networks) and "*Other"* (including Maitland, North / Westlake's and Eastlakes).

Continuous coding.

The only continuous variable was participant Age.

2.6.2 List of Threatening Events

Instrument

The Short List of Threatening Life Experiences (TLE) (Brugha, Bebbington, Tennant, & Hurry, 1985) was a public domain self-report list of 12 stressful life events in the previous 6 months (Beautrais, 2002). It had good reliability and validity and encompassed many of the individual events found on longer lists but had the advantage of taking less time to administer (Brugha, et al., 1985). The scale had been normed on psychiatric clinical samples (Brugha & Cragg, 1990).

Variables

Variables included 12 items that could be endorsed as having occurred in the past 6 months (Brugha, et al., 1985).

Categorical coding.

The 12 items were scored as categorical binary variables (yes or no).

Continuous coding.

The total number of items endorsed as having occurred ("yes") was summed to provide a variable "number of LTE items endorsed".

2.6.3 Short-Form 12

Instrument

The 12 item Short-Form Health Survey version 2 (SF-12 v2) (Ware, Kosinski, & Keller, 1996) was a 12 question measure of physical and mental disability. It was initially developed as a 36 item instrument and has since been distilled to a 12 item version, while retaining strong psychometric properties. The 12 items accounted for more than 90% of the variance in the physical component summary (PCS) and mental component summary (MCS) scores. The PCS measured physical functioning, physical impact on role and bodily pain, and the MCS measured mental health, emotional impact on role and social functioning. The other items measured general health and vitality (Ware, et al., 1996). The SF-12 has been used extensively in research concerning the impact of mental illness on wellbeing in Australian populations (See for example: Andrews, Henderson, & Hall, 2001; Sanderson & Andrews, 2002; Sanderson, Andrews, & Jelsma, 2001).

Variables

Variables were 12 items scored in a number of ways. Items 1, 2, 3, 8, 9, 10, 11 and 12 were scored on various Likert scales. Items 4, 5, 6 and 7 were binary (no, yes).

Categorical coding.

The Short-Form-12 continuous scores, mental component score and physical component score, were collapsed into 4 categories: No disability, mild, moderate and severe disability (Ware, et al., 1996).

Continuous coding.

Each variable was scored as a continuous variable using the brief rounded integer scorer [14], yielding mean scores of 50 (SD 10). The SF-12 Mental Component Score ranged between 23 and 73. The Physical Component Score ranged between 3 and 70 for physical disability. Lower scores indicated greater disability (Ware, et al., 1996).

2.6.4 DASS-21

Instrument

The Depression, Anxiety and Stress Scale 21 item version (DASS-21) (Lovibond & Lovibond, 1995; Lovibond & Lovibond, 1995) was a self-report instrument that used three scales of seven items to assess negative emotional states, depression, anxiety and stress. The DASS-21 measured symptom severity as a dimension with the assumption that negative emotions become clinically significant as a matter of increasing degree and so the DASS-21does not produce diagnostic categories. The DASS-21 is a shorter version of the original DASS-42 items, however preferable because it was faster to administer and had equivalent, if not better, factor structure, internal reliability and construct validity in measuring core symptoms characteristic of depression, anxiety and stress in both clinical and non-clinical populations (Antony, Bieling, Cox, Enns, & Swinson, 1998; Henry & Crawford, 2005). The DASS-21 was an existing minimum clinical data set collection requirement for the ATAPS program.

Variables

The DASS-21 items are scored on a likert scale with four anchor points: did not apply to me at all (0); applied to me to some degree, or some of the time (1); applied to me to a considerable degree, or a good part of time (2); applied to me very much, or most of the time (3).

Categorical coding.

DASS-21 Depression, Anxiety and Stress scores were collapsed and grouped into 5 categories: Normal, mild, moderate, severe and extremely severe (Lovibond & Lovibond, 1995).

Continuous coding.

The DASS-21 was scored continuously on three domains representing self-reported symptom levels of depression, anxiety and stress and yielded three separate continuous scales. The score range for each of the 3 scales was between 0 – 21. The DASS-21 scale scores were added together to give a composite score of negative affect (Lovibond & Lovibond, 1995) also referred to as "General Psychological Distress" (Crawford, Cayley, Lovibond, Wilson, & Hartley, 2011) and ranged between 0 - 62 (Henry & Crawford, 2005).

2.6.5 K10

Instrument

The Kessler 10 (K10) (Kessler et al., 2002) was a self-report 10-item population health measure used to identify and measure symptom severity associated with high prevalence DSM-IV Axis I disorders. Psychometric validation occurred in the Australian National Survey of Mental Health and Wellbeing (n = 10641), showing that the K10 is a valid instrument for use in Australian contexts. The K10 demonstrates high precision in identifying mild to severe DSM-IV disorders (Furukawa, Kessler, Slade, & Andrews, 2003) in the 90^{th} – 99^{th} percentile and shows good reliability across sociodemographic differences (Kessler, et al., 2002). Results are ideally interpreted within a population context; however the K10 is still considered an appropriate measure for individuals in clinical research. The K10 was also an existing clinical requirement used in collection of the minimum data set for ATAPS programs and took only a few minutes to complete.

Variables

The K10 was scored on a likert scale of five anchor points: none of the time (1); a little of the time (2); some of the time (3); most of the time (4); all of the time (5). Three established cut-off scores could also be used to determine categories of "high", "moderate" and "low" distress and also yield a probability likelihood of having an anxiety or depressive disorder or ever having reported a suicide attempt.

Categorical coding.

Three K10 categories of psychological distress (low, moderate and high) were collapsed from the continuous total score (Kessler, et al., 2002).

Continuous coding.

All 10 items were added to provide an overall continuous score of general psychological distress ranging between 10 and 50 (Kessler, et al., 2002).

2.6.6 Alcohol and Other Substance Use: World Health Organisation - Alcohol Smoking and Substance Involvement Screening Test (WHO-ASSIST)

Instrument

Alcohol and other substance misuse patterns were measured using the World Health Organisation Alcohol, Smoking and Substance Involvement Screening Test version 3 (WHO – ASSIST V3.0) (Humeniuk & Ali, 2006). The ASSIST was an interviewer administered 8 question instrument developed to screen for misuse of Tobacco, Alcohol, Cannabis, Cocaine, Amphetamine-type stimulants, Sedatives, Hallucinogens, Inhalants, Opioids and 'Other Drugs' in primary care settings (Humeniuk & Ali, 2006). It had good concurrent, construct, predictive and discriminant validity with most established substance use screeners and diagnostic instruments (including the alcohol and other drug modules of the M.I.N.I plus, described later) and good test-retest reliability and internal consistency (Cronbach's alpha > .80). It had also been normed in an Australian General Practice population (Humeniuk & Ali, 2006). The ASSIST took around 10 minutes to administer.

Variables

Question 1 identified if a substance had ever been used. Responses were binary (yes / no). Only substances endorsed at this question were asked about during the rest of the instrument. If no substances were endorsed, the interview was stopped.

Question 2 enquired about the frequency of substance use during the past three months. Responses were rated on a likert scale: Never, Once or Twice, Monthly, Weekly or Daily or Almost Daily. If a substance endorsed in question 1 was not used in the past 3 months, then questions 3, 4 and 5 were skipped and questions 6, 7 and 8 were answered.

Question 3 concerned compulsion to use substances. Question 4 addressed personal health, social, financial or legal problems. Question 5 asked about failure to meet role obligations. Responses for questions 3, 4 and 5 were all rated on the same likert scale found in Question 2, see the above paragraph.

Questions 6 asked about whether there had ever been concern expressed about the use of endorsed substances during a lifetime. Question 7 addressed any difficulties experienced in cutting down the use of a substance or quitting. Question 8 asked if any drug had been used by injection. Responses for questions 6, 7 and 8 were rated on a 3 point likert scale. The anchor points were "No, never", "Yes, in the past 3 months" and "Yes, but not in the past 3 months" (Humeniuk & Ali, 2006).

Categorical coding

Data from Question 1 provided the number of cases and controls that had used substances over a lifetime. Data from Question 2 provided the number of cases and controls currently using substances (past 3 months).

Continuous coding

A continuous score was calculated for the total number of substances currently being used (past 3 months).

2.6.7 Suicide Risk

Instrument

Four questions from the General Health Questionnaire 28 item (GHQ-28) (Goldberg & Hillier, 1979) assessed suicidal ideation and were validated in an Australian population

against the well-established Beck Scale for Suicide Ideation (SSI) (Watson, Goldney, Fisher, & Merritt, 2001), a 21 item rating scale with strong reliability and validity for assessing current suicidal intent (Beck, Kovacs, & Weissman, 1979). The validation study established that the four GHQ questions showed a significant, large effect size when correlated with the SIS (Watson, et al., 2001). There were also six questions used from the M.I.N.I suicide module that specifically asked about suicide and self- harm behaviour in the past month.

Variables

Suicide risk was identified using 4 items from the General Health Questionnaire pertaining to recent suicidal ideation (listed here):

- Have you recently thought that life isn't worth living?
- Have you recently thought of the possibility that you might do away with yourself?
- Have you recently found yourself wishing you were dead and away from it all?
- Have you recently found that the idea of taking your own life kept coming into your mind?

Another 4 questions, taken from the MINI suicide module, asked about suicide and deliberate self-harm thoughts and behaviours in the past month. These items included:

- In the past month did you have a suicidal plan?
- In the past month did you take any active steps to plan to injure yourself or to prepare for a suicide attempt in which you expected or intended to die?
- In the past month did you deliberately injure yourself without intending to kill yourself?
- In the past month did you attempt suicide?
    - Did you hope to be rescued, or to survive?
    - Did you expect or intend to die?

An extra item asked if there was a current suicide plan. All variable ratings were binary (no = 0, yes = 1).

Categorical Variables

The proportion of participants who endorsed individual items was recorded as binary responses (yes/no).

The GHQ items were collapsed into 3 risk categories (low = 0, moderate = 1 – 2 and high = 3 - 4) (Goldberg & Hillier, 1979).

Continuous Variables

A continuous score ranging from 0 to 4 was developed by summing the four GHQ questions that were endorsed.

2.6.8 Psychiatric Diagnoses: Mini International Neuropsychiatric Interview (M.I.N.I)

Instrument

The M.I.N.I (Mini International Neuropsychiatric Interview) (Sheehan & Lecrubier, 2006) is a short diagnostic structured interview developed to identify discrete International Classification of Diseases version 10 diagnostic classifications (Lecrubier et al., 1997). The instrument used algorithms, similar to those used in the Composite International Diagnostic Interview (CIDI) (WHO, 1997), facilitating elimination of possible diagnostic criteria within two questions (Lecrubier, et al., 1997). The MINI has shown good procedural validity (Amorim, Lecrubier, Weiller, Hergueta, & Sheehan, 1998; Lecrubier, et al., 1997). Agreement between the M.I.N.I. and CIDI (as gold standard) appear good; Inter-rater (kappa's between .88 and 1.0) and test-retest (kappa's between .86 and .93) reliability and specificity and sensitivity are good (Lecrubier, et al., 1997). Agreement between the M.I.N.I and the gold standard Structured Clinical Interview for Diagnostic and Statistical Manual (DSM-III-R-patient version diagnoses) (SCID) is also generally good (Sheehan et al., 1997; Spitzer, Williams, Gibbon, & First, 1992). The M.I.N.I is fast to administer (15 minutes) compared with the CIDI and SCID (minimum 90 minutes) (Lecrubier, et al., 1997). For the purpose of university affiliated research, the M.I.N.I was free to use.

Variables

There were two modules excluded: alcohol and other substance use (because it used American drug names) and antisocial personality disorder and Bi-polar Affective Disorder I and II categories used in the analyses were made by combining scores from Major Depressive Episode (current and recurrent) and either manic or Hypomanic episode (past and current) based on the DSM-TR-IV criteria.

Categorical coding.

ICD-10 psychiatric diagnosis at the time of interview was rated as criteria met or not met (D. Sheehan & Lecrubier, 2006). Individual diagnostic categories were grouped to form 4 major categories, as follows:

- Any mood disorder (Major Depressive Episode current or recurrent, Major Depressive Episode with Melancholic Features, Mood Disorder with Psychosis, Dysthymia, Manic Episode (current and past), Hypomania (current or past).
- Any Anxiety Disorder (Panic Disorder current and lifetime, Agoraphobia, Social Anxiety Disorder, Obsessive – Compulsive Disorder, Post-Traumatic stress Disorder and Generalised Anxiety Disorder).
- Any Eating Disorder (Anorexia Nervosa, Bulimia Nervosa and Anorexia Binge/Purge type).
- Any Psychotic Disorder (Psychosis Disorder lifetime or current and any Psychotic Disorder)

Continuous coding.

The total number of co-morbid psychiatric diagnoses at the time of interview made up the continuous variable (Sheehan & Lecrubier, 2006).

2.8 Analysis Strategy

Descriptive statistics were used for socio-demographic, treatment and clinical characteristics of participants. Initial comparisons of cases and controls used two tailed t-tests, Chi square and Fisher's exact test as appropriate.

A series of logistic regressions were used to test the two categorical variables (Any Mood or Any Anxiety Disorder; see table 1) and two continuous variables (K-10 and DASS-21; see table 2), respectively in predicting case versus control membership.

Initial unadjusted regression models for each of the four predictor variables were variously adjusted for a range of potential confounders to examine the change in magnitude of effect of each predictor variable. Any variable from the initial comparisons that was significant at the $p < .05$ level was considered for inclusion in the multivariate analysis. Any variables thought to be possible confounders from the literature were considered for inclusion. A forced entry process was used.

Regression models for Any Mood or Any Anxiety Disorder were sequentially adjusted for: demographics (age, income, relationship status and network), number of threatening experiences (LTE), physical illness and disability (LTE Q1, SF-12 PCS score), mental disability (SF-12 MCS score), psychological distress (K-10 score), GP treatment (mental health visit in past month, current antidepressant treatment); and co-morbidity of mental illness including: Any Mood Disorder, substance misuse (number of substances in past 3 months) and substance misuse or Any Mood Disorder (for Any Anxiety Disorder), and Any Anxiety Disorder and substance misuse or Any Anxiety Disorder (for Any Mood Disorder). Results were expressed as Odds Ratios (ORs) with 95% Confidence Intervals (CI95%) in predicting case v control.

Regression models for K-10 and DASS-21 were sequentially adjusted for: demographics, number of threatening experiences, physical illness and disability, co-morbidity of mental illness and GP treatment (mental health visit in the last month, current antidepressant treatment, substance misuse, Any Anxiety Disorder), Any Mood Disorder and mental disability. Results were expressed as ORs with CI95% for each rise of one point on the K-10 or DASS-21 in predicting case v control.

