An exploration of the prevalence, diagnosis and treatment of depression in patients with multiple chronic conditions

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Abstract

Introduction

The likelihood of developing two or more chronic illnesses (‘multimorbidity’) increases with age. Depression is common with chronic physical illness, but may not be detected or treated in multimorbid patients.

This thesis is comprised of a series of related studies designed to explore the prevalence, diagnosis and management of depression in patients with multiple chronic conditions using an explanatory mixed methods design. Data and participants were sourced from a multidisciplinary outpatient clinic in metropolitan Adelaide.

Study One: Clinic Database Analysis

The study estimated the prevalence of a) depression diagnoses and b) depressive symptoms using the Geriatric Depression Scale (GDS) in an outpatient clinic population, exploring agreement between clinician diagnoses of depression and GDS scores. Doctor-diagnosed depression was recorded for 15% of patients. Based on GDS scores, 50% of patients reported threshold-level depression symptoms, although many had no corresponding depression diagnosis. This suggests that whilst many multimorbid patients experience depressive symptoms, these may not be detected.

Study Two: Comparing the GDS, HADS and CIDI

Study Two compared GDS scores with Hospital Anxiety and Depression Scale (HADS) scores and Composite International Diagnostic Interview (CIDI) diagnoses. The GDS identified more depression-positive cases than the HADS and the CIDI, but the CIDI failed to detect severe depressive symptoms in several patients. During the
study, concerns arose relating to the use of the CIDI with older multimorbid patients; consequently, the study was terminated early.

**Study Three: Patient Symptom Priority Scale**

The Patient Symptom Priority Scale was developed to explore patient perceptions of symptom burden and functional impact, and piloted in the clinic. Patients described more physical symptoms than emotional symptoms. Age correlated positively with chronic illness and physical symptom counts, and negatively with psychological symptom impact. Geriatric Depression Scale scores correlated with all psychological variables.

**Study Four: GP experiences of depression diagnosis and management with multimorbid patients**

Semi-structured interviews were conducted with GPs who had referred patients to the clinic, to explore GP perceptions of depression diagnosis and treatment with multimorbid patients and generate a grounded theory model reflecting the role of multimorbidity in their practice. Multimorbidity generated increased time to determine symptom causation and build relationship with the patient. GPs offered medical and social depression interventions.

**Study Five: Experiences of depression diagnosis and treatment amongst multimorbid patients**

To explore the patient perspective, further qualitative interviews were undertaken with multimorbid clinic patients who had been diagnosed with depression.
Thematic analysis revealed common diagnosis and treatment experiences amongst these multimorbid patients with depression. All patients attributed depression onset to the loss of their normal life, with stigma emerging as an underlying influence in patient decisions about treatment.

**Conclusion**

This is the first study to compare depression symptoms with depression diagnoses in a multimorbid population, and found that many patients experience threshold-level depression symptoms that are not being addressed. General practitioners are aware of contextual factors, and try to address them, but also make assumptions about their patients that may not be accurate. This may account for the number of patients still suffering. The findings suggest that a thorough symptom profile is necessary for effective detection and treatment of depression in this vulnerable population.
Certification

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to Melinda Stanners and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my thesis when deposited in the University Library, being made available for loan and photocopying, subject to the provisions of the Copyright Act 1968. I also give permission for the digital version of my thesis to be made available on the web, via the University’s digital research repository, the Library catalogue, and also through web search engines, unless permission has been granted by the University to restrict access for a period of time.

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Chapter One: Depression in the context of chronic and multiple chronic illnesses

An early draft of this chapter was published as an open access book chapter in 2012, after which it was substantially revised for inclusion in this thesis. The chapter is included in this thesis with the permission of co-author Dr Christopher Barton.


1.1 Aims of the chapter

This chapter outlines the literature surrounding chronic illness and depression, exploring the prevalence of multiple chronic conditions and the impact on mental health. A description of challenges faced by clinicians in identifying and treating depression in the multimorbid patient follows, with treatment strategies also discussed. A brief look at innovations in chronic disease management leads into a description of the context of the studies undertaken as part of this PhD thesis. The chapter concludes with a brief outline of each study, and a summary of the study outcomes.

1.2 Introduction

Current projections for ageing suggest that 25% of the populations of developed countries will be aged 65 years and over by the year 2050 (1). As an individual ages, the likelihood of living with one or more chronic illnesses increases (2). Epidemiological research has identified that individuals living with chronic physical illnesses, such as heart disease, diabetes and respiratory diseases, are more likely to experience depression than those without chronic illness (3, 4). These individuals experience worse quality of life (5), increased numbers and severity of symptoms (5, 6), are more likely to be non-
compliant with treatment regimens (7) and more likely to suffer additional morbidity (7) and premature mortality (8, 9).

Consequently, the impact of the interaction between chronic disease, disability and depression is of increasing relevance in the pursuit of healthy ageing. This chapter reviews the literature to describe the epidemiology of depression and multimorbidity, innovations in the management of persons living with multiple chronic illnesses, and opportunities for improving the quality of mental health care for older people with multimorbidities.

1.3 Epidemiology of Chronic Illness and Depression

The Australian Bureau of Statistics National Health Survey (conducted from 2007-2008) estimated that up to 75% of Australians across all ages (10) experience one or more chronic health condition, with chronic illnesses constituting the leading causes of death in Australia in 2010 (11). Likewise, mental health problems are common in the community and pose a significant disease burden on both a global (12) and national (13) scale. Depression is one of the most common mental health conditions and is found in people of all regions, all countries and all societies (12), with the World Health Organisation’s global burden of disease report estimating the 12 month prevalence of uni-polar depressive episodes to be between 5.8% and 9.5% in the year 2000 (12). The incidence, prevalence and persistence of depression is not evenly distributed in the community, with depression more common amongst those who are younger, female (12), who have lower income or education (14-16), live in poverty, or who live in poorer neighbourhoods (12, 17, 18).