In order to develop the an explanatory multivariable model of patient characteristic predictors of referral to and attendance at GP Access, a forward stepwise logistic regression analysis was performed using the following predictor variables: relationship status, employment, annual household income, any mood disorder, any anxiety disorder (categorical); age, number of life threatening experiences, SF-12 Mental Disability, SF-12 Physical Disability and total number of substances used in the past 3 months (continuous). GP network, which reflected ascertainment bias, and GP treatment variables (current antidepressant treatment and GP visits for mental health care), which reflected GP behaviour) were excluded from the model. Variables were retained in the model with a $p < .05$ value. Results were expressed as ORs with CI95%. The following model summary statistics were reported for the final iteration: -2 Log Likelihood and Nagelkerke R^2 statistic (variance).

In order to explore the relatively high proportion within controls having Any Anxiety Disorder, a *post hoc* analysis was conducted, reporting number and percentage with recent mental health visits, current antidepressant treatment or both.

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Appendix 3: Results

3.1 Demographic Characteristics

Demographic variables for ATAPS cases, controls and the whole sample are shown in Table 1. The majority of the sample were female (65.4%), were in a relationship, that is, either married / de facto (52.8%), had completed year 12 / TAFE or tertiary qualifications (70.9%), were employed (part time or full time), reported an annual household income of < $50,000 and attended GPs in the Newcastle area. The mean age of the sample was 42.57 years (*SD* = 13.22).

Gender, relationship status, education level, employment status, level of income, GP network and age were tested for differences between groups. There was a significant difference in relationship status, employment status, level of income, GP network and age. Cases were more likely to not be in a relationship (never married or separated / divorced or widowed), unemployed, have lower annual household income and attended GPs in the Newcastle area

There was no significant difference in the proportion of females, or the level of education.

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Table 1
Socio-demographic Characteristics of Case – Control Groups (ATAPS Versus GP)

	Frequencies			Statistical Comparison		
Demographic Variables	ATAPS (*n* = 63)	GP (*n* = 64)	Total (*n* = 127)	Chi Square	*df*	*p*
Categorical Variables	(*n*) %	(*n*) %	(*n*) %			
Gender						
Male	(22) 34.9	(22) 34.4	(44) 34.6	0.00	1	0.95
Female	(41) 65.1	(42) 65.6	(83) 65.4			
Relationship Status						
Never Married	(20) 31.7	(10) 15.6	(30) 23.6	10.85	2	0.004**
Married / De Facto	(24) 38.1	(43) 67.2	(67) 52.8			
Separated / Divorced / Widowed	(19) 30.2	(11) 17.2	(30) 23.6			
Education Level						
Still at School	(0) 0.0	(0) 0.0	(0) 0.0	2.24	2	0.33
Year 10 or equivalent	(18) 28.6	(19) 29.7	(37) 29.1			
Year 12 or TAFE/TECH	(22) 34.9	(29) 45.3	(51) 40.2			
Tertiary	(23) 36.5	(16) 25.0	(39) 30.7			
Employment Status						
Employed (Full/Part time)	(34) 54.0	(49) 76.6	(83) 65.4	12.50	2	0.002**
Unemployed	(17) 27.0	(3) 4.7	(20) 15.7			
Other (Benefits/Pension)	(12) 19.0	(12) 18.8	(24) 18.9			
Level of Income						
<$50,000	(43) 68.3	(27) 42.2	(70) 55.1	9.30	2	0.01**
$50,000 - $99,000	(13) 20.6	(20) 31.3	(33) 26.0			
≥$100,000	(7) 11.1	(17) 26.6	(24) 18.9			
GP Network						
Newcastle	(45) 71.4	(24) 37.5	(69) 54.3	14.73	1	< 0.001***
Other	(18) 28.6	(40) 62.5	(58) 45.7			
Continuous Variables	*M (SD)*	*M (SD)*	*M (SD)*	*t (df – 125)*		*p*
Age	39.97 (13.82)	45.13 (12.17)	42.57 (13.22)	2.23		0.03*

Note: ATAPS = Access to Psychological Services Case Group. GP = General Practice Control group.
*$p < 0.05$ ** $p < 0.01$ ** *$P < 0.001$.

3.2 Mental Health Service Use

Mental Health service use was reported for the month prior to the assessment and is shown in Table 2. No use of public inpatient and private inpatient services was reported by participants in either group. All participants in the case group were attending public outpatient services at GP Access; hence there was a 98.4% positive endorsement rate (1 participant had stopped accessing services by the time of the interview). One control reported they were accessing outpatient public mental health services, although not at GP Access. Other mental health Care was endorsed by 2 cases who reported attending a private psychiatrist (see table 2).

GP visits for any reason may have included consultation for mental health problems, physical problems or both. Note: the GP visit at the time of recruitment for the control sample was excluded from the count of the number of visits to a GP for any reason.

GPs were the most frequently attended health professionals for mental health care (31.5%). Significant differences were found for the number of visits to GPs for mental health care in the past month, with more cases (41.3%) attending their GP in the past month, compared with controls (21.9%). Overall, the number of visits to GPs for any reason in the past 3 months was significantly different in cases versus controls.

Table 2
Mental Health Service Use in the Past Month

	Frequencies			Statistical Comparison		
	ATAPS	GP	Total	Chi Square	*df*	*P*
	(*n* = 63) (*n*) %	(*n* = 64) (*n*) %	(*n* = 127) (*n*) %			
Mental Health Services						
Public Inpatient	(0) 0.0	(0) 0.0	(0) 0.0			
Private Inpatient	(0) 0.0	(0) 0.0	(0) 0.0			
Public Outpatient	(62) 98.4	(1) 1.6	(63) 49.6	119.13	1	0.00**
Private Outpatient	(2) 3.2	(5) 7.8	(7) 5.5	†		0.44
Mental Health Care (Other)	(2) 3.2	(0) 0.0	(2) 1.6	†		0.24
GP Mental Health Visit	(26) 41.3	(14) 21.9	(40) 31.5	5.54	1	0.02*
Number of GP Visits (Any Reason)				10.89	4	0.03*
None	(18) 28.6	(34) 53.1	(52) 40.9			
Once	(25) 39.7	(16) 25.0	(41) 32.3			
2 - 3	(15) 23.8	(9) 14.1	(24) 18.9			
4 - 6	(5) 7.9	(3) 4.7	(8) 6.3			
> 6	(0) 0.0	(2) 3.1	(2) 1.6			

Note: Public Outpatient Services include services accessed under the ATAPS. The number of visits to the GP for any reason during the past 3 months excluded the occasion of service at the point of recruitment for GP controls.
*$p < 0.05$. ** $p < 0.01$ ***$P < 0.001$.
† Fishers Exact Test

3.3 Threatening Events

Individual items on the Threatening Life Events (TLE) scale were endorsed if they had occurred in the 6 months prior to the interview. The most commonly endorsed threatening events by the entire sample were: suffering a serious illness, injury or an assault; the serious illness, injury or an assault of a close relative; a serious problem with a close neighbour or relative; being unemployed or seeking work unsuccessfully for more than one month; being sacked from a job or a major financial crisis (see table 3).

Significant differences were found for four of the threatening events. Twice as many cases (31.7%) as controls (15.6%) reported experiencing a serious illness, injury or assault of a close relative. Cases (36.5%) were significantly more likely than controls (12.5%) to have been unemployed or seeking work unsuccessfully for more than one month. There was a significant difference between cases (36.5%) and controls (12.5%) to have experienced a major financial crisis and more cases (9.5%) than controls (0%) reported problems with the police or a court appearance.

On the continuous measure of the number of concurrent life events experienced in the six months before the interview, cases on average experienced significantly more concurrent threatening events (M = 2.35, SD = 1.70) than controls (M = 1.34, SD = 1.68).

Table 3

List of Threatening Events (LTE) Reported During the 6 Months Prior to Interview

	Frequencies			Statistical Comparison		
	ATAPS	GP	Total	Chi Square	*df*	*P*
	(*n* = 63)	(*n* = 64)	(*n* = 127)			
List of Threatening Events Variables	(*n*) %	(*n*) %	(*n*) %			
Suffered a serious illness, injury or an assault	(16) 25.4	(20) 31.3	(36) 28.3	0.54	1	0.46
Serious illness, injury or an assault of a close relative	(20) 31.7	(10) 15.6	(30) 23.6	4.54	1	0.03*
Parent, Child or Spouse died	(3) 4.8	(2) 3.1	(5) 3.9	†		0.68
Close family friend or another relative died	(11) 17.5	(14) 21.9	(25) 19.7	0.39	1	0.53
A separation due to marital difficulties	(7) 11.1	(3) 4.7	(10) 7.9	†		0.21
Broke off a steady relationship	(8) 12.7	(3) 4.7	(11) 8.7	2.58	1	0.11
Serious problem with a close friend neighbour or relative	(18) 28.6	(14) 21.9	(32) 25.2	0.76	1	0.39
Unemployed or were seeking work for more than one month	(23) 36.5	(8) 12.5	(31) 24.4	9.92	1	0.00**
Sacked from your job	(6) 9.5	(1) 1.6	(7) 5.5	†		0.06
A major financial crisis	(23) 36.5	(8) 12.5	(31) 24.4	9.92	1	0.00**
Problems with the police and a court appearance	(6) 9.5	(0) 0.0	(6) 4.7	†		0.01*
Something valued was lost or stolen	(7) 11.1	(3) 4.7	(10) 7.9	†		0.21
Continuous Variables	*M (SD)*	*M (SD)*	*M (SD)*	*t (df – 125)*		*p*
Number of LTE items endorsed	2.35 (1.70)	1.34 (1.68)	1.84 (1.76)	-3.35		< 0.00***

Note: LTE = List of Threatening Events Scale (Brugha, 1985)

*$p < 0.05$. ** $p < 0.01$ ***$P < 0.001$.

† Fishers Exact Test

3.4 Disability

All results for mental and physical disability measured by the SF-12 can be seen in Table 4. There were considerable levels of mental and physical disability in both cases and controls. When the disability score was stratified to produce a categorical measure of disability, there was a significant difference between groups for levels of mental disability (χ^2 = 32.08, p = < 0.001). There was no significant difference in levels of physical disability on the categorical measure.

On the continuous scale, scores between 30 – 40 indicate moderate disability, 40 – 50 indicate only mild disability and scores greater than 50 indicate no disability; lower scores represent greater disability (Andrews, 2002). Cases demonstrated significantly greater mean mental disability (*M* = 33.97, *SD* = 11.96) compared with controls (*M* = 47.88, *SD* = 11.40). Although smaller in magnitude, there was also a significant difference for physical disability; cases had less physical disability (*M* = 47.92, *SD* = 11.43) compared with controls (*M* = 43.89, *SD* = 43.89).

Table 4

Short-Form-12 Mental and Physical Disability Scores for Case and Control Groups

	Frequencies			Statistical Comparison		
	ATAPS	GP	Total	Chi Square	*df*	*P*
Disability Scores	(*n* = 63)	(*n* = 64)	(*n* = 127)			
Categorical Variables	(*n*) %	(*n*) %	(*n*) %			
Mental Disability				32.08	3	< 0.001***
None	(9) 14.3	(37) 57.8	(46) 36.2			
Mild	(6) 9.5	(9) 14.1	(15) 11.8			
Moderate	(20) 31.7	(10) 15.6	(30) 23.6			
Severe	(28) 44.4	(8) 12.5	(36) 28.3			
Physical Disability				3.44	3	0.33
None	(29) 46.0	(23) 35.9	(52) 40.9			
Mild	(19) 30.2	(16) 25.0	(35) 27.6			
Moderate	(9) 14.3	(15) 23.4	(24) 18.9			
Severe	(6) 9.5	(10) 15.6	(16) 12.6			
Continuous Variables	*M (SD)*	*M (SD)*	*M (SD)*	*t (df – 125)*		*P*
Mental Disability	33.97 (11.96)	47.88 (11.40)	40.98 (13.57)	6.70		< 0.01***
Physical Disability	47.92 (11.43)	43.89 (11.04)	45.89 (11.37)	-2.02		0.05*

*$p < 0.05$ ** $p < 0.01$ ***$P < 0.001$.

3.5 DASS-21 and K10

Categorical measures

Table 5 shows all details for DASS-21 (psychological symptoms) and K10 (psychological distress) results. Symptoms of Depression, Anxiety and Stress were common in both cases and controls. For the DASS-21, a substantial number of cases met criteria for severe or extremely severe psychological symptoms: Depression (38.1%), Anxiety (39.7%) and Stress (42.9%).

When stratified to develop categorical measures of psychological symptoms (DASS-21) and psychological distress (K10), cases and controls were significantly different for all categorical scores, on the DASS-21 sub-scales and the K10.

Continuous measures

There was a significant difference between the mean DASS-21 Composite scores; cases mean scores (M = 25.19, SD = 14.30) were almost double that of controls (M = 13.98, SD = 13.96). Cases (M = 23.97, SD = 8.75) also had significantly higher average K10 scores compared to controls (M = 18.25, SD = 7.99).

Table 5

Psychological Symptoms, Composite Negative Affect (DASS) and K10 Scores

	Frequencies			Statistical Comparison		
	ATAPS	GP	Total	Chi Square	*df*	*P*
	(*n* = 63)	(*n* = 64)	(*n* = 127)			
Categorical Variables	(*n*) %	(*n*) %	(*n*) %			
DASS Subscales						
Depression				21.36	4	<0.001***
Normal	(21) 33.3	(47) 73.4	(68) 53.5			
Mild	(6) 9.5	(2) 3.1	(8) 6.3			
Moderate	(12) 19.0	(3) 4.7	(15) 11.8			
Severe	(10) 15.9	(5) 7.8	(15) 11.8			
Extremely Severe	(14) 22.2	(7) 10.9	(21) 16.5			
Anxiety				10.40	4	0.04*
Normal	(27) 42.9	(39) 60.9	(66) 52.0			
Mild	(3) 4.8	(7) 10.9	(10) 7.9			
Moderate	(8) 12.7	(8) 12.5	(16) 12.6			
Severe	(8) 12.7	(4) 6.3	(12) 9.4			
Extremely Severe	(17) 27.0	(6) 9.4	(23) 18.1			
Stress				15.50	4	0.004**
Normal	(23) 36.5	(43) 67.2	(66) 52.0			
Mild	(6) 9.5	(7) 10.9	(13) 10.2			
Moderate	(7) 11.1	(5) 7.8	(12) 9.4			
Severe	(17) 27.0	(6) 9.4	(23) 18.1			
Extremely Severe	(10) 15.9	(3) 4.7	(13) 10.2			
K10				12.44	2	0.002**
Low	(15) 23.8	(34) 53.1	(49) 38.6			
Moderate	(30) 47.6	(22) 34.4	(52) 40.9			
High	(18) 28.6	(8) 12.5	(26) 20.5			

Continuous	M (*SD)*	M (*SD)*	M (*SD)*	*t (df – 125)*	*P*
DASS Composite Score	25.19 (14.30)	13.98 (13.96)	19.54 (15.16)	-4.47	<0.001***
K10 Total Score	23.97 (8.75)	18.25 (7.99)	21.09 (8.82)	-3.85	<0.001***

*$p < 0.05$. ** $p < 0.01$ ***$P < 0.001$.