People with chronic illness are also particularly vulnerable to depression. This relationship is most clearly demonstrated when comparing prevalence of depression in community settings where the prevalence is typically low (3%-5%) compared with
primary care (5%-10%) and inpatient settings (10%-14%) (19). Studies have primarily reported increased prevalence of major depression in individuals diagnosed with specific medical illnesses, such as cardiovascular disease (including myocardial infarct, stroke and cerebrovascular disease), type II diabetes, chronic obstructive pulmonary disease, arthritis and chronic pain, asthma, and cancer (20-26).

Depression has a significant impact on chronic medical illness, with depression associated with increased symptom burden (perhaps arising from poorer adherence to treatment regimens and a more negative perception of health), additive functional impairment, greater medical utilisation costs, and worse quality of life (27, 28). Depressive disorders can adversely affect the course of medical illnesses (29) and recent evidence suggests that patients with depression die 5 to 10 years earlier than patients without depression (30).

Over the past decade, several studies have identified depression as a risk factor for future chronic illness, even where unrelated to pre-existing illness (27). Using data from the Canadian National Public Health Survey, Patten reported hazard ratios associated with major depression and several prevalent long-term medical conditions (21). The age- and sex-adjusted risk of developing heart disease (1.6), arthritis/rheumatism (1.9), asthma (2.0) back pain (1.4), chronic obstructive pulmonary disease (2.4), and hypertension (1.7) increased to a statistically significantly level in individuals with major depression at baseline over the eight year follow-up period of the study.

Recent research suggests that the relationship between chronic illness and depression is likely to be bidirectional, whereby having depression increases risk of chronic illness, and conversely, having chronic illness increases risk of depression (25-27, 29). Katon’s conceptual model (31) highlights the complex interactions between
known risk factors for major depression and chronic medical illness, such as genetic and biological vulnerability, childhood adversity, stressful life events, and health risk behaviours such as smoking, sedentary lifestyle and over eating (31). While the mechanisms by which disease and depression interact remain undefined, it is clear that patients with chronic disease and comorbid anxiety or depression experience greater disease burden (6, 32) and disability (5, 33).

The majority of studies investigating relationships between depression and chronic illnesses have focused on individual conditions, either excluding patients with multiple chronic illnesses or simply failing to consider conditions in combination. In our ageing population, however, increasing numbers of individuals will live with more than one chronic illness, and studies are only now beginning to investigate the prevalence and impact of depression in patients with multiple chronic conditions.

1.4 Definition and Epidemiology of Multimorbidity

The term ‘multimorbidity’ is often used to describe the presence of two or more chronic conditions in an individual (34), in contrast to the term ‘comorbidity’, which is defined as the presence of any disease in addition to an ‘index’ disease under study (Feinstein, 1967, quoted in (35)). Practical applications of the term ‘multimorbidity’ differ across the literature. In Marengoni et. al.’s (36) thorough systematic review of the literature to date, three major operational definitions are described:

- Number of concurrent diseases in an individual – the definition most frequently used in epidemiological research, but which does not differentiate between patients living symptom-free and patients experiencing severe functional loss.
Cumulative indices measuring both number and severity of conditions – used in clinical studies for identifying patients at risk of negative health outcomes.

Cumulative effect of conditions, symptom burden, and cognitive and physical dysfunction – used where care needs and use of services are addressed.

Attempts to estimate the prevalence and patterns of multimorbidity have produced inconsistent results. Studies investigating multimorbidity have been conducted worldwide, including the Netherlands (37) Canada (38), Sweden (39), Australia (40), United States (41), and Ireland (42), producing prevalence estimates ranging from 64.7% to 98.7% of patients over 65, with lower prevalence estimates found amongst persons aged less than 65 (43, 44). Differences in data collection methods, defining and scoring multimorbidity, categorising ages, and modelling prevalence data, limit the extent to which these studies can be compared. Data drawn from administrative databases and surveys (37) suggest a much lower prevalence of multimorbidity than data drawn from medical records (38). Recent studies propose patient record review as the most accurate method of multimorbidity data collection (45), as databases and surveys may provide incomplete information. As yet no resolution of these confounding factors has been reached.

Most studies published to date tend to define and measure multimorbidity as a simple disease count, but do not address the burden of disease; consequently, scales such as the Charlson Comorbidity index (46), the Index of Co-Existential Diseases (ICED) (47) and the Cumulative Illness Rating Scale (CIRS) (48) have been developed to provide a measure of severity in comorbidity and multimorbidity research. The Charlson index provides a weighted score on the basis of individual disease count and
severity, the ICED includes disease count, severity and physical impairment, and the CIRS classifies diseases by organ domains and attributes a severity score to each. Where the CIRS has been used in the literature, multimorbidity is defined as ‘the presence of illness in two or more morbidity domains’ (pp73) (40).

A German research group redefined multimorbidity yet again as the co-occurrence of three or more chronic conditions, applying factor analysis to insurance claims from adults over the age of 65 to identify patterns of statistically significant chronic disease combinations (49). Three factors (cardiovascular and metabolic disorders, anxiety, depression and somatoform disorders, and neuropsychiatric disorders) emerged, with approximately fifty percent of claimants belonging to at least one multimorbidity pattern. Whilst the study found that half of insured Germans over 65 years of age belong to a pattern of multimorbidity, the findings are of limited usefulness for epidemiological or clinical application, as the associations between conditions within and between factors were not explored.