3.6 Alcohol and Other Substance Misuse

3.6.1 Proportions of substances misused currently (past 3 months) and lifetime

Table 6 shows the results of the proportions of substances misused currently (past 3 months) and over a lifetime and a continuous measure of the total number of substances currently misused. Significantly more cases (39.7%) than controls (18.8%) reported lifetime Opioid use.

For current use (in the past 3 months), cases used significantly more Cannabis (17.5%) than controls (3.1%), Amphetamines (11.1%) versus (0%) and Sedatives (22.2%) versus (9.4%). Cases also had significantly greater current use of the mean number of substances (M = 1.27, SD = 1.52) compared with controls (M = 0.55, SD = 0.87).

Table 6

	Frequencies			Statistical Comparison		
	ATAPS (n = 63) (n) %	GP (n = 64) (n) %	Total (*n* = 127) (n) %	Chi Square	df	P
Lifetime						
Tobacco	(51) 81.0	(51) 79.7	(102) 80.3	0.032	1	0.86
Alcohol	(63) 100.0	(61) 95.3	(124) 97.6	†		0.24
Cannabis	(42) 66.7	(38) 59.4	(80) 63.0	0.724	1	0.40
Cocaine	(10) 15.9	(7) 10.9	(17) 13.4	0.667	1	0.41
Amphetamines	(18) 28.6	(10) 15.6	(28) 22.0	3.096	1	0.08
Inhalants	(4) 6.3	(1) 1.6	(5) 3.9	†		0.21
Sedatives	(33) 52.4	(24) 37.5	(57) 44.9	2.842	1	0.09
Hallucinogens	(8) 12.7	(6) 9.4	(14) 11.0	0.358	1	0.55
Opioids	(25) 39.7	(12) 18.8	(37) 29.1	6.738	1	0.01**
Past 3 months (current)						
Tobacco	(23) 36.5	(17) 26.6	(40) 31.5	1.455	1	0.23
Alcohol	(53) 84.1	(48) 75.0	(101) 79.5	1.624	1	0.20
Cannabis	(11) 17.5	(2) 3.1	(13) 10.2	7.101	1	0.01**
Cocaine	(0) 0.0	(0) 0.0	(0) 0.0			-
Amphetamines	(7) 11.1	(0) 0.0	(7) 5.5	†		0.01**
Inhalants	(1) 1.6	(0) 0.0	(1) 0.8	†		0.50
Sedatives	(14) 22.2	(6) 9.4	(20) 15.7	3.949	1	0.05*
Hallucinogens	(0) 0.0	(0) 0.0	(0) 0.0			-
Opioids	(13) 20.6	(8) 12.5	(21) 16.5	1.522	1	0.22

Continuous	M (*SD)*	M (*SD)*	M (*SD)*	*t (df – 125)*	*P*
Number Used 3 Months	1.27 (1.52)	0.55 (0.87)	0.91 (1.28)	-3.29	< 0.001***

Note. Lifetime substance use refers to the substances nominated as used at least once in their lifetime. Past 3 months refers to the particular substances in the past 3 months. Number used in the past 3 months is the number of substances used at least once.

*$p < 0.05$ ** $p < 0.01$ ***$p<0.001$

† Fishers Exact Test

3.7 Suicide Risk

Suicide and deliberate self-harm risk variables (GHQ and M.I.N.I) profiles and comparisons are shown in Table 7. There were three participants who reported having a current suicide plan. This result was immediately reported to the attending health professional, either the GP or treating Psychologist.

Of the GHQ individual items, the most commonly endorsed item was the GHQ statement "[I] recently felt life isn't not worth living". This item was endorsed by significantly more cases (42.9%) than controls (18.8%).

The GHQ stratified categories for overall risk of suicide in the total sample showed a high risk for suicide in (18.9%) as well as moderate risk (16.5%). There was a significant difference between cases and controls. Suicide risk using the GHQ continuous score also showed the overall risk of suicide was higher in the cases (M = 1.14, SD = 1.44) than controls (M = 0.70, SD = 1.40), however this difference was not significant.

The M.I.N.I suicide variables were barely endorsed by either group. The most commonly endorsed item "[I] had a suicide plan" was endorsed by slightly more cases (7.9%) than controls (4.7%), however the difference was not significant.

Table 7

Suicidal Ideation and Behaviours and Overall Risk of Suicide GHQ and MINI Suicide Items

	Frequencies			Statistical Comparison		
	ATAPS	GP	Total	Chi Square	*df*	*P*
	(*n* = 63)	(*n* = 64)	(*n* = 127)			
Categorical Variables	(*n*) %	(*n*) %	(*n*) %			
GHQ Individual Items (Recently)						
Felt life isn't worth living	(27) 42.9	(12) 18.8	(39) 30.7	8.67	1	< 0.001**
Thought you might do away with yourself	(13) 20.6	(10) 15.6	(23) 18.1	0.54	1	0.46
Wish you were dead and away from it all	(20) 31.7	(14) 21.9	(34) 26.8	1.58	1	0.21
The idea of taking your life kept coming into your mind	(12) 19.0	(9) 14.1	(21) 16.5	0.57	1	0.45
GHQ Overall Risk of Suicide						
Low	(33) 52.4	(49) 76.6	(82) 64.6			
Moderate	(15) 23.8	(6) 9.4	(21) 16.5	8.47	2	0.01**
High	(15) 23.8	(9) 14.1	(24) 18.9			
MINI Items (Past Month)						
Had a suicide plan	(5) 7.9	(3) 4.7	(8) 6.3	†		0.49
Took active steps toward suicide with intention to die	(1) 1.6	(3) 4.7	(4) 3.1	†		0.62
DSH without intention to die	(2) 3.2	(2) 3.1	(4) 3.1	†		1.00
Suicide attempt	(0) 0.0	(2) 3.1	(2) 1.6	†		0.50
Wanted to be rescued	(0) 0.0	(1) 1.6	(1) 0.8	0.99	2	0.61
Intended to die	(0) 0.0	(0) 0.0	(0) 0.0			
Current Suicide Plan	(2) 1.6	(1) 0.8	(3) 2.4	†		0.62
Continuous Variables	*M (SD)*	*M (SD)*	*M (SD)*	*t (df – 125)*		*p*
Suicide Risk	1.14 (1.44)	0.70 (1.40)	0.92 (1.28)	-1.75		0.08

Note. GHQ (General Health Questionnaire) and M.I.N.I Neuropsychiatric Interview. GHQ time frame is past 3 months. Suicide risk is the continuous measure developed from summing the 4 GHQ suicide questions scored as 0 or 1to form a scale ranging from 0 (no risk) to 4(high risk).
$p < 0.05$. ** $p < 0.01$

3.8 Psychiatric Diagnoses

Individual and grouped psychiatric diagnoses and the total number of current diagnoses derived from the M.I.N.I are presented in Table 8. Mental disorders were common in controls as well as cases. The major diagnostic categories included Any Mood Disorder (endorsed by 44.9% of the whole sample), Any Anxiety Disorder (60.6%), Any Psychotic Disorder (3.1%) and Any Eating Disorder (0%).

Cases and controls had significantly different frequencies for individual diagnoses. With regard to mood disorders, cases were more likely to meet criteria for Major Depressive Episode (Current and Recurrent), Major Depressive Episode with Melancholic features, and Mood Disorder with Psychosis (lifetime but not current), Dysthymia, Mania (past episode) and Hypomania (past but not current). For anxiety disorders, more cases met criteria for Agoraphobia, Social Anxiety Disorder, Obsessive Compulsive Disorder, and Generalised Anxiety Disorder.

There were large and significant differences for Any Mood Disorder and Any Anxiety Disorder. More cases (68.3%) met criteria for Any Mood Disorder than controls (21.9%). Also, more cases (73.0%) met criteria for Any Anxiety Disorder than controls (48.4%).

The mean number of co-morbid diagnoses was significantly greater in the cases (M = 2.02, SD = 1.73) than controls (M = 0.83, SD = 1.28).

Antidepressant medication use was common in the entire sample (41.7%); a significantly greater number of cases (55.6%) were currently using antidepressants compared with the control group (28.1%).

Table 8

Individual DSM-IV-TR Diagnoses, Current Use of Antidepressant Medications and Number of Co morbid DSM-IV Diagnoses

	Frequencies			Statistical Comparison		
	ATAPS (n = 63)	GP (n = 64)	Total (n = 127)	Chi Square	*df*	*P*
Categorical Variables	(n) %	(n) %	(n) %			
Mood Disorders						
Major Depressive Episode (Current)	(29) 46.0	(13) 20.3	(42) 33.1	9.49	1	0.002**
Major Depressive Episode (Recurrent)	(21) 33.3	(7) 10.9	(28) 22.0	9.27	1	0.002**
Major Depressive Episode Melancholic Feat.	(19) 30.2	(9) 14.1	(28) 22.0	4.79	1	0.03*
Mood Disorder with Psychosis (Lifetime)	(5) 7.9	(0) 0.0	(5) 3.9	†		0.03*
Mood Disorder with Psychosis (Current)	(2) 3.2	(0) 0.0	(2) 1.6	†		0.24
Dysthymia	(8) 12.7	(0) 0.0	(8) 6.3	†		0.003**
Mania (Current)	(1) 1.6	(0) 0.0	(1) 0.8	†		0.50
Mania (Past)	(9) 14.3	(2) 3.1	(11) 8.7	5.00	1	0.03*
Hypomania (Current)	(1) 1.6	(0) 0.0	(1) 0.8	†		0.50
Hypomania (Past)	(9) 14.3	(1) 1.6	(10) 7.9	†		0.01**
Bi-Polar I Affective Disorder	(10) 15.9	(2) 3.1	(8) 6.3	†		0.16
Bi-Polar II Affective Disorder	(4) 6.3	(0) 0.0	(4) 3.1	†		0.06
Any Mood Disorder	(43) 68.3	(14) 21.9	(57) 44.9	27.61	1	< 0.001***
Anxiety Disorders						
Panic Disorder (Current)	(13) 20.6	(6) 9.4	(19) 15.0	3.16	1	0.08
Panic Disorder (Lifetime)	(22) 34.9	(20) 31.3	(42) 33.1	0.19	1	0.66
Agoraphobia	(23) 36.5	(10) 15.6	(33) 26.0	7.20	1	0.007**
Social Anxiety Disorder	(18) 28.6	(4) 6.3	(22) 17.3	11.05	1	< 0.001***
Obsessive Compulsive Disorder	(7) 11.1	(0) 0.00	(7) 5.5	†		0.006**
Post-Traumatic Stress Disorder	(5) 7.9	(4) 6.3	(9) 7.1	†		0.74
Generalised Anxiety Disorder	(24) 38.1	(14) 21.9	(38) 29.9	3.98	1	0.05*
Any Anxiety Disorder	(46) 73.0	(31) 48.4	(77) 60.6	8.04	1	0.01**

	Frequencies			Statistical Comparison		
Categorical Variables	ATAPS (*n* = 63) (*n*) %	GP (*n* = 64) (*n*) %	Total (*n* = 127) (*n*) %	Chi Square	*df*	*P*
Psychosis						
Psychotic Disorder (Lifetime)	(2) 3.2	(2) 3.1	(4) 3.1	†		1.00
Psychotic Disorder (Current)	(1) 1.6	(1) 1.6	(2) 1.6	†		1.00
Any Psychotic Disorder	(2) 3.2	(2) 3.1	(4) 3.1	†		1.00
Eating Disorders						
Anorexia Nervosa	(0) 0.0	(0) 0.0	(0) 0.0			
Anorexia Nervosa (Binge / Purge Type)	(0) 0.0	(0) 0.0	(0) 0.0			
Bulimia Nervosa	(0) 0.0	(0) 0.0	(0) 0.0			
Any Eating Disorder	(0) 0.0	(0) 0.0	(0) 0.0			
Current Anti-Depressant Treatment	(35) 55.6	(18) 28.1	(53) 41.7	9.82	1	0.002**

Continuous Variables	*M (SD)*	*M (SD)*	*M (SD)*	*t (df – 125)*	*p*
Number of Co-Morbid Diagnoses	2.02 (1.73)	0.83 (1.28)	1.42 (1.63)	-4.41	< 0.001***

Note. Bipolar Disorder I & II categories combined diagnoses of Major Depressive Episode (current or recurrent) and either Manic or Hypomanic Episode (past or current).
*$p < 0.05$. ** $p < 0.01$ ***$p < 0.001$

3.10 Unadjusted and Adjusted Multivariable Logistic Regression: Predictor variables Any Mood Disorder and Any Anxiety Disorder

Forced entry univariate and variously adjusted multivariable logistic regression models were used to determine whether Any Mood Disorder or Any Anxiety Disorder predicted case versus controls. Results were expressed as Odds Ratios (ORs) with 95% Confidence Intervals (CI95%).

Any Mood Disorder was the strongest independent categorical predictor for being a case. It was significant in the unadjusted model (OR 7.68, CI 95% 3.47, 17.01) and remained significant in all models after adjusting for Demographics, Threatening Events, Physical Illness and Disability, Mental Disability, GP Treatment Variables (Mental Health Visits to the GP and current Anti-Depressant Treatment) and Co-Morbidity with other mental disorders.

Any Anxiety Disorder also predicted being a case. It was significant in the unadjusted model (OR 2.88, CI 95% 1.37, 6.05) and remained significant after adjusting for the number of Life Threatening Events, Physical Illness and Disability and Co-morbid Substance Use. Any Anxiety Disorder was non – significant after adjusting for Demographics, Mental Disability and Psychological Distress, GP Treatment Variables (current Antidepressant use and mental health treatment by a GP), Co-morbid Substance Misuse and Any Mood Disorder and Any Mood Disorder (see table 9).

Table 9
Logistic Regressions: Predictor Variables Any Mood Disorder and Any Anxiety Disorder for Group Membership (ATAPS Versus GP)

	Categorical Variables					
	Any Mood Disorder			Any Anxiety Disorder		
Variables	OR	CI 95%	*p*	OR	CI 95%	*p*
Unadjusted	7.68	3.47-17.01	< 0.001***	2.88	1.37-6.05	< 0.001***
Adjusted						
Demographics						
Age, Income, Relationship Status, Network	5.50	2.26-13.36	< 0.001***	1.53	0.65-3.62	0.33
Threatening Events (LTE)						
Total Number of Events	6.35	2.80-14.39	< 0.001***	2.40	1.11-5.17	0.03*
Physical Illness and Disability						
LTE Q1, SF-12 Physical Disability Score	10.65	4.30-26.34	< 0.001***	3.38	1.55-7.36	< 0.001***
Mental Disability						
SF-12 Mental Disability	2.72	1.01-7.34	0.05*	1.07	0.43-2.70	0.88
K10 total score	7.26	2.47-21.29	< 0.001***	1.72	0.75-3.97	0.20
GP Treatment Variables						
GP-Mental Health Visit, Current ADT	6.95	2.93-16.47	< 0.001***	2.35	1.07-5.18	0.03*
Co-Morbidity						
Substance Misuse	6.38	2.82-14.44	< 0.001***	2.26	1.22-5.65	0.01**
Substance Misuse and Any Anxiety Disorder	5.75	2.33-14.15	< 0.001***	-	-	-
Substance Misuse and Any Mood Disorder	-	-	-	1.27	0.52-3.12	0.60
Any Anxiety Disorder	7.00	2.89-16.84	< 0.001***	-	-	-
Any Mood Disorder	-	-	-	1.24	0.51-3.03	0.63

Note: Network refers to the Location of GP practice within the Division. LTE refers to the total number events in the threatening life events scale in the past 6 months. TLE Question 1 is an illness, injury or assault in the past 6 months so is included in the Illness and Disability section. GP Mental Health Visit is if the participant attended the GP for Mental Health problems in the past month. SF-12 Mental Disability or Physical Disability is the relevant scale of the Short-Form 12.
*$p < 0.05$ ** $p<0.01$ ***$p < 0.001$

3.9 Unadjusted and Adjusted Multivariable Logistic Regression: Predictor Variables DASS-21 and K10

Forced entry unadjusted and variously adjusted multivariable logistic regression models were used to determine whether DASS-21 and K10 predicted cases versus controls. Results were expressed as Odds Ratios (ORs) with 95% Confidence Intervals (CI95%).

The K10 score was a significant predictor of being a case (OR 1.06, CI95% 1.04, 1.14) and remained significant after adjusting for Demographics, Threatening Events, Physical Illness and Disability, Co-morbidity (substance misuse and Any Anxiety Disorder) and GP Treatment Variables (GP visit for Mental Health and current Antidepressant medication). It became non-significant when adjusted for Any Mood Disorder and Mental Disability.

DASS-21 negative affect composite score was also a significant predictor of being a case (OR 1.06, CI 1.03, 1.09) and remained significant after adjusting for Demographics, Threatening Events, Physical Illness and Disability, Co-morbidity (substance misuse and Any Anxiety Disorder) and GP Treatment Variables (GP visit for Mental Health and current Antidepressant treatment). It became non-significant when adjusted for Any Mood Disorder and Mental Disability (see table 10).

Table 10
Logistic Regression: Predictor Variables DASS-21 and K10 Composite Negative Affect Score for Group Membership (ATAPS Versus GP)

	Continuous Variables					
	DASS Composite Score			K10		
Univariate and Adjusted Variables	OR	CI 95%	*p*	OR	CI 95%	*p*
Unadjusted	1.06	1.03-1.09	$p < 0.001$***	1.06	1.04-1.14	$p < 0.001$***
Adjusted						
Demographics						
Age, Income, Relationship Status, Network	1.05	1.01-1.08	0.01**	1.06	1.01-1.12	0.02*
Threatening Events (LTE)						
Total Number of Events	1.05	1.02-1.08	$p < 0.001$***	1.07	1.02 – 1.12	0.01**
Physical Illness and Disability						
LTE Q1, SF-12 Physical Disability Score	1.08	1.04-1.11	$p < 0.001$***	1.11	1.06-1.17	$p < 0.001$***
Co-Morbidity and Treatment Variables						
GP Mental Health visit, Current ADT, Substance Misuse, Any Anxiety Disorder	1.04	1.01-1.07	0.02*	1.06	1.00-1.11	0.05*
Any Mood Disorder	1.02	0.98-1.05	0.40	1.01	0.95-1.07	0.88
Mental Disability						
SF-12 Mental Disability	0.99	0.95-1.03	0.52	0.93	0.86-1.00	0.06

Note: Network refers to the Location of GP practice within the Division. TLE refers to the total number events in the threatening life events scale in the past 6 months. TLE Question 1 is an illness, injury or assault in the past 6 months so is included in the Physical Illness and disability section. GP Mental Health Visit is if the participant attended the GP for Mental Health problems in the past month. SF-12 Mental Disability or Physical Disability is the relevant scale of the Short-Form 12.
*$p < 0.05$. ** $p < 0.01$ ***$p<0.001$

3.11 Explanatory Forward Stepwise Multivariable Logistic Regression

This explanatory model was developed to establish the most parsimonious explanation of the variables that predict referral to, and attendance at, ATAPS services. A forward stepwise multivariable logistic regression was used. Detailed results are shown in Table 11.

Three significant predictors were found. Lower Mental Disability scores (representing greater mental disability), a greater number of substances misused and a higher Physical Disability score (representing lesser physical disability) predicted being a case.

These three variables accounted for 45% of the variance (using the Nagelkerke statistic) and the -2 Log likelihood for the model was 124.04.

Table 11
Explanatory Logistic Regression Model

		Univariate		Forward Stepwise Model	
Variables	*n*	OR	CI 95%	OR	CI 95%
Categorical					
Relationship Status			**		
Never Married	30	1.00		----	----
Married/ De Facto	67	0.28	0.11, 0.69**	----	----
Separated/Divorced/Widowed	30	0.86	0.30, 2.50	----	----
Employment			**		
Employed	83	1.00		----	----
Unemployed	20	8.17	2.22,30.06**	----	----
Other (benefits/pension)	24	1.44	0.58, 3.59	----	----
Income			**		
<$50,000	70	1.00		----	----
$50,000 - $99,000	33	0.41	0.18, 0.10*	----	----
>$100,000	24	0.26	0.10, 0.71**	----	----
Any Mood Disorder	57	7.68	3.47, 17.01***	----	----
Any Anxiety Disorder	77	2.88	1.38, 6.05**	----	----
Continuous					
Age		0.97	0.94, 0.10*	----	----
Number of LTE		1.44	1.14, 1.80***	----	----
SF-12 Mental Disability		0.91	0.88, 0.94***	0.90	0.87, 0.94***
SF-12 Physical Disability		1.03	1.00, 1.07*	1.07	1.02, 1.11**
Number of Substances Misused		1.68	1.19, 2.35**	1.63	1.08, 2.46*

Note: LTE refers to the total number events in the threatening life events scale in the past 6 months. SF-12 Mental Disability or Physical Disability is the relevant scale of the Short-Form 12.
*$p < 0.05$. ** $p < 0.01$*a**$p < 0.001$

3.12 *Post Hoc* Analysis

In the *post hoc* analysis 31 (48.4%) of controls met criteria for Any Anxiety Disorder. Of these 14 (45.2%) were not receiving any mental health care, whereas 5 (16.1%) were only receiving anti-depressant treatment, 4 (12.9%) only GP mental health care and 8 (25.8%) were receiving both.

Structured Literature Review for the Better Outcomes in Mental Health Care Program				
Author	Aim / objective	Study Design / Population	Analyses	Results
(Hickie & Groom, 2002)	BOiMH components description and background	Mental health services pre-2001 Major events on mental health care reform pre 2002 Perceived benefits of PC based system Priorities	Review of major events on mental health care reform Review of 5 components BOiMHC	Incentive payments to GPs for episodes of care MBS items for GPs providing focused psychological strategies Support for ongoing GP education / promotion of multidisciplinary care ATAPS Consultation MBS for psychiatrist / GP consultation Benefits: better access, match chronic care agendas, consumer preference for initial GP care, integrate medical / psychological care, change community attitudes, pop health outcomes (reduced suicide rates)
(Jackson-Bowers, Holmwood, & Wade, 2002)	Literature review and discussion paper to inform the structure developed for the BOiMHC ATAPS	Specific issues examined included employment, administrative arrangements, citing of these services, communication between general practitioners and counsellors as well as clinical supervision and support.	Discussion	Divisions of General Practice will be fund holders. There will be a range of service delivery models including employment, outsourcing, contracting. Onsite or co-location with GPs or location in private practices. Discussion of the need for high levels of communication between GPs and AHPs and balancing this with confidentiality, ensuring professional regulation of 'counsellors', establishing brief therapy models, developing relationships with secondary models, ensuring those referred are suitable (high prevalence, mild to moderate mental health problems), integration of counsellors into a primary care team.
(Blashki, Hickie, & Davenport 2003)	Discussion of the need for ongoing training and support of GPs to provide high quality psychological treatments	Specific issues examined	Discussion	Call for research into provision of psychological treatments by GPs and how GPs interact with specialist mental health services Need for ongoing training and support in mental health care
(Winefield et al., 2003)	Reports a baseline study of the GP attitudes to integrated onsite psychological services under BOiMHC	Anonymous questionnaire to both GPs at the beginning of services being provided and 1 year later Practice records were audited at 1 year to determine the services being provided by the psychologist	Psychologists work: proportions of diagnoses, mean treatments and a range of qualitative notes on non-clinical actions (meetings etc…) GP Attitudes Qualitative methods	Presenting problems: depression 36.1%, anxiety 36.1%, PTSD 4.5%, relationships / self-esteem 16.5%, pain management 4.5% and other 5.3%. Mean number of consultations 5.7. Non clinical tasks: communication with GPs, educating GPs about psychological interventions, meeting and presenting to other divisions GPs, involvement in the divisions mental health committee and selecting screening measures, developing referral network, establishing setting as post-graduate placement. GP attitudes: Most said it was important to have the psychologist on site. GPs wanted to learn more about what psychologists do, who to refer and how to manage psychological problems in their patients better. Enthusiastic referral by GPs resulted in greater acceptance of psychological care from patients. Gap-payments were a barrier to patients accessing care
(Harrison & Britt, 2004)	GP management of MH care with introduction of BOiMHC	Comparison of BEACH data from 1990 – 2002.	BEACH Reports	2002: 11.5 / 100 encounters. Mood disorders, stress related disorders, behavioural syndromes from psychoactive drugs 1991: 69.5% contacts prescriptions, clinical treatments 50.0%. Increase of management rates from 9603 to 11557.

				Encourage future comparative research.
(Hickie, Pirkis, Blashki, Groom, & Davenport, 2004)	Examined uptake of 5 components BOiMHC	HIC billing data 1 July 2002 – 30 September 2003	Number of GP registered to deliver to do BOiMHC, provision of 3 step MH Plan process, participation in allied health pilot projects and access to psychiatrists	First 15 months: 3046 (15%) of GPs had been certified as eligible to participate, 387 had registered to provide focussed psych strategies. 11377 3 step MHT plan processes. 6472 sessions of focussed psychological strategies. 69 access to allied health services funded with . Access to psychiatrist less successful.
(Pirkis et al., 2006)	Models of service delivery, quantification of success	108 Division projects for BOiMHC survey of PO	Retention of staff Location of service provision Referral mechanism	97 projects (95%) response rate. 74% contract, 28% direct employment, 7% other 11% had changed models since incept Location: 63% GP rooms, 42% other location(divisions or other 24% changed location since incept 51% direct referral, 27% brokerage, 25% register system 13% changed since incept.. Guidelines have to be flexible for service delivery within each division context Some combined models
(Pirkis et al., 2006)	Impact of ATAPS programs on Psychologists	Service delivery models Level of uptake Patient characteristics Services delivered Advantages / disadvantages of projects	APS member survey MDS Local project evaluation reports Forum Survey of projects	Contract & direct employment Location of services Psychologist involvement (942 90% psychologists) Improved relationship with GPs Increased referral base Structured sessions Need higher remuneration Inadequate decision making power Not enough info from GPs
(Jasper, Rawlin, & Thomas, 2006)	Overview of implementation and uptake of BOiMHC initiative from a general practice perspective	Commentary		Many aspects of BOiMHC appear to be successful – particularly training and registration of GPs and the ATAPS component and collaborative care is more common. Recommendation for future research to determine which part of the BOiMHC program contribute to improved outcomes
(Vagholkar, Hare, Hasan, zwar, & Perkins, 2006)	Evaluation of ATAPS programs in South Highlands and Illawarra Divisions of General Practice 2004 – 2005	Analysis of process and patients outcomes from program data and qualitative satisfaction data. Data for number of GPs, AHPs, number of referrals and sessions attended, GP satisfaction and AHP satisfaction Patient measures: demographics, patient satisfaction, K10 and DASS clinical outcome measures	Strategy based on University of Melbourne Evaluations.	Different models were used – both successful. Referral reasons: depression 66% - 79%, Anxiety around 53%, Alcohol and drug use around 6%, psychotic disorders around 1%, somatic symptoms 1% (other 11 – 44% included bereavement, bi-polar, eating disorders, personality disorders). K10 and DASS42 scores significant clinical improvement Patients generally positive and satisfied 13 GPs only and some psychologists reported satisfaction with program and it increased access and improved communication between psychologists and GPs. Most happy with referral mechanism but preferred direct referral (for confidentiality and expediency, preference for less administration, concerns about too little remuneration.