The same research group examined triadic disease combinations specific to multimorbid patients using the same data (50). Multimorbidity was again defined as three or more chronic conditions, yielding a prevalence of 45% amongst patients 65-70 years and 65% amongst patients 80 years and older. Multimorbidity occurred in a broad range of disease combination variations at low prevalences. The most frequently occurring triad conditions occurred at low individual prevalence, suggesting that future research would benefit from a synergistic approach to multimorbidity. The three-disease definition of multimorbidity renders these studies incomparable to other prevalence research, as no other research group has shared this definition of multimorbidity.

In Australia, recent studies have confirmed that multimorbidity increases with age (40, 51). Whilst the majority of prevalence studies have focused on adults aged over
65, several Australian studies have estimated that multimorbidity affects between 4.4% - 46.5% of patients under 65. The first study to investigate the prevalence of multimorbidity in Australia applied the CIRS multi-domain definition of multimorbidity, and found that 3398 (37.1%) patients from across 305 general practices had chronic disease in two or more organ domains (40). Prevalence rates of 14.7% for patients between 25-44, 46.5% for patients between 45-64, 74.6% for patients between 65-74, and 83.2% for patients aged 75 and older established a correlation between multimorbidity and age, and highlighted the frequent occurrence of multimorbidity amongst younger general practice patients (40). These results could not be generalised to the wider Australian population, however, as the sample of general practice patients excluded healthy Australians, inflating disease estimates. This study could not be compared with other prevalence studies worldwide, either, as preceding prevalence research had predominantly applied the disease count definition of multimorbidity. As the researchers obtained patient data from GPs and not patients, symptom severity data was not collected, raising questions about the value of using the CIRS when no justification was made, and no benefit was derived, from using organ domain count as opposed to disease count.

A more recent study obtained data using random sampling techniques in the community and reported much lower rates of 4.4% of South Australians between 20-39, and 15.0% of adults aged 40-59 experiencing two or more chronic conditions (51). This study was limited by reliance on self report and a disease list that only included asthma, cardiovascular disease, chronic obstructive pulmonary disease, diabetes, any current mental health disorder, arthritis and osteoporosis, and in its omission of other chronic conditions it does not provide a true reflection of multimorbidity in the South Australian population. The finding that two or more of the diseases under study occurred in a
substantial proportion of adults younger than 60 years of age, however, is a reminder of the need to expand the practical definition of multimorbidity to encompass younger adults.

1.4.1 **Multimorbidity and psychological wellbeing**

Patient perception of health and quality of life interact with multimorbidity, with one systematic review of multimorbidity studies identifying an inverse relationship between disease count and health-related quality of life (HRQOL), but again, the studies reviewed were limited by inconsistency of measures and definitions, and the absence of disease burden measures (52). A recent study looking at multimorbidity and self-rated health found that the effect on perception of health of a single chronic disease was larger than the cumulative effect of multiple chronic conditions, but that from the first disease onwards, multimorbidity is associated with a smaller cumulative decline in self-rated health (53). This is interesting in light of findings that although disease count has been associated with decline of physical functioning in both cross-sectional (54) and longitudinal (55) studies, mortality has been found to be better predicted by disability than number of conditions (56).

Disability has also been found to be more predictive of depression than age (57). Roberts, Kaplan and Shema et.al.’s (57) analysis of the prevalence of major depressive episodes from the 1994 cohort of the Alameda County Study found that, when all risk factors were accounted for, age-related increases in depression were attributable to declines in physical health, physical function and perceptions of well-being. Fortin et. al.’s (58) multivariate analyses of psychological distress and multimorbidity amongst 238 primary care patients in Quebec, Canada, found that psychological distress was significantly greater when measured using the Cumulative Illness Rating Scale (CIRS) than when multimorbidity was measured by a simple illness count, finding that the risk
of psychological distress was almost 5 times greater in the group with the highest burden of disease. These findings, supported by subsequent research (1), contradict the assumption that depression is an inevitable effect of ageing, and highlight the impact of disease and disability on mental wellbeing.

Despite the apparent connection between disability and depression, few studies have investigated the occurrence of depression in people living with multimorbidity. One Australian study involving 7,620 patients recruited from thirty general practices in Victoria found that the prevalence of probable depression increased with increasing number of chronic physical conditions (59). Adjusting for age, sex and location, patients with two conditions had the odds of being diagnosed with depression of 2.40, and those with five or more conditions had the odds of being diagnosed with depression of 3.45.

Although they found a clear relationship between the number of individual chronic conditions and depressive symptoms, the authors suggested that the relationship between the two is mediated by the presence of functional limitations and patient perception of HRQOL. This study highlights that patient perception of health affects their mental wellbeing, supporting previous findings connecting multimorbidity and perceived HRQOL (52), and proposes that a more synergistic view of functional disability and patient perception of health would provide more value in a clinic setting than focusing on one factor.

The findings are subject to several limitations, however, as the comorbidity list was limited to twelve common physical conditions, leaving the role of other chronic conditions unexplored. Also, although the survey asked whether the participant experienced any functional limitation, no measure of disease burden was taken, and the relationship between severity of disease burden and HRQOL could not be explored. Finally, 95% of respondents nominated English as their first language, suggesting that
people with poorer English language skills were not able to complete the postal survey, and consequently are not represented in the data. As an estimated 27% of Australia’s resident population were born overseas as of the 2010-2011 census (60), with increasing numbers migrating from countries where the national language is not English, this is a significant oversight.