(Winefield, Turnbull, Seiboth, & Taplin, 2007)	Evaluation of clinical outcomes of patients referred to a BOiMHC ATAPS by South Australian GPs	26 GPs and 251 referred patients	Patient satisfaction, GP satisfaction, psychological distress, life impairment and health service usage	Satisfaction with treatment program for both GPs and referred patients was high. Patients who attended 3 or more sessions reported greater reduction in distress and disability and gain s were maintained after 3 months. Acceptance of referral resulted in less health service use.
(Morley, Pirkis, Naccarella, et al., 2007)	Assesses rural ATAPS projects to determine if access to services has increased and whether this has improved patient outcomes	Survey of models of service delivery, MDs and 3 case studies	Frequencies and proportions for survey Frequencies, proportions and Chi Square for MDS	Rural projects used multiple models. Proportionally higher uptake in rural areas compared with urban projects. Majority of patients are female. Significantly lower majority, older and less educated in rural projects. Most took antidepressants and never had previous mental health care. Most common referral for cognitive and then behavioural interventions. Significant improvement in clinical outcome scores.
(Morley, Pirkis, Sanderson, et al., 2007)	Service delivery models and patient outcomes	Clinical patient outcomes Service delivery outcomes	MDS Survey of models of service delivery	All programs showed achieved patient outcomes Direct referral systems significantly better outcomes Direct employment non-significant better outcomes
(Barton et al., 2008)	Examine referrals to ATAPS and MAHS (More Allied Health Services) to identify characteristics of referrers and referees in the Adelaide Hills Division of General Practice	Extraction of data held by the Division between July 2001 – 2005.	Frequencies, percentages and Odds ratios.	116 GPs made 2451 referrals. 72% of referees were Female and more likely to be referred by female GPs. Men more likely referred by Male GPs to MAHS. Mean K10 scores were 31.3 for ATAPS. Referral reason mainly depression (74.13%) c.f. anxiety (55.21%). Co-morbid anxiety and depression was common.
(Doff, 2008)	5 aims at psychology clinic at the University of New England.: To profile BOiMHC clientele demographically and in terms of medical information. To identify symptoms improvement from treatment To determine if diagnosis mediates clinical improvement Client satisfaction with the program	Archival data of BOiMHC clients attending the Psychology Clinic at the University of New England and client satisfaction surveys	Frequencies and percentages Paired samples t-tests Little's MCAR Regression analysis Factor analysis Cronbach's alpha	Similar demographics to national data Largest diagnostic group was depression, then anxiety, then co-morbid depression and anxiety Antidepressant s most common drug, followed by anxiolytics Significant reduction on symptoms, not mediated by diagnosis Client satisfactions was high
(Fletcher et al., 2008)	Rate of demand in BOiMHC with the introduction of BAiMHC also comparing urban and rural	MDS of divisions Nov 2006 – march 2007	Correlation analysis of monthly number of sessions and number of AHPs reimbursed under BAiMHC 1/11/2006 – 31/3/2007	39040 BOiMHC sessions: 220,522 BAiMHC sessions Number of BOiMHC sessions remained constant: easier referral flexibility for AHP, similar pay system as private specialists Increase in BAiMHC sessions during first 5 months of operation: established history of quality service delivery, expenditure is known, provides steady AHP income and position Strong demand for both and are complementary and both are affordable,

				recommendation to maintain both services.
(Naccarella et al., 2008)	Demand management strategies for unmet need in ATAPS	Types of demand management strategies: Supply side vs. demand side strategies	Survey of ATAPS Project officers *Most successful **Second †least successful ‡ Useful and direct impact on supply and demand § not useful (but reserve was the strategies needed time to mature. NB: Projects mostly said demand management would not be an issue if projects were appropriately resourced	85% projects use at least 1 demand management strategy Mean of 5.6 different strategies in projects ‡81% informing and training GPs (training and referral out), advising about caps and co-payments, updates on referral numbers, referral criteria, appropriateness of referrals and waiting lists **‡76% Central point of control for demand management strategies (administration / intake systems) and solid infrastructure *‡61% monitor and limit referrals (voucher systems) §55% encourage partnership and collaboration particularly with mental health services relationship building MOU 55% Optimising session delivery – how soon presentation after referral must happen, session limits (6) and group therapy formats § 55% restrict criteria intake: communicate target group and eligibility criteria, demographics, symptoms severity, known to GP at least 6 months, (resentful stakeholders / forced decision making) ‡50% increasing workforce incl. Post graduate clinical psychology students. 43% strategic funding arrangements: monitoring monthly budgets, resource allocation formulae 41% prioritising referrals (wait list and triage – urgency or K10 score)†37% Co-payments: and non-attendance
(Dempsey & Donaghue, 2009)	Examine GPs perceptions of psychologists and the ways in which GPs have responded to these policy changes in making referrals for mental health patients	Qualitative interviews with 9 GPs in Western Australia	Thematic Analysis	Some GPs are optimistic about the changes under BOiMHC and others are negative or ambivalent about the administration of the program, not about the increased access to psychological services, particularly perceived increases in bureaucracy and paperwork. GPs would like to know more about the psychologists they are referring to.
(Fletcher et al., 2009)	Reports findings of ongoing evaluation of ATAPS services. Review of changes in GP uptake over time, consumer and session profiles.	MDS	Frequencies and percentages. Pre and post clinical outcome measurements.	GP participation has continued to increase. A reduction of referrals coincided with the introduction of Better Access to Mental Health Care program, but has continued to increase. Consumer profile is consistent: women, high prevalence disorders who have had difficulty accessing mental health care in the past who receive individual 1 hour CBT based sessions. Evidence for clinical improvement.
(Bassilios et al., 2010)	Compare uptake of BOiMHC and BAiMHC	MDS Medicare benefits schedule uptake data	Multiple linear regression # of sessions MDS BOMH Urban / rural uptake Medicare claims for BAMH	Uptake of both programs is high and complementary BAMH continues to rise, BOMH has remained steady (but could be due to capped funding BAMH is addressing unmet need unable to be covered by BOMH
(Byles, Dolja-Gore, Loxton, Parkinson, & Stewart Williams, 2011)	Quantify women's uptake of MBS items BAMHC and characteristics of women	Australian Longitudinal Study on Women's Health: 3 age cohorts (1921-26) (1946 – 1951) and (1973 – 1978)	Sf-36, uptake of mental health medicare items and out of pocket versus medicare costs	Most who reported mental health problems did not use medicare services (between 88% – 99%). SF-36 scores were lowest (more disability) in women who accessed mental health care and are associated with increased costs for women and medicare.
(Pirkis et al., 2011)	Assess clinical improvement of patients in	MDS 16,700 January 2006 – June 2010	Pre and Post treatment scores on a range of measures and then a	There was a strong improvement in absolute terms for most patients. Older patients, higher SES, no previous history of mental health care with

	BOiMHC ATAPS		logistic regression on K10 scores (7747)	higher pre-treatment K10 baseline scores improved the most. Consider rationalising the instruments used by divisions to the K10 and DASS>
Articles for Better Outcomes in Mental Health Care Program (not located in the systematic literature review)				
Author	Aim / objective	Study Design / Population	Analyses	Results
(Pirkis et al., 2004)	Is ATAPS improving access from initial 29 projects	Service delivery models Levels of Uptake Patient characteristics Treatment characteristics Advantages / disadvantages of projects	MDS Local project evaluation	Contract & direct employment 710 – 926 GPs 160-0229 AHPS (mostly psychologists) Concerns about needing more capacity Female (73%), low income 57%, less than year 12 (56%) 87% English speaking, Depression 77%, anxiety 55% Diagnostic assessment (62%), Cognitive interventions (59%), CBT (44%), Relaxation (31%) Improved relationship with GPs, Increased referral base, clinical supervision, professional support Increased satisfaction and improved outcomes (GP, AHPs, consumers
(Minas, Kilmidis, & Kokanovic, 2005)	Examine impact of BOMH on GP attitudes, training needs, service improvement strategies and patient management approaches	Survey of GPs in Melbourne area based on HIC records 2500 questionnaires sent.	GP demographics Interest in mental health work Registration in BOiMHC Views on MH in GP Mental health training needs Confidence managing mental disorders Referral sources Nature of presenting MH probs Strategies re how to improve capacity to do MH work Interest in MH research Comparison BOiMHC registered vs not registered	598 GPs (23.9%) returned questionnaires Referrers to BOMH: Expressed interest in Mental Health Care 28.4% registered for BOiMHC Registered had more positive attitude to mental health work, more confident with MH work, Both groups agreed on current emphasis on Mental Health in policy No difference expressed training needs: except non registered more training in assessment and diagnosis for more severe disorders (psychosis and neuropsychiatric conditions)
(Klimidis, Minas, & Kokanovic, 2006)	Compare GPs registered under BOiMHC and those not registered to addressing mental disorders in members of ethnic minority communities (EMCs)	Cross sectional study of 597 Melbourne metro GPs. 311 met criteria for EMCs patients with mental disorder past month. Registered v not registered for BOiMHC	Measures of difficulty in accessing bi-lingual allied health, interpreters and translated materials, accessing guidelines on working effectively with interpreters, accessing guidelines on cultural and migration factors affecting mental health and patient compliance.	Less registered GPs had problems of access to bilingual allied health, interpreters, translated materials or problems v those not registered. No difference in accessing guidelines or patient compliance. Most prevalent problems of all GPs were lack of access to bilingual allied health (70%), access to translated materials (58%) and low EMC patient compliance with Mental Health assessment and treatment.
(Morley, Pirkis, Sanderson, et al., 2007)	Explores whether 51 rural ATAPS programs are improving access and translating into consumer outcomes	Three data sources: survey of models of service delivery, MDS and 3 case studies	Comparison with 57 matched urban projects	Uptake of ATAPS higher in rural areas, more AHPs and GPs are involved and consumers have received care and delivered at low or no cost to consumers and achieving clinical improvements on standardised measures.

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National ATAPS Evaluations By Centre For Health Policy, Programs And Economics, The University Of Melbourne					
Author	# / 16	**Focus of Evaluation**	**Evaluation Source**	**Analyses**	**Results**
(Pirkis, Blashki, Headey, Morley, & Kohn, 2003)	1	Round 1 pilot projects Models of service delivery used in pilots Uptake of the pilots Advantages / disadvantages of the pilots	Local evaluation reports only of 15 pilots	69 projects in first 12 months – 15 were pilots	**Models**: Referral mechanisms, Retention of AHPs, Location of services **Uptake:** lead time necessary for infrastructure, 136 AHPS, 69 psychologists, 387 referring GPs, 2036 patients referred. All underestimates due to data availability
(Morley, Kohn, Pirkis, Blashki, & Burgess, 2004)	2	Round 1 pilot projects + supplementary national Models of service delivery used in pilots Uptake of the pilots Characteristics of patients Services provided Advantages / disadvantages of the pilots	Local evaluation reports MDS	15 pilots 14 Supplementary projects 40 round 2 projects	**Models**: As report 1 (voucher, brokerage and some have changed) **Uptake:** 8,678 therapy sessions, 710 – 926 GPs, 160 – 229 AHPs, 3,476 – 6,656 patients **Patient characteristics:** 58% low incomes, 56% < year 12, 77% diagnosed with depression and / or anxiety (55%), 40% no previous history of specialist mental health care **Services**: Mean 2.5 sessions per patient, 71% 1 hour, 97% individual, 55% Cognitive therapy, 41% behavioural
(Morley, Kohn, Pirkis, Blashki, & Burgess, 2005)	3	Round 1 pilot projects + supplementary, round 2 and 3, Victoria and Tasmania Explores models in greater depth of service delivery – have they changed since evaluation 1 and 2 Benefits and barriers for divisions, GPs, AHPs, patients	17 of the 25 ATAPS services in Victoria (68%) and 1 Tasmanian project	Evaluation Forum	**Models:** 2 categories: direct employment and contract **Locations:** co-located or own rooms in contract model **Referral system:** brokerage, voucher, register and direct referral Conclusion that model variations are adopted as appropriate in the contextual variation of benefits and barriers
(Kohn, Morley, Pirkis, Blashki, & Burgess, 2005)	4	Round 1 pilot projects + supplementary, round 2 National Models of service delivery used in pilots Uptake of the pilots Characteristics of patients accessing ATAPS Services provided Benefits and Barriers Lessons learned	Synthesis of report 1-3 Local evaluation reports MDS Focus on including round 2 projects	Round 1 pilots running 28months Supplementary, 21mths Round 2 18 months Round 3 8 mths (33)	**Uptake:** 45,823 therapy sessions, 1771 GPs, 596 AHPs, 12,758 patients **Patient characteristics:** 62% low incomes, 76% diagnosed with depression and / or anxiety (56%), 46% no previous history of specialist mental health care **Services**: Mean 3.6 sessions per patient, 75% 1 hour, 98% individual, 61% Cognitive therapy, 45% behavioural **Benefits:** GPs up skilling, improved capacity for high quality care, referral options. AHPs increased referral base, better relationships with GPs. Both liked structure. **Barriers:** GPs paperwork was too onerous. AHPs remuneration and more decision
(Pirkis, Morley, Kohn, Blashki, & Burgess, 2005)	5	What is profile o models of service delivery across the ATAPS projects Are particular models associated with different levels of access to services	Survey sent to PO's MDS (number of consumers accessing the projects		**Models:** 27% voucher system, 24% brokerage, 51% direct referral **Retention:** 76% contracted, 28% direct employment, 7% other means Models have been changed over time and modified No model was associated with high levels of access – all performing equally
(Kohn et al., 2005)	6	Rounds 1,2 and 3 nationally Changes in GP and AHP participation over time Changes to access to and nature of mental health care for consumers Changes in experiences of GP, AHPs and	Surveys for PO's and MDS	Synthesis of evaluations for rounds 1-3	**Uptake:** 102,120 therapy sessions, 2980 GPs, 1040 AHPs, 26,444 patients (mean 181.1 sessions per day) **Patient characteristics:** mostly female, low incomes, diagnosed with depression and / or anxiety, no previous history of specialist mental health care. **Benefits:** GPs up skilling, collaboration, improved capacity for high quality care, referral options. AHPs increased referral base, better relationships with GPs. Both liked structure.

		consumers Are there positive outcomes for consumers			**Barriers:** GPs paperwork was too onerous.GP concern about remuneration issues, inadequate feedback and confusion is less of an issue. AHPs remuneration and more decision. Consumers struggle with equity (cost) and the capped session limit **Outcomes:** Not much data (5% of consumers) – 88% getting better
(Morley, Kohn, et al., 2006)	7	Differences between urban and rural projects: Models Uptake Profiles of patients Services Outcomes Issues and solutions	Surveys for PO's and MDS Case studies	Case Studies	**Models:** Rural 37% direct employ and 53% from own rooms, Urban 21% direct employ and 72% from own rooms (existing private practices). Rural use direct referral systems more and frequently with co-location. **Uptake:** Similar GPs @ 1,600 14,000 – 16,000 patients (mean 181.1 sessions per day) Rural AHPs, = 359, urban AHPs = 770 **Patient characteristics:** mostly female with depression and anxiety and half taking ADT, individual sessions for 1 hour in both. In rural, more males, slightly older, English speaking at home, indigenous populations, lower SES, less educated, low incomes, diagnosed with depression and / or anxiety, no previous history of specialist mental health care. **Issues:** Rural: distance, workforce, lack of training and support for GPs, limited services, large indigenous populations, high unemployment and stigma. Urban: demand management, workforce, availability and co-ordination with other services.
(Morley, Pirkis, et al., 2006)	8	Level of consumer outcomes within and across projects Relationship between service delivery model and consumer outcomes	MDS PO survey of service delivery models	Pre and post treatment outcomes measures: K10, BAI, BDI, HADS, DASS21, DASS42, HoNOS, GWBI, STAI, BASIS32, SDS, GHQ28	Outcomes are positive, mostly large or medium magnitude. No differences in outcomes between models of service delivery. Only significant predictor was direct referral models and non significant trends for direct employment models
(Naccarella et al., 2006)	9	Demand Management Strategies: How many projects use demand management What strategies are being used Which ones are most helpful Features of strategies that have worked well or not	PO survey	Qualitative analysis 81% response rates* Most successful **Second †least successful ‡ Useful and direct impact on supply and demand § not useful (but reserve was the strategies needed time to mature. NB: Projects mostly said	85% projects use at least 1 demand management strategy Mean of 5.6 different strategies in projects ‡81% informing and training GPs (training and referral out), advising about caps and co-payments, updates on referral numbers, referral criteria, appropriateness of referrals and waiting lists **‡76% Central point of control for demand management strategies (administration / intake systems) and solid infrastructure *‡61% monitor and limit referrals (voucher systems) §55% encourage partnership and collaboration particularly with mental health services relationship building MOU 55% Optimising session delivery – how soon presentation after referral must happen, session limits (6) and group therapy formats § 55% restrict criteria intake: communicate target group and eligibility criteria, demographics, symptoms severity, known to GP at least 6 months, (resentful stakeholders / forced decision making) ‡50% increasing workforce incl. Post graduate clinical psychology students.