1.5 Challenges in the management of the patient with multimorbidity and depression

A number of challenges have been identified in the identification and treatment of patients with comorbid depression and chronic illness (27, 61). While high quality trials of antidepressant treatments and psychotherapies demonstrate the effectiveness of these treatments in depressed medically ill patients, the efficacy of these treatments is lower in this population than in depressed individuals without chronic illness (26). More intensive collaborative treatments that include antidepressants, psychotherapy, education and case management can be effective in this patient group (26).

Although the effect of depression on patterns of treatment, expenditures and outcomes for individual chronic medical conditions has received significant attention, the impact of multimorbidity on the identification and treatment of depression is only now being investigated. Additional challenges may be present in the identification, particularly in elderly patients, and treatment of depression in multimorbid patients.

1.5.1 Identification of depression in the elderly, multimorbid patient

A worldwide study conducted by the World Health Organisation (WHO) found that depression consistently occurs more frequently in people with a chronic condition (62). Depression is also associated with increased risk of the development of other
health conditions and increased symptom burden (6); therefore, timely detection and management of depression should be a priority where chronic illness is present.

At the frontline of mental health medicine, evidence suggests that GPs may struggle to detect and diagnose clinical depression in older patients (63-65). Depressive symptom presentation differs in older adults as compared with younger adults (64, 66). Older patients suffering from depression will complain of irritability or feeling down, or admit to having lost interest in previously pleasurable activities (66), but more often experience depression in a somatic form. The denial of psychological symptoms whilst emphasising physical symptoms is referred to as ‘somatisation’ (67). A study of Canadian GPs found that clinician detection of depression was significantly affected where patients presented with physical symptoms of depression (68). Complicating the presentation of depressive illness is the higher likelihood of older patients experiencing chronic disease, loss of function, and pain, where symptoms such as low energy, poor appetite, weight loss or cognitive decline may be related to depression, or disease, or both (66). Chronically ill patients may also complain of medically unexplained symptoms or higher levels of pain (6). Consequently, where a chronic disease is present, depression is at risk of being undiagnosed or untreated (69).

Differentiating between depression and other psychological and social problems continues to pose a challenge even where GP education has occurred. After ten years of education and guidelines, GPs in the Netherlands still struggled to differentiate depression from social problems in patients over 55 (70). Justification of the presence of depression further complicates diagnosis, as identified by a recent meta-synthesis of papers addressing GP depression diagnosis in the United Kingdom (71). Where social or physical circumstances were viewed as justifying the presence of depression, some clinicians were found to take a ‘normalising’ approach to the patient’s depressive
symptoms. Reluctant to medicalise social problems, these clinicians struggled to differentiate between distress and clinical depression (71). This poses a risk for clinicians who view depression in multimorbid patients as a natural response to illness and disability, as they may fail to recognise clinical depression and consequently withhold treatment by normalising and justifying patient depression.

Grief further complicates depression diagnosis. Older patients face the loss of spouses and peers, and although a grief reaction may take the appearance of a depressive episode (72), in a healthy grief process the bereaved moves from acute grief to a state of integration and recovery of pleasure in life (73). Where acute grief lingers and becomes pathological, however, clinicians may misattribute and normalise symptoms of depression in bereaved patients, and inadvertently deprive patients of treatment (73). Pathological grief and bereavement-related depression have been identified as unique conditions separate from major depression (74), and have also been differentiated from major depressive disorder in the elderly (74, 75).

To aid the identification and diagnosis of depression, scales like the Geriatric Depression Scale (76), the Beck Depression Inventory (77), and the Hospital Anxiety and Depression Scale (78), have been developed using criteria drawn from the DSM criteria. As yet, no validation of any of these scales has been attempted in multimorbid patient groups; this raises concerns about their reliability where depressive symptoms overlap with symptoms of disease (79), particularly where somatic symptoms are addressed in the scale questionnaire. For example, Geriatric Depression Scale item #13 (80) asks, ‘Do you feel full of energy?’ A negative answer to this question is attributed to depression, but in a patient experiencing one or more chronic conditions, a lack of energy could as equally be a vicissitude of their illnesses or medications as a symptom of depression. Item #2 of the Geriatric Depression Scale may be similarly inappropriate
for patients with multiple chronic conditions, as an endorsement of the question ‘Have you dropped many activities or interests?’ could also be attributable to disability due to disease. Somatic symptoms in the Beck Depression Inventory (77) may be likewise unreliable in their attribution of symptoms to depression; but whilst the Hospital Anxiety and Depression Score’s exclusion of somatic symptoms provides a higher degree of face validity, no validation in the multimorbid population has yet been published. Additionally, questions relating to feelings of sadness, worthlessness or suicidality in the Hospital Anxiety and Depression Score may not be useful where patients deny psychological symptoms.

1.6 Treatment of Depression in multimorbid patients

Once diagnosed, depression can remain untreated for a variety of reasons, such as competing demands on the time spent in consultation, patient/clinician resistance to discussing the depression or accepting/offering treatment, polypharmacy, fear of adverse effects, and limited access to treatment and services.

Due to time limitations in clinical settings, when depression presents alongside multiple physical conditions, the treatment of physical conditions can often take precedence (81). Where patients prioritise symptoms to maximise their limited time with GPs, they may be unwilling to take time away from physical concerns to discuss their mental health; consequently, where physical symptoms are the patient’s primary cause for concern, GPs may be unwilling to raise the issue of treatment for depression when patients have not complained about psychological suffering (82).