				demand management would not be an issue if projects were appropriately resourced	43% strategic funding arrangements: monitoring monthly budgets, resource allocation formulae 41% prioritising referrals (wait list and triage – urgency or K10 score)†37% Co-payments: and non attendance
(Fletcher et al., 2007)	10	Changes in participation in projects by GPs and AHPs Changes in profile of consumers over time Changes in the level of uptake of services provided by projects following introduction of Better Access. Outcomes for consumers	MDS MBS Medicare benefits branch		**Uptake:** 306,419 therapy sessions, 6,082 GPs, 2,220 AHPs, 72,409 patients No significant change in uptake with the introduction of BAMH. BOMH and BAMH appear to be operating complementarily. **Patient characteristics:** mostly female, around 40 years, low incomes, with depression and anxiety, no previous history of specialist mental health care.
(Kohn et al., 2007)	11	Use of data from evaluation reports by various stakeholders	Semi-structured interviews with 10 purposively sampled stakeholders representing audiences for the evaluations	Qualitative analysis	**3 categories of use:** Instrumental use, influencing divisions management and delivery of services and DoHA contractual arrangements Conceptual use: Contributed knowledge about the delivery of primary mental health care Symbolic / legitimative use: confirming the original premise for BOMH and supporting lobbying and advocacy for Mental Health reforms
(Fletcher et al., 2008)	12	Progressive achievements over time Changes in participation of AHPs and GPs Changes in the profile of consumers Outcomes for consumers	MDS Specifically consumer and session based data		**Uptake:** 420,555 therapy sessions (mean 5.2 sessions per patient), 7,776 GPs, 2,665 AHPs, 100,854 patients (81, 372 attended services) Most 1 hour sessions, almost all individual, 44% Cognitive therapy, 58% behavioural **Patient characteristics:** mostly female (three quarters), mean age 39 years, 2/3rd low incomes, with depression (75%) and anxiety (57%), ½ no previous history of specialist mental health care. Outcomes are positive, mostly large or medium magnitude in 65% of cases.
(Bassilios et al., 2009)	13	Changes in level of uptake of services provided by the projects following the introduction of Better Access 21 months ago	MDS MBS Medicare benefits branch		Divisional analysis of the number of session provided in 21 months since Better Outcomes introduction, temporary and minor reduction in BOMH uptake, which has recovered and session uptake in both BOMH and BAMH are increasing. They are complementary.
(Fletcher et al., 2009)	14	Progressive achievements over time (particularly with introduction of BAMH): Changes in AHP and GP participation Changes in consumer profiles Outcomes for consumers	MDS MBS Medicare benefits branch		**Uptake:** 602,405 therapy sessions (mean 5.1 sessions per patient), 10,296 GPs, 3,527 AHPs, 153,922 patients (116, 782 attended services) Most 1 hour sessions, almost all individual, 44% Cognitive therapy, 58% behavioural **Patient characteristics:** mostly female (three quarters), mean age 39 years, 2/3rd low incomes, with depression (75%) and anxiety (57%), ½ no previous history of specialist mental health care. Outcomes are positive, mostly large or medium magnitude in 86% of cases.
(Fletcher et al., 2010)	15	Progressive achievements over time: Levels of uptake Sociodemographic and clinical profiles of consumers	MDS PO survey	Comparison with previous and results and survey in 2005	**Uptake:** 709,684 therapy sessions (mean 5.3 sessions per patient), 15,251 GPs, 4,042 AHPs, 174,675 patients (135,033 (77%) attended services) Most 1 hour sessions, almost all individual, 44% Cognitive therapy, 58% behavioural

		Nature of care Changes in service delivery models over time			**Patient characteristics:** (consistently the same) mostly female (three quarters), mean age 39 years, 2/3rd low incomes, with depression (75%) and anxiety (57%), ½ no previous history of specialist mental health care. **Service Delivery:** Most common AHP retention was contractual located in own rooms with direct referral. This model has increased but there has been a bigger increase in direct employment models and decrease in all other models. Many divisions use combined models that are contextually relevant.
(Pirkis et al., 2010)	16		MDS Outcome measures, Pre and post	Linear Regression Analysis: BAI, BASIS32, BDI, DASS depression subscale, DASS anxiety subscale, DASS stress subscale, GAF, GWBI,HADS, HoNOS, K10	**Patient characteristics:** Female (70.4%), 42.5% between 25 – 44 years, 65.6% low incomes, 26% depression and anxiety, depression (29.8%) and anxiety (15.6%),45.2% no previous history of specialist mental health care. Results from 9 different outcome measures available for 113,107 patients. Most common measure was the K10 available for 7,747, All groups made significant improvements. High K10 scores correlated with; age 45 – 64 years old, higher income, level of education, no previous history of education, 13 – 18 sessions, unknown treatment type at last session and pre-test score but **NOT** gender, diagnosis or co-payment.
(Bassilios et al., 2011)	17	Examination of participation rates by GPs, AHPs and consumers.	MDS	MDS	**Uptake:** July 2003 – December 2010:879,331 sessions, 18,545 GPs, 4,695 AHPS, 223,851 patients. **Patient characteristics:** Female (70%), mean age 39 years, 2/3rds low incomes, half no previous history of specialist mental health care. **Service delivery**: Most 1 hour, nearly all individual, around half were Cognitive therapy and / or behavioural therapy. 79% did not incur gap payment. **Outcomes:** All outcome s measures demonstrated clinical significant differences in improvement.
(Australian Government Department of Health and Aging, 2010)		Review to understand how to better compliment Better Access to Mental Health Care and to target gaps for people for who there are barriers to access BAMHC	External ATAPS review panel Consultation with stakeholders Analysis of evaluation data Review of policy and plans including new National Mental health Policy and the Fourth National Mental Health plan Assessment of day to day administration of BOMH by stakeholders		Start 2003. Administered Divisions of General Practice 600,000 sessions. $27 million p/ year allocated. Total $80.7 million. Primarily depression (76%) and anxiety (69%). Improved outcomes in 86% of cases. 68% low income earners. 45% provided in rural areas. Better Access was designed on the BOiMHC model but offered through private providers on a fee for service basis. Over 90% of providers are psychologists and clinical psychologists Review of suicide prevention projects ATAPS should be refocused to target hard to reach groups (financially disadvantaged, ATSI, children and young people, services for parents when children have a mental disorder, high risk or suicide or homelessness Move to efficiency, lower unit costs and reward for through put.

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BEACH (Bettering the Evaluation and Care of Health) General Practice Activity in Australia Cross sectional national analysis of clinical activity during GP encounters: GP characteristics, encounters (payment and type), patient characteristics, GP clinical activity (prescription, referral)			
Author	**# / 13**	**Study Design**	**Results**
(H. Britt, Sayer, Miller, Charles, Scahill, Horn, & Bhasale, 1999)	1	47,600 encounters, 476 GPs April 1998 (inception) – October 1998	Depression 5th most common problem representing 3.6% of encounters No referrals recorded
(H. Britt, Sayer, Miller, Charles, Scahill, Horn, Bhasale, et al., 1999)	2	98,400 encounters, 984 GPs April 1998 (inception) – March 1999	Depression 4th most common problem representing 3.5% of encounters 3% encounters referred to allied health, 4.8% were to Psychologists
(H. Britt et al., 2000)	5	104,700 encounters, 1047 GPs April 1999 – March 2000	Depression 4th most common problem representing 3.4% of encounters 3.1% encounters referred to allied health, 4.7% were to Psychologists
(Helena Britt et al., 2001)	8	99,900 encounters, 999 GPs April 1999 – March 2000	Depression 4th most common problem representing 3.7% of encounters 2.3% encounters referred to allied health, 6.6% were to Psychologists Depression most frequent problem with clinical treatment Psychological counselling 5.8% of non-pharmacological treatments 0.1% of encounters were prescribed Anti-Depressant Treatment (ADT)
(H. Britt et al., 2002)	10	98,300 encounters, 983 GPs April 2001 - March 2002	Depression 4th most common problem representing 3.4% of encounters. 2.3% encounters referred to allied health, 6.6% were to Psychologists Psychological counselling 6.1% of non-pharmacological treatments Psychological medicine prescription in 8.4% - Prescribing rates of all ADT did not change but SSRIs increased.
(H. Britt et al., 2003)	14	100,800 encounters, 1,008 GPs April 2002 - March 2003	Depression 4th most common problem representing 3.5% of encounters. 2.5% encounters referred to allied health, 7.0% were to Psychologists Psychological counselling 2.9% of non-pharmacological treatments (2nd most comment managed non pharmacologically, anxiety 6th) Psychological medicine prescription in 8.3%.
(H. Britt et al., 2004)	16	100,000 encounters, 1,000 GPs April 2003 - March 2004	Depression 4th most common problem representing 3.7% of encounters. 2.6% encounters referred to allied health, 7.1% were to Psychologists Psychological counselling 5.6% of non-pharmacological treatments (2nd most comment managed non pharmacologically, anxiety 6th) Psychological medicine prescription in 8.8%.
(H. Britt et al., 2005)	18	95,300 encounters, 953 GPs April 2004- March 2005 Annual results	Depression 4th most common problem 3.7% of encounters Anxiety 1.7%, sleep disturbance 1.7% 2.7% encounters referred to allied health, 8.1% were to Psychologists 2nd most frequently managed chronic problem (depression)

			ADT prescription 3.1, anxiolytic 2.0 Psychological counselling 5.9% of non-pharmacological treatments
(H. Britt et al., 2007)	19	101,170 encounters, 1,017 GPs April 2005- March 2006	85% Australian population visit GP in a year. Depression 4th most frequently managed problem 1.9% of encounters Anxiety 1.2%, sleep disturbance 1.2% ADT prescription 3.2, anxiolytic 2.1 2.9% encounters referred to allied health, 9.7% were to Psychologists
(H. Britt, Miller, Charles, Bayram, et al., 2008)	21	93,000 encounters, 930 GPs April 2006-March 2007	Depression 5th most frequently managed problem 2.5% of encounters Anxiety (10th) 1.2%, sleep (11th) disturbance 1.1% 4 of 5 encounters for depression were for ongoing management. 1.1% of all new cases were new cases of depression. 3rd most commonly managed chronic condition. Of all prescriptions, ADT prescription 4.1% (most commonly sertraline and venlafaxine, anxiolytic 2.4% (most commonly diazepam 1.3% and oxazepam 0.8%), antipsychotics (1.2% Psychological counselling was 6.4% of all clinical treatments 3.7% of referrals to allied health, 28% to Psychologists
(H. Britt, Miller, et al., 2008b)	22	95,300 encounters, 953 GPs April 2007- 2008	Depression 5th most frequently managed problem 4% of encounters and is primarily managed as a chronic disorder, 2nd most common at 7.0% of chronic encounters. Overall encounters, Depression (5th) 2.6% Anxiety (13th) 1.2%, sleep (14th) disturbance 1.1% Of all prescriptions, ADT prescription 4.1%,, anxiolytic 2.4%, antipsychotics (1.3%) Psychological counselling was 6.2% of all clinical treatments 3.4% of referrals to allied health, 19% to Psychologists
(H. Britt et al., 2009)	25	98,800 encounters with 988 April 2009 – March 2010	Depression 5th most frequently managed problem 4% of encounters and is primarily managed as a chronic disorder, 2nd most common at 8.0% of chronic encounters. Overall encounters, Depression 2.8% Anxiety (12th most common) 1.2%, sleep disturbance (14th most common) 1.0%, Tobacco abuse (0.5%) Of all prescriptions, ADT prescription 4.2%, anxiolytic 2.4%, antipsychotics (1.4%) Psychological counselling was 6.4% of all clinical treatments 3.0% of referrals to allied health, 20% to Psychologists

(H. Britt, et al., 2009)	27	101,349 encounters, 988 GPs April 2009 – March 2010 inclusive	Depression 5th most frequently managed problem 4% of encounters and is primarily managed as a chronic disorder, 2nd most common at 8.0% of chronic encounters. Overall encounters, Depression 2.8% Anxiety (11th most common) 1.2%, sleep disturbance (14th most common) 1.0%, Tobacco abuse (0.5%) Of all prescriptions, ADT prescription 4.6%, anxiolytic 2.1%, antipsychotics (1.3%) Psychological counselling was 6.6% of all clinical treatments 3.9% encounters referred to allied health, 20% of these were to Psychologists (primarily depression 12.1%)
BEACH Summary Reports			
(H. Britt & Miller, 2000)	Peer reviewed article	Review of BEACH study findings from the first 2 years of application and discuss 5 areas of future health policy and workforce planning. Discusses the usefulness of the data for health policy and planning	BEACH detects : 1. Workforce issues and source of GP services 2. Changes in clinical problems managed over time 3. Accurate management records and insight into problem management 4. Health indicators and risk factors 5. Accurate records of consultation times
(Sayer et al., 2000)	3	Supplementary analysis of nominated data (SAND) 1998-1999 Depression data: 4.006 encounters, 200 GPs	27.2% encounters with depressive episode in previous 12 months. 5th most common presentation, Females 30.5% and Males 22.8% 25.9% no help 54.3% help from a GP 25.3% family and friends 8.8% psychiatrist Medication used in 30.6% (mostly sertraline)
(H. Britt, et al., 2005)	18	95,300 encounters, 953 GPs April 2004- March 2005 Focus on measurement of changes over time	85% Australian population visit GP in a year. No change in presentations for depression
(H. Britt, Miller, Charles, Bayram, et al., 2008)	21	Supplementary analysis of nominated data (SAND) 1998-2008	No change in identification or management rates. GP counselling for depression increased in 2000-2001 and continued to 2006-07. When medicare rebates were offered for psychological consultation for

			patients referred by GPs (BAMH), the rate of GP counselling returned to 1998-99 rates and referrals to psychologists sharply increased. Referrals to psychiatrists decreased. Same number of referrals to allied health, but more to psychologists
(H. Britt, Miller, et al., 2008a)	23	Comparison of BEACH data	GPs are first line in health care 88% of population visited a GP at least once in 2005-06 9,874 GPs, 981.983 encounters Depressive disorder was the 2nd most common chronic problem managed the prevalence of treatment has significantly increased from 3.5% to 4% of presenting problems. Anxiety remained stable around 1.8%. No significant change in rates of referral to allied health professionals
(H. Britt & Miller, 2009)	24	Comparison of BEACH data	GP management of chronic illness (e.g.: Diabetes type 2) in line with health policy. Increased referral to psychologist but rate of management in GP increased 1998-2008 particularly for depression suggesting collaborative care. A significant increase in GP management of anxiety and depression occurred before BOiMHC was introduced. With MBS items for psychologists, referral to psychiatrists decreased and psychologists increased.