Patient acceptance of the diagnosis is a critical hurdle for general practitioners in providing depression treatment for older chronically ill patients, as many older patients deny or normalise depressive symptoms or attribute them to physical illness (66, 67). Patient engagement is necessary for successful depression treatment (83), with general
practitioners often providing education and encouragement for patients to accept the need for some form of intervention.

1.6.1  **Treatment: Pharmacotherapy**

Antidepressant treatment has good evidence of success in older patients (84) and remains the leading treatment mode in multimorbid patients, with one study in the United States suggesting that amongst multimorbid adults with a diagnosis of depression, twice as many patients (56.2%) were prescribed antidepressants compared with those who received psychotherapy (21.4)%. The remaining 22.5% received no treatment for depression (85).

In patients with multiple chronic conditions, and particularly in elderly multimorbid patients, polypharmacy and medication side effects are salient concerns. Whilst software programs are available that assist general practitioners attempting to manage multiple medications and their interactions, both patients and GPs are wary of disrupting a successful medication combination that may have taken some trial and error to reach. Even where GPs may be confident in their choice of antidepressant, patient anxiety around disrupting their medication plan may result in continued resistance to treatment. Additionally, potential adverse effects of medications may exacerbate particular vulnerabilities in the elderly, such as dizziness increasing the risk of falls, sedation affecting cognition, potential serotonin syndrome when used in combination with other serotonergic agents, resulting in GP reluctance to prescribe and patient reluctance to trial them (86, 87).

1.6.1.1  **Non-compliance with medication**

Even where GPs have prescribed an antidepressant, patient non-compliance may present a barrier to effective depression treatment. Zivin and Kales’ (83) narrative review reported antidepressant medication non-adherence rates ranging from 40-75% in
depressed elderly patients, and identified treatment preferences, resistance regarding depression’s status as a medical illness, poor social support, cost of treatment and stigma as variables that affect non-adherence. Prior negative experiences, fear of adverse reactions, fear of antidepressant addiction, and polypharmacy also impacted negatively on medication adherence, as well as fear that the antidepressant would prevent the occurrence of natural sadness (83). Other studies have identified that expectation of positive benefits from taking medication, social support, and cognitive function are critical factors for antidepressant adherence, but that the same factors are also negatively impacted on by depression (7).

1.6.2 Treatment: Psychotherapy

There is a noticeable gap in the literature on the subject of multimorbidity and psychotherapy. Psychotherapy is often used in the management of pain (88), and has been observed to be offered to multimorbid patients (85), but no research to date has examined psychotherapy techniques or efficacy in this population.

One potentially useful technique is interpersonal psychotherapy (IPT), which posits interpersonal relationships as the context in which patients express depression. This conversational therapeutic technique is designed to identify and explore the focus of patient problems (grouped into four categories: grief, role transition, role dispute, and interpersonal deficits), explore and implement coping strategies, and consolidate gains over 12-16 weeks (89). Interpersonal psychotherapy has been found to be beneficial in treating mood disorders in older adults in a range of contexts, including disability and cognitive impairment (89), and in light of the highly relevant focus categories may be appropriate for use with multimorbid patients, especially where depressive symptoms are attributed to functional disability or role loss.

1.6.3 Other Strategies: Social Prescribing
Qualitative research has found that GPs engage in what is referred to as ‘social prescribing’ – recommending interventions outside of the medical framework – where patients do not respond to interventions embedded in the framework of the medical model (90), or when GPs believe depression to be related to loneliness or isolation (86). Such interventions include activities such as exercise, pet ownership, and activities with groups that facilitate social engagement.

Studies have suggested that exercise may alleviate depressive symptoms and improve mental as well as physical wellbeing in depressed adults with and without a range of chronic diseases (91). Studies are not conclusive, however, and efficacy may vary according to condition, as exercise was found to improve physical function and quality of life but not psychological wellbeing in one group of patients with chronic heart failure (92). Physical limitations due to symptoms of illness may limit the extent to which exercise may be useful for multimorbid patients, and no studies have yet addressed the efficacy of exercise in patients with multiple chronic conditions. Research is needed to explore whether exercise appropriate to the patient’s capability alleviates depressive symptoms in this population.

Research over the last thirty years on the physical and mental impact of pet ownership has also produced mixed results. Several studies have suggested that pet ownership can improve physical and mental health (93, 94), whilst some have reported an absence of effect of pet ownership on physical health (95), and one study of Australian adults aged between 60-65 found a detrimental effect, reporting poorer physical and mental health and higher levels of psychoticism for pet owners (96). One recent study attributed the inconsistency in the literature to a lack of attention to gender and marital status as contributing variables, finding that only single adults and women benefited psychologically from dog ownership (97).
Social engagement strategies are recommended by GPs to address perceived loneliness and isolation. Whilst a gap remains in the literature exploring loneliness and depression in patients with multiple chronic conditions, physical incapacity to engage in previously enjoyed activities, tiredness resulting from illness, medication adverse effects or depression, and time-of-life events such as the deaths of peers or spouse may foster an environment in which loneliness can develop. Loneliness has been found to be associated with depression in a range of studies worldwide (98); consequently, whilst interventions that encourage or facilitate social engagement may sit outside of the current medical model of depression treatment, they may be beneficial for depressed multimorbid patients. Further research into the efficacy of social interventions is needed.

1.7 Innovations in the treatment of multimorbidity and implications for mental health

There are a number of challenges in the treatment of the patient with multimorbidity. Whilst Western medical systems and health care professionals struggled to adapt to the shift in disease burden from acute, primarily infectious disease to chronic illness through the second half of the 20th Century, now these systems of care need to adapt again to support the treatment of increasingly older patients with multiple chronic illnesses.

To help improve chronic care, there is a need to strengthen the primary care system, encourage care coordination, and promote care management of high cost patients with complex conditions (99, 100). Momentum is building in the move away from traditional medical care models, where patients see specialists for care of individual conditions with limited or no interaction between care providers, towards a
more collaborative, integrated model of care, where patients play a central role in decision making about their treatment.

Multidisciplinary approaches have been trialled and discussed in a range of health care settings, including maternity and child health services (101), chronic headache care (102), community-dwelling elders (103), and eczema sufferers (104) and have been found to optimise patient outcomes in palliative care for lung cancer (105) and short bowel syndrome (106). The dynamics of multidisciplinary teams have been studied in post-cancer follow-up care (107) and maternity care (108), as well as in a hospital setting (109). A 2004 systematic review of systematic reviews of integrated care programs found that despite considerable heterogeneity of care models, integrated care programs reduced fragmentation, and improved continuity and coordination of care, providing an overall improvement in patient care (110).

Several successful models of care for older persons with chronic conditions have been evaluated, and a recent systematic review of models of comprehensive care for older adults with chronic conditions describes 15 of these (100). The models primarily involved interdisciplinary primary care, or services that enhance traditional primary care (100). Community based approaches, such as chronic disease self-management, have also been found to be effective, including for patients with multimorbidity and depression (111).

As the first line of medical care, the role of coordinator of care often falls to primary care providers, which may prove problematic in complex patients. Patients frequently accessing specialty care have been found to experience less continuity of care with their primary care provider, suggesting that high use of specialist services may compromise the primary care provider’s ability to provide adequate coordination of care (112). Where complex patients receive large amounts of specialty care, it may be more
effective to share coordination of care with other care providers; this could be achieved where the specialist is part of a multidisciplinary team.

Other solutions continue to emerge. For example, dedicated multidisciplinary clinics providing coordinated care to multimorbid patients are a fairly recent phenomenon that has been successful in improving coordination of care and patients outcomes in Ireland (109), and also at the Royal Adelaide Hospital in Adelaide, South Australia. As this clinic was an important source for participants in this research, its operation is outlined below.

1.7.1 The Multidisciplinary Ambulatory Consulting Service

The Multidisciplinary Ambulatory Consulting Service (MACS) clinic, operated out of the clinical pharmacology unit at the Royal Adelaide Hospital in South Australia, provides multi-disciplinary care for multimorbid outpatients with complex care needs. Its multidisciplinary staff includes physicians and physician trainees in a variety of fields including clinical pharmacology, cardiology, general medicine and geriatrics, nursing and pharmacy. Patients are referred to a specific specialist in the clinic, often during hospital admission and sometimes by a general practitioner, with whom clinic staff maintain active communication.

Prior to their clinic appointment, patients receive by post a questionnaire designed to obtain details of health issues, concerns, conditions and medications to facilitate better pre-clinic preparation for staff. The questionnaire includes the Geriatric Depression Scale (GDS) to alert staff to the potential for clinical depression. Upon arrival at the clinic, patients see a nurse who measures their weight and blood pressure, and discusses contextual stressors and potential support needs such as community services or domiciliary care. Patients then meet with the pharmacist, bringing all medications and other vitamins and supplements for the pharmacist to review on their
first appointment, and the pharmacist monitors their medications at subsequent appointments. The patient then meets with the specialist to whom they have been referred, who will request additional tests such as electrocardiogram, or prescribe or change medications as appropriate. After the clinic the members of the team meet together to discuss patient needs and collaborate on patient care plans. A detailed report is sent to the patient’s primary care provider after each clinic visit.

An acknowledged limitation of the clinic in its current form is the absence of psychological or psychiatric care – a challenge that is frequently faced in primary care. Whilst many patients are burdened with comorbid mental health problems, recent research in the USA identified that the segregation of physical and mental health administration in Medicare is the greatest barrier to providing mental health care in a primary care setting (113). This segregation is also present in health systems with universal health care, such as Australia, which includes psychological therapy as an ‘allied health’ service as opposed to a general medical service, and limits the number of Medicare-subsidised psychological service visits to twelve (114). The administrative and ideological segregation between ‘medical’ care providers and ‘allied health’ providers presents a substantial barrier to integration of care (113), particularly where multidisciplinary teams are in place to manage complex patients. As depression and anxiety increase with symptom burden (6, 32), incorporation of mental health care into multidisciplinary models seems a logical step in the development of coordinated and integrated care. It is clear, however, that some ideological shifts may be required before such integration is possible. Understanding the mental health needs of the multimorbid clinic population would contribute to the ideological shift necessary for this integration, and provides a strong rationale for this thesis.
1.8 Thesis Overview

Few studies to date have investigated depression in a specifically multimorbid patient population. However, a large body of research spanning several decades confirms that individuals with chronic illness are more likely to have depression than those without chronic illness. Prevalence of depression is higher amongst patients with multiple chronic illnesses and more functional disability, but there are challenges to treating depression amongst this group compared to those without chronic illness, or those with a single chronic illness. Few studies to date have investigated depression in a specifically multimorbid patient population. Furthermore, many studies have maintained a pharmacological focus, leaving issues relating to non-pharmacological treatment and the patient’s broader context largely unexplored. A clearer understanding of a) the prevalence and risk factors of depression in multimorbid patients, b) the reliability of screening tools used in the population, and c) the concerns and motivations of both multimorbid patients and their treating clinicians will aid in improving detection and developing treatment guidelines appropriate for this population.