Other BEACH reports not included in table:

General practice series no. 3, Measures of health and health care delivery in general practice in Australia

General practice series no. 6, It's different in the bush, a comparison of general practice activity in metropolitan and rural areas of Australia 1998-2000

General practice series no. 7, Imaging orders by general practitioners in Australia 1999-00

General practice series no. 9, Cardiovascular problems and risk behaviours among patients at general practice encounters in Australia 1998-00

General practice series no. 11, Male consultations in general practice in Australia 1999-00

General practice series no. 12, Older patients attending general practice in Australia

General practice series no. 13, Changes in pathology ordering by GPs in Australia 1998-2001

General practice series no. 15, General practice activity in the states and territories of Australia 1998-2003

General practice series no. 17, Locality matters: the influence of geography on general practice in Australia 1998-2004

General practice series no. 20, Patient-based substudies from BEACH: abstracts and research tools 1999-2006

General practice series no. 26, General practice activity in Australia 1999-00 to 2008-09; 10 year data tables

General practice series no. 28, General practice activity in Australia 2000-01 to 2009-10: 10 year data tables

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1. DOB: ☐☐ / ☐☐ / ☐☐☐☐

2. Gender :
   - ☐ Male
   - ☐ Female

3. Postcode: ☐☐☐☐ (Suburb:_____)

4. Current relationship status:
   - ☐ Never Married
   - ☐ Married / de facto
   - ☐ Separated / divorced
   - ☐ Widowed

5. Highest level of education:
   - ☐ Still at school
   - ☐ Completed year 10 or equivalent
   - ☐ Completed year 12 or technical college / TAFE qualifications
   - ☐ Tertiary qualifications

6. Employment status
   - ☐ Employed (Full or Part Time)
   - ☐ Unemployed /
   - ☐ Other (benefits/pension)

7. Household Income
   - ☐ < $50,000
   - ☐ $50,000 - $99,000
   - ☐ $100,000 +

8. Have you received mental health care in the past month?

   If yes, tick all that apply:

   ☐. 1. Public Inpatient ☐ 4. Public Outpatient
   ☐ 2. Private Inpatient ☐ 5. Private Outpatient
   ☐ 3. GP ☐ 6. Other

9. How many times have you attended your GP in the past month for any reason?
   - ☐ Never
   - ☐ Once
   - ☐ 1 – 3
   - ☐ 3 – 6
   - ☐ 6 +

INSTRUCTIONS: Have any of the following life events or problems happened to you during the last 6 months? Please tick the box for yes or no.

1 . You yourself suffered a serious illness, injury or an assault.	Yes ☐	No ☐
2 . A serious illness, injury or assault happened to a close relative.	Yes ☐	No ☐
3 . Your parent, child or spouse died	Yes ☐	No ☐
4 . A close family friend or another relative (aunt cousin, grandparent) died.	Yes ☐	No ☐
5 . You had a separation due to marital difficulties	Yes ☐	No ☐
6. You broke off a steady relationship	Yes ☐	No ☐
7. You had a serious problem with a close friend , neighbour or relative	Yes ☐	No ☐
8 . You became unemployed or you were seeking work unsuccessfully for more than one month.	Yes ☐	No ☐
9. You were from your sacked job	Yes ☐	No ☐
10. Y ou had a major financial crisis.	Yes ☐	No ☐
11. You had problems with the police and a court appearance	Yes ☐	No ☐
12. Something you valued was lost or stolen.	Yes ☐	No ☐

For office use only:

Yes ☐ No ☐ Score: ☐

Q1	In general, would you say your health is...	Excellent. Very Good Good Fair Poor	○ ○ ○ ○ ○		
The following items are about activities you might do during a typical day. Does your health now limit you in these activities? Is so, how much?					
Q2	Moderate activities such as moving a table, pushing a vacuum cleaner, bowling, or playing golf.	Limited a lot Limited a little Not limited at all	○ ○ ○		
Q3	Climbing several flights of stairs.	Limited a lot Limited a little Not limited at all	○ ○ ○		
These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.					
Q4	Have you accomplished less than you would like as a result of your physical health?	No Yes	○ ○		
Q5	Were you limited in the kind of work or other regular activities you do as a result of your physical health?	No Yes	○ ○		
Q6	Have you accomplished less that you would like to as a result of any emotional problems, such as feeling depressed or anxious?	No Yes	○ ○		
Q7	Did you not do work or other regular activities as carefully as usual as a result of any emotional problems such as feeling depressed or anxious?	No Yes	○ ○		
Q8	How much did pain interfere with your normal work, including both work outside the home and housework?	Not at all Slightly Moderately Quite a bit Extremely	○ ○ ○ ○ ○		
Q 9	How much have you felt calm and peaceful?	All of the time Most of the time A good bit of the time Some of the time A little of the time None of the time	○ ○ ○ ○ ○ ○		
Q10	How much of the time did you have a lot of energy?	All of the time Most of the time A good bit of the time Some of the time None of the time	○ ○ ○ ○ ○		
Q11	How much time have you felt down?	All of the time Most of the time A good bit of the time Some of the time A little of the time None of the time	○ ○ ○ ○ ○ ○		
Q12	How much time has your physical health or emotional problems interfered with your social activities like visiting with friends, relatives etc?	All of the time Most of the time Some of the time A little of the time None of the time	○ ○ ○ ○ ○		

>50 = No Disability; 40–50 = Mild Disability; 30-40 = Moderate Disability; <30 = Severe Disability. **M =** **+ 61 =** **P =** **+**

	Yes	No
GHQ		
1. Have you recently felt that life isn't worth living?	☐	☐
2. Have you recently thought of the possibility that you might do away with yourself?	☐	☐
3. Have you recently found yourself wishing you were dead and away from it all?	☐	☐
4. Have you recently found that the idea of taking your own life kept coming into your mind?	☐	☐
MINI		
C5. In the past month did you have a suicidal plan?	☐	☐
C6. In the past month did you take any active steps to prepare to injure yourself	☐	☐
or to prepare for a suicide attempt in which you expected or intended to die?	☐	☐
C7. In the past month did you deliberately injure yourself without intending to kill yourself?	☐	☐
C8 In the past month did you attempt suicide?	☐	☐
Did you hope to be **res**cued, or to survive?	☐	☐
Did you expect or **int**end to die?	☐	☐
Do you presently have a suicide **plan**?	☐	☐

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

Depression =
Anxiety =
Stress =

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

For all questions, please fill in the appropriate response circle. Fill in the circles like this: ●

In the past 4 weeks:	None of the time (1)	A little of the time (2)	Some of the time (3)	Most of the time (4)	All of the time (5)
1. About how often did you feel tired out for no good reason?	○	○	○	○	○
2. About how often did you feel nervous?	○	○	○	○	○
3. About how often did you feel so nervous that nothing could calm you down?	○	○	○	○	○
4. About how often did you feel hopeless?	○	○	○	○	○
5. About how often did you feel restless or fidgety?	○	○	○	○	○
6. About how often did you feel so restless you could not sit still?	○	○	○	○	○
7. About how often did you feel depressed?	○	○	○	○	○
8. About how often did you feel that everything is an effort?	○	○	○	○	○
9. About how often did you feel so sad that nothing could cheer you up?	○	○	○	○	○
10. About how often did you feel worthless?	○	○	○	○	○

K10 score: ____/50

A. WHO - ASSIST V3.0

INTERVIEWER ID		**COUNTRY**		**CLINIC**	
PATIENT ID			**DATE**		

INTRODUCTION ***(Please read to patient)***

Thank you for agreeing to take part in this brief interview about alcohol, tobacco products and other drugs. I am going to ask you some questions about your experience of using these substances across your lifetime and in the past three months. These substances can be smoked, swallowed, snorted, inhaled, injected or taken in the form of pills (show drug card).

Some of the substances listed may be prescribed by a doctor (like amphetamines, sedatives, pain medications). For this interview, we will not record medications that are used as prescribed by your doctor. However, if you have taken such medications for reasons other than prescription, or taken them more frequently or at higher doses than prescribed, please let me know. While we are also interested in knowing about your use of various illicit drugs, please be assured that information on such use will be treated as strictly confidential.

NOTE: BEFORE ASKING QUESTIONS, GIVE ASSIST RESPONSE CARD TO PATIENT

Question 1
(if completing follow-up please cross check the patient's answers with the answers given for Q1 at baseline. Any differences on this question should be queried)

In your life, which of the following substances have you ever used? *(NON-MEDICAL USE ONLY)*	**No**	**Yes**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	3
d. Cocaine (coke, crack, etc.)	0	3
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	3
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	3
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	3
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	3
j. Other - specify:	0	3

Probe if all answers are negative:
"Not even when you were in school?"

If "No" to all items, stop interview.

If "Yes" to any of these items, ask Question 2 for each substance ever used.

Question 2

In the past three months, how often have you used the substances you mentioned *(FIRST DRUG, SECOND DRUG, ETC)*?	**Never**	**Once or Twice**	**Monthly**	**Weekly**	**Daily or Almost Daily**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	2	3	4	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	2	3	4	6
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	2	3	4	6
d. Cocaine (coke, crack, etc.)	0	2	3	4	6
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	2	3	4	6
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	2	3	4	6
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	2	3	4	6
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	2	3	4	6
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	2	3	4	6
j. Other - specify:	0	2	3	4	6

If "Never" to all items in Question 2, skip to Question 6.

If any substances in Question 2 were used in the previous three months, continue with Questions 3, 4 & 5 for each substance used.

Question 3

During the past three months, how often have you had a strong desire or urge to use *(FIRST DRUG, SECOND DRUG, ETC)*?	**Never**	**Once or Twice**	**Monthly**	**Weekly**	**Daily or Almost Daily**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	3	4	5	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	3	4	5	6
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	3	4	5	6
d. Cocaine (coke, crack, etc.)	0	3	4	5	6
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	3	4	5	6
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	3	4	5	6
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	3	4	5	6
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	3	4	5	6
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	3	4	5	6
j. Other - specify:	0	3	4	5	6

Question 4

During the past three months, how often has your use of *(FIRST DRUG, SECOND DRUG, ETC)* led to health, social, legal or financial problems?	Never	Once or Twice	Monthly	Weekly	Daily or Almost Daily
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	4	5	6	7
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	4	5	6	7
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	4	5	6	7
d. Cocaine (coke, crack, etc.)	0	4	5	6	7
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	4	5	6	7
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	4	5	6	7
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	4	5	6	7
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	4	5	6	7
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	4	5	6	7
j. Other - specify:	0	4	5	6	7

Question 5

During the past three months, how often have you failed to do what was normally expected of you because of your use of *(FIRST DRUG, SECOND DRUG, ETC)*?	Never	Once or Twice	Monthly	Weekly	Daily or Almost Daily
a. Tobacco products					
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	5	6	7	8
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	5	6	7	8
d. Cocaine (coke, crack, etc.)	0	5	6	7	8
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	5	6	7	8
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	5	6	7	8
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	5	6	7	8
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	5	6	7	8
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	5	6	7	8
j. Other - specify:	0	5	6	7	8

Ask Questions 6 & 7 for all substances ever used (i.e. those endorsed in Question 1)

Question 6

Has a friend or relative or anyone else ever expressed concern about your use of *(FIRST DRUG, SECOND DRUG, ETC.)*?	**No, Never**	**Yes, in the past 3 months**	**Yes, but not in the past 3 months**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	6	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	6	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	6	3
d. Cocaine (coke, crack, etc.)	0	6	3
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	6	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	6	3
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	6	3
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	6	3
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	6	3
j. Other – specify:	0	6	3

Question 7

Have you ever tried and failed to control, cut down or stop using *(FIRST DRUG, SECOND DRUG, ETC.)*?	**No, Never**	**Yes, in the past 3 months**	**Yes, but not in the past 3 months**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	6	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	6	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	6	3
d. Cocaine (coke, crack, etc.)	0	6	3
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	6	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	6	3
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	6	3
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	6	3
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	6	3
j. Other – specify:	0	6	3

Question 8

	No, Never	Yes, in the past 3 months	Yes, but not in the past 3 months
Have you ever used any drug by injection? ***(NON-MEDICAL USE ONLY)***	0	2	1

IMPORTANT NOTE:

Patients who have injected drugs in the last 3 months should be asked about their pattern of injecting during this period, to determine their risk levels and the best course of intervention.

PATTERN OF INJECTING		INTERVENTION GUIDELINES
Once weekly or less **Fewer than 3 days in a row**	or	**Brief Intervention including "risks associated with injecting" card**
More than once per week **3 or more days in a row**	or	**Further assessment and more intensive treatment***

HOW TO CALCULATE A SPECIFIC SUBSTANCE INVOLVEMENT SCORE.