This thesis describes five studies designed to explore issues relating to depression prevalence, diagnosis and management in patients with multimorbidities in Australia. All research was undertaken with the cooperation of the Clinical Pharmacology unit at the Royal Adelaide Hospital, with participants recruited from the Multidisciplinary Ambulatory Consulting Service (MACS) clinic run by the director of the unit, who is also a co-supervisor of the PhD candidate.

1.8.1 Epistemology, Methodology and Research Design

Pragmatism was chosen as the epistemological approach most appropriate for the goals of the research as a whole. Pragmatism is a problem-centred, real-world orientated position that focuses on practical application for the consequences of the
research (115). It emphasises the importance of the research question over method or philosophical worldview, allowing instead a practical research philosophy to guide methodological choices, and abandons positivist concepts of ‘reality’ and ‘truth’ whilst also abandoning the dichotomy of postpositivism and constructivism (116). Whilst philosophers might pit the two viewpoints against each other, the goal of improving clinical practice through gaining an understanding of participants’ constructed realities juxtaposes the two viewpoints as complementary.

Consequently, a mixed methods approach was adopted to answer the research aims of this thesis as described in the Project Overview below (115). Creswell and Plano Clark describe mixed methods as research in which the researcher:

- ‘Collects and analyses persuasively and rigorously both qualitative and quantitative data
- Mixes (or integrates or links) the two forms of data concurrently by combining them (or merging them), sequentially by having one build on the other, or embedding one within the other
- Gives priority to one or both forms of data
- Uses these procedures in a single study or multiple phases of a program of study
- Frames these procedures within philosophical worldviews and theoretical lenses, and
- Combines the procedures into specific research designs that direct the plan for conducting the study’—p5 (115)

The project described in this thesis complies with Creswell and Plano Clark’s core characteristics and follows an explanatory design, where the qualitative phase was
designed to explain the findings of the quantitative phase (115). I collected and analysed quantitative and qualitative data, integrating the two forms of data sequentially by having qualitative data build on the quantitative data, with both forms of data given equal priority. These procedures were used in multiple phases of a program of study, framing procedures within philosophical and theoretical positions, and combined the procedures into an explanatory sequential design that directed the plan for conducting the study.

Following the explanatory sequential design, the qualitative studies arose from the quantitative findings, and were undertaken using principles designed for developing grounded theory using thematic analysis. Grounded theory is a contentious subject, with positions ranging from a strict positivist empiricism (117) to constructivism (118). Whilst Glaser and Strauss’ original premises for grounded theory assumed a positivist theoretical viewpoint (that is, the belief that there is a single objective reality and that it can be investigated through unbiased data collection methods that can be verified), Strauss and Corbin moved away from the positivist position, acknowledging the impossibility of performing qualitative analyses devoid of personal biases (119). At the other end of the spectrum, Charmaz’ constructivist approach (the premise that there are multiple realities and they are mutually constructed by interaction), proposes that grounded theory is a continuum from positivism to constructivism (120). The diversity of positions from which grounded theory has been applied demonstrates the flexible nature of grounded theory’s strategies, which makes it ideal for use within pragmatist epistemology.

As the purpose of the research was to inform clinical practice, the grounded theory methods described by Corbin and Strauss (119) were chosen to guide the collection and analysis of qualitative data for this thesis, and drove the analytical
process towards developing, refining and interrelating concepts (118). Grounded theory strategies used in this thesis include the simultaneous collection and analysis of data, a two-stage coding process, memo and journal writing, sampling to refine the emerging theoretical ideas, and an integration of the theoretical framework into an interpretive model. Categories arose from the data, and the emergent theory was developed to fit and explain the data (120). Reflexive activities were also undertaken, enabling reflection on, and discussion of, the researcher’s role and influence on the collection and interpretation of data (119).

1.9 Project overview

Chapters One, Three and Seven are written in traditional chapter form, with Chapters Two, Four, Five, and Six prepared in manuscript format for publication. The manuscript in Chapter Five was published in ‘Ageing and Mental Health’ (120).

1.9.1 Study One: Database Analysis

The first study, described in Chapter Two, aimed to determine the prevalence of depressive symptoms amongst multimorbid patients attending the MACS clinic. The CIRS method endorsed by Fortin et al. (121) was used to select and classify data on health conditions, with the majority of patients attending the clinic diagnosed with chronic conditions in two or more organ domains. Considering the strength of relationship found between multimorbidity and patient perceptions of health in Fortin et. al.’s comparison of symptom burden rating scales, this definition is appropriate for the study’s focus on multimorbidity and depression.

The clinic database maintains a detailed record of the medical history of each patient, including past and present acute and chronic conditions as well as medications. Results of a screening questionnaire completed by all patients attending the MACS are
also recorded in the database, which includes a Geriatric Depression Scale (GDS) score reflecting the number of depressive symptoms endorsed by each patient.