For each substance (labelled a. to j.) add up the scores received for questions 2 through 7 inclusive. Do not include the results from either Q1 or Q8 in this score. For example, a score for cannabis would be calculated as: **Q2c + Q3c + Q4c + Q5c + Q6c + Q7c**

Note that Q5 for tobacco is not coded, and is calculated as: **Q2a + Q3a + Q4a + Q6a + Q7a**

THE TYPE OF INTERVENTION IS DETERMINED BY THE PATIENT'S SPECIFIC SUBSTANCE INVOLVEMENT SCORE

	Record specific substance score	no intervention	receive brief intervention	more intensive treatment *
a. tobacco		0 - 3	4 - 26	27+
b. alcohol		0 - 10	11 - 26	27+
c. cannabis		0 - 3	4 - 26	27+
d. cocaine		0 - 3	4 - 26	27+
e. amphetamine		0 - 3	4 - 26	27+
f. inhalants		0 - 3	4 - 26	27+
g. sedatives		0 - 3	4 - 26	27+
h. hallucinogens		0 - 3	4 - 26	27+
i. opioids		0 - 3	4 - 26	27+
j. other drugs		0 - 3	4 - 26	27+

NOTE: *FURTHER ASSESSMENT AND MORE INTENSIVE TREATMENT may be provided by the health professional(s) within your primary care setting, or, by a specialist drug and alcohol treatment service when available.

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23 December 2008

HUNTER NEW ENGLAND
NSW HEALTH

Associate Professor G Carter
A/Director Consultation Liaison Psychiatry
Clinical Liaison Psychiatry
Calvary Mater Hospital

Dear Professor Carter,

Re: General Practice Patients Accessing Psychological Services: Two Populations or One? (08/12/17/5.09)

HNEHREC Reference No: 08/12/17/5.09
NSW HREC Reference No:HREC/08/HNE/419

Thank you for submitting the above protocol which was first considered by the Hunter New England Human Research Ethics Committee at its meeting held on 17 December 2008. This Human Research Ethics Committee is constituted and operates in accordance with the National Health and Medical Research Council's *National Statement on Ethical Conduct in Human Research (2007)* (National Statement) and the *CPMP/ICH Note for Guidance on Good Clinical Practice*. Further, this Committee has been accredited by the NSW Department of Health as a lead HREC under the model for single ethical and scientific review.

I am pleased to advise that following receipt of the requested clarifications and changes to the information sheet and consent form by the Professional Officer, the Hunter New England Human Research Ethics Committee has granted ethical approval for the above protocol.

The following documentation has been reviewed and approved by the Hunter New England Human Research Ethics Committee:

- The Participant Information Statement and Consent Form – (version 2 dated 22 December 2008);
- The Questionnaire;
- WHO – ASSIST (V3.0); and
- The M.I.N.I – Mini International Neuropsychiatric Interview (English version 5.0.0 dated 1 July 2006)

For the protocol **General Practice Patients Accessing Psychological Services: Two Populations or One?**

Approval from the Hunter New England Human Research Ethics Committee for the above protocol is given for a maximum of **3** years from the date of this letter, after which a renewal application will be required if the protocol has not been completed.

The *National Statement on Ethical Conduct in Human Research (2007),* which the Committee is obliged to adhere to, include the requirement that the committee monitors the research protocols it has approved. In order for the Committee to fulfil this function, it requires:

- a report of the progress of the above protocol be submitted at 12 monthly intervals. Your review date is **December 2009.** A proforma for the annual report will be sent two weeks prior to the due date.

Hunter New England Human Research Ethics Committee
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http://www.hnehealth.nsw.gov.au/Human_Research_Ethics

- A final report be submitted at the completion of the above protocol, that is after data analysis has been completed and a final report compiled. A proforma for the final report will be sent two weeks prior to the due date.

- All variations or amendments to this protocol, including amendments to the Information Sheet and Consent Form, must be forwarded to and approved by the Hunter New England Human Research Ethics Committee prior to their implementation.

- The Principal Investigator will immediately report anything which might warrant review of ethical approval of the project in the specified format, including:

    - any serious or unexpected adverse events
        - Adverse events, however minor, must be recorded as observed by the Investigator or as volunteered by a participant in this protocol. Full details will be documented, whether or not the Investigator or his deputies considers the event to be related to the trial substance or procedure.

        - Serious adverse events that occur during the study or within six months of completion of the trial at your site should be reported to the Professional Officer of the Hunter New England Human Research Ethics Committee as soon as possible and at the latest within 72 hours.

        - Copies of serious adverse event reports from other sites should be sent to the Hunter New England Human Research Ethics Committee for review as soon as possible after being received.

        - Serious adverse events are defined as:

            - Causing death, life threatening or serious disability.
            - Cause or prolong hospitalisation.
            - Overdoses, cancers, congenital abnormalities whether judged to be caused by the investigational agent or new procedure or not.

    - unforeseen events that might affect continued ethical acceptability of the project.

- If for some reason the above protocol does not commence (for example it does not receive funding); is suspended or discontinued, please inform Dr Nicole Gerrand, the Professional Officer of the Hunter New England Human Research Ethics Committee as soon as possible.

The Hunter New England Human Research Ethics Committee also has delegated authority to approve the commencement of this research on behalf of the Hunter New England Area Health Service. This research may therefore commence.

Should you have any queries about your project please contact Dr Nicole Gerrand as per her contact details at the bottom of the page. The Hunter New England Human Research Ethics Committee Terms of Reference, Standard Operating Procedures, membership and standard forms are available from the Hunter New England Area Health Service website:

Internet address:
http://www.hnehealth.nsw.gov.au/Human_Research_Ethics

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Please quote **08/12/17/5.09** in all correspondence.

You are reminded that this letter constitutes ethical approval only. You must not commence this research project at a site until separate authorisation form the Chief Executive or delegate of that site has been obtained.

The Hunter New England Human Research Ethics Committee wishes you every success in your research.

Yours faithfully

For: Dr M Parsons
Chair
Hunter New England Human Research Ethics Committee

Article for GP Newsletter – Research

Research is being conducted at GP Psychology Services to compare characteristics of 3 primary care populations: Patients who attend their GP for any reason, those who are referred to and who attend the Better Outcomes in Mental Health Care program and the Suicide and Self Harm Fast Response Service. The research is part of postgraduate Clinical Psychology Doctoral degree being undertaken by Gillian Maddock, a psychologist who has worked with GP Psychology Services for the past 2 years. GP's from each of the 5 GP networks are needed for a sample of only 3 general primary care patients each. If you are interested in participating, please contact:

Gillian Maddock, GP Psychology Services 49260529.

Monday, 09 January 2012

Practice Manager
Surgery

Dear Dr,

I am conducting research into Mental Health in General Practice in conjunction with GP Access Psychology Services and the University of Newcastle. I would like to discuss the possibility of recruiting GP patients from your surgery to participate in a brief research interview.

I have attached a brief statement outlining the purpose of the research and what is involved and a copy of the participant information sheet in case more information is required.

I would appreciate it if you could bring this to the attention of the GPs in your practice for them to consider being involved. I will call you directly in the coming week to talk about the research in more detail. Please feel welcome to contact me directly if there are any questions.

Yours Faithfully,

Gillian Maddock
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Why is the research being done?
Symptoms of mental illness and suicidal thoughts can be quite common in patients attending their GP. This research will help us to better identify symptoms of mental health problems and suicidal thoughts in GP patients who access psychological support compared with those who do not.

Who can participate?
Patients aged between 18 – 65, who attend their GP for any reason, but who do not access psychological support through GP Psychology Services at GP Access.

What is involved?
A limited number of patients per GP will be interviewed for 30 – 40 minutes using a range of questionnaires assessing various aspects of mental health, including symptoms of anxiety and depression, recent stressful life events, substance use, suicidal thoughts and a diagnostic interview.

The researcher would attend the General Practice Clinic on the day. Reception staff would advise patients that mental health research is being conducted by a psychologist with whom they could speak with at the time to get more information and consider participating. Any patients who express interest would be given more detailed information by the researcher and, if willing to volunteer, would provide informed consent. Interviews would take place before or after the GP consultation at the clinic.

Risk and benefits of participating?
The results will be used to generate a 1 page mental health report for the GP and treating psychologist (if relevant).

The psychologist will debrief patients after the interview. If there are any concerns about the patient's general wellbeing, or if distress or risk of harm is identified, the researcher will support the patient to contact the GP or psychologist (if relevant). The research assessment is not a substitute for counselling or psychological support.

How will information be used?
This research has ethics approval from the Hunter New England Human Research Ethics Committee and is post-graduate research for a Doctorate of Clinical Psychology. The data will be published in a thesis and in professional peer review journals. The results may also be used to apply for ongoing funding for psychological services, particularly for the Suicide and Self Harm Fast Intervention service piloted at GP Psychology Services in 2009.

Your participation would be highly valued.
Gillian Maddock

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

Assoc. Prof. Gregory Carter
A/Director Department of Consultation-Liaison Psychiatry
Calvary Mater Newcastle Hospital

Conjoint Associate Professor & Principal Researcher
Brain and Mental Health Priority Research Centre
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Gregory.Carter@newcastle.edu.au]

Consent Form for the Research Project:
General Practice Patients Accessing Psychological Services: Two populations or one?

Chief Investigator: Greg Carter; Co-investigators: Gillian Maddock and Professor Mike Startup

Document Version 2; dated 22/12/2008

☐ I agree to participate in the above research project and give my consent freely.

☐ I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.

☐ I understand I can withdraw from the project without penalty at any time and I do not have to give any reason for withdrawing.

☐ I consent to completing questionnaires and participating in an interview.

☐ I consent to the assessment results being reported to my GP and psychologist if I am attending one.

☐ I understand that my personal information will remain confidential to the researchers, however if serious risk of harm to myself or others is identified in the course of the interview, the interviewer may be required to disclose the necessary information to a third party.

☐ I have had the opportunity to have questions answered to my satisfaction.

Print Name: _____

Signature: _____ **Date:** _____

Instructions for Authors Australian New Zealand Journal of Psychiatry

The Australian and New Zealand Journal of Psychiatry is the official journal of the Royal Australian and New Zealand College of Psychiatrists. It is published twelve times per year and accepts submissions presented as original research, reviews, or correspondence. Editorial comments, reflection papers and book reviews are commissioned by the Editor.

The acceptance criteria for all papers are the quality and originality of the research and its significance to our readership. All articles submitted are first screened by the Editor for suitability, quality and originality. If suitable, articles are assigned to the Editor or an Associate Editor who coordinates the peer review process, which usually involves seeking reviews from at least two researchers expert in the field. The Editorial Board reserves the right to refuse any material for publication and advises that authors should retain copies of submitted manuscripts and correspondence as material cannot be returned. Final acceptance or rejection rests with the Editorial Board.

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All articles submitted to the Journal must comply with these instructions. Failure to do so will result in return of the manuscript and possible delay in publication. Manuscripts should be written so that they are intelligible to the professional reader who is not a specialist in the particular field. Where contributions are judged as acceptable for publication on the basis of scientific content, the Editor or the Publisher reserve the right to modify typescripts to eliminate ambiguity and repetition and improve communication between author and reader. If extensive alterations are required, the manuscript will be returned to the author for revision.

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Papers are accepted for publication in the Journal on the understanding that the content has not been published or submitted for publication elsewhere. This must be stated in the covering letter. Authors must also state that the protocol for the research project has been approved by a suitably constituted Ethics Committee of the institution within which the work was undertaken and that it conforms to the provisions of the Declaration of Helsinki in 1995 (as revised in Edinburgh 2000). All investigations on human subjects must include a statement that the subject gave informed consent and patient anonymity should be preserved. Any experiments involving animals must be demonstrated to be ethically acceptable.

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If you think your proposed article justifies 'jumping the queue', please call, fax or email the Editorial Office before submitting the manuscript.

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Manuscripts should follow the style of the Vancouver agreement detailed in the International Committee of Medical Journal Editors' revised 'Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication', as presented at www.ICMJE.org/

The journal uses UK spelling and authors should therefore follow the latest edition of the Concise Oxford Dictionary.

All measurements must be given in SI units as outlined in the latest edition of Units, Symbols and Abbreviations: A Guide for Medical and Scientific Editors and Authors (Royal Society of Medicine Press, London).

Abbreviations should be used sparingly and only where they ease the reader's task by reducing repetition of long, technical terms. Initially use the word in full, followed by the abbreviation in parentheses. Thereafter use the abbreviation.

Drugs should be referred to by their generic names, rather than brand names. Do not use pejorative labels such as 'schizophrenics', 'psychotics' and 'neurotics'. Instead refer to 'patients with schizophrenia' etc. Use the word 'patient' rather than 'client' or 'consumer' if possible.

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Title page: The title page should contain: (i) The title of the paper; the title should be short, informative and contain the major key words. (ii) A short running title (less than 40

characters, including spaces) should also be provided. (iii) The full names of the authors and position titles at respective institutions/places of employment. (iv) The addresses of the institutions at which the work was carried out (addresses for authors other than the correspondence author should contain the department, institution, city and country). (v) The present address of any author if different to that where the work was carried out. (vi) The full postal and email address, plus facsimile and telephone numbers, of the author to whom correspondence about the manuscript, proofs and requests for offprints should be sent.

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Objective: questions addressed; principal aims of a review.

Method: design, setting, sample, interventions (if appropriate), chief outcome measures; for reviews give sources of data and criteria for their selection.

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Key words: up to five. Key words should be taken from those recommended by the US National Library of Medicine's Medical Subject Headings (MeSH) browser list at: www.nlm.nih.gov/mesh/meshhome.html

Text: Authors should use subheadings to divide the sections of their manuscript: Introduction, Materials and methods, Results, Discussion, Acknowledgements, References.

Acknowledgements: The source of financial grants and other funding should be acknowledged, including a frank declaration of the authors' industrial links and affiliations. The contribution of colleagues or institutions should also be acknowledged. Thanks to anonymous reviewers are not appropriate.

References: The Vancouver system of referencing should be used. In the text, references should be cited using Arabic numerals in square brackets in the order in which they appear. If cited only in tables or figure legends, number them according to the first identification of the table or figure in the text.

In the reference list, the references should be numbered and listed in order of appearance in the text. Cite the names of all authors when there are six or fewer; when seven or more list the first three followed by 'et al'. Names of journals should be abbreviated in the style used by PubMed/MEDLINE.

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References should be listed in the following format:

Journal article

1. Henderson S, Andrews G, Hall W. Australia’s mental health: an overview of the general population survey. Aust N Z J Psychiatry 2000; 34:197-205

Book

2. Rosenberg M. Society and the adolescent self-image. Middletown, CT: Wesleyan University Press, 1989.

Chapter in a book

3. Kadzin A. Psychosocial treatments for conduct disorder in children. In: Nathan PE, Gorman JM, eds. A guide to treatments that work. New York, NY: Oxford University Press, 1998:65-89.

Web site

4. Nicholson J, Beibel K, Kinden B, Henry A, Stier L. Critical issues for parents with mental illness and their families. New York, NY: Centre for Mental Health Services; Substance Abuse and Mental Health Services Administration, 2001. [cited 9 Aug 2006.] Available from URL: http://www.mentalhealth.org/publications/all/pubs/

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