The study aimed to explore three things: the prevalence of depression in this outpatient clinic population as indicated by both doctor-diagnosed depression, and GDS symptom scores; the level of agreement between doctor-diagnosed depression and the GDS in both the total score and the categories of severity (mild, moderate, severe, and no depression); and the presence or absence of demographic or disease variables that increased the odds of a depression diagnosis or a particular GDS categorisation. Comparison of clinical diagnosis of depression with patient-reported depression symptoms had not been explore in the literature, and the clinic database provided an ideal source of records of community-dwelling, multimorbid outpatients. Exploring the agreement between doctor diagnosis of depression and depression symptom profile is an important element in exploring depression detection in this population, as patients suffering depressive symptoms may not have been diagnosed and treated. Additionally, awareness of variables that may increase the likelihood of depression being diagnosed or not diagnosed has value to clinicians monitoring the mental health of their patients. Awareness of conditions that may increase the odds of a patient developing moderate or severe depressive symptoms as measured by the GDS will also have clinical value where clinicians use the GDS to screen for depression.

1.9.2 Study Two: Comparing the GDS, HADS and CIDI

The poor agreement between GDS scores and doctor diagnosis of depression found in Study One was concerning. Whilst medication efficacy could be attributed to patients with depression scoring no to mild depression on the GDS, many patients fell into the severe category of the GDS but had apparently not been detected as depressed by a clinician. As this difference may have arisen due to poor validity of the GDS in
patients with multimorbidity, a study was devised with the aim of determining the performance of the GDS in the clinic population. Described in Chapter Three, the performance of the GDS was compared with a common self-report scale, the Hospital Anxiety and Depression Scale (HADS), and depression diagnosis using the Composite International Diagnostic Interview (CIDI). During data collection it became apparent that some participants were unable to effectively complete the CIDI, which was being used as the gold standard for comparison, and so the study was ended after eighteen participants had been interviewed. Nonetheless, some valuable findings were made about the screening and diagnosis of depression in multimorbid patients, particularly in relation to lack of agreement between scales. Future research examining the questions raised about the focus on certain symptoms, and the use of some tools, in this population will be well-informed by the outcomes of the study.

1.9.3 Study Three: The Patient Symptom Priority Scale

The preceding studies generated questions about the ways that multimorbid patients perceive their experience of physical and psychological symptoms and communicate them in a clinical setting. Existing scales focused on individual conditions, and excluded the patient in determining symptoms of priority. To accommodate the complex symptom profile found in patients with multimorbidities, I designed a scale to elicit up to six symptoms that are most bothersome to the patient, and gain patient ratings of concern about the symptom, and the extent to which it impacted on their lives. A pilot administration of the scale aimed to explore the suspected differences in patient perceptions of psychological and physical symptoms. The scale has the potential to be a useful clinical and epidemiological tool, and the findings of the pilot study not only quantified patient perceptions about symptoms, but informed the qualitative patient interviews included in this study series.
1.9.4 **Study Four: Qualitative Interviews with General Practitioners**

The two previous studies confirmed that some patients with severe depressive symptoms were not being identified as depressed, leading to questions about how depression was detected and managed in this population. Qualitative one-on-one semi-structured interviews were conducted with GPs who had referred patients to the clinic, with the aim of generating grounded theory. Detailed in Chapter Five, the interviews explored the experiences of GPs in detecting depression in multimorbid patients, resulting in a grounded theory model of the impact of multimorbidity on GP process.

1.9.5 **Study Five: Qualitative Interviews with Multimorbid Patients**

To explore the experiences of patients who had been successfully diagnosed with depression, qualitative interviews were also conducted with multimorbid clinic patients who had been diagnosed with depression. Chapter Six describes the experiences of patients in whom depression had been detected. Whilst the original aim of generating grounded theory was not supported by the data, thematic analysis generated some useful findings. Thematic analysis was used to explore the impact of multimorbidity on the patient experience of depression diagnosis and management, in order to better understand the dynamics that contribute to the developments, diagnosis and management of depression in patients with multiple chronic conditions.

1.10 **References**


47. Greenfield S, Apolone G, McNeil BJ, Cleary PD. The importance of co-existent
disease in the occurrence of postoperative complications and one-year recovery in
patients undergoing total hip replacement. Comorbidity and outcomes after hip

1968 May;16(5):622-6.

Multimorbidity patterns in the elderly: a new approach of disease clustering identifies
complex interrelations between chronic conditions. PLoS One [serial on the Internet].

50. van den Bussche H, Koller D, Kolonko T, Hansen H, Wegscheider K, Glaeske
G, et al. Which chronic diseases and disease combinations are specific to
multimorbidity in the elderly? Results of a claims data based cross-sectional study in

The association between chronic illness, multimorbidity and depressive symptoms in an
Feb;47(2):175-84.

52. Fortin M, Lapointe L, Hudon C, Vanasse A, Ntetu AL, Maltais D.
Multimorbidity and quality of life in primary care: a systematic review. Health Qual

53. Galenkamp H, Braam AW, Huisman M, Deeg DJ. Somatic multimorbidity and


100. Boult C, Green AF, Boult LB, Pacala JT, Snyder C, Leff. B. Successful models of comprehensive care for older adults with chronic conditions: Evidence for the


Chapter Two: The prevalence of depression diagnoses and symptoms in a multidisciplinary chronic disease management outpatient clinic

To investigate the prevalence of depression and depressive symptoms in a multimorbid outpatient population, deidentified data were extracted from the MACS clinic patient database on two occasions. The first extraction included data from patients who had attended the clinic between September 2005 and January 2010, who had two or more chronic conditions and had completed the Geriatric Depression Scale (GDS). The small sample size drawn from the 2005 extraction limited the conclusions that could be drawn from analyses; consequently a second extraction was performed in September 2011, which included data from patients who had attended the clinic between September 2005 and September 2011.

The following chapter is in press with ‘Health’ in the form of a manuscript titled ‘The prevalence of depression amongst outpatients with multimorbidity’, and is included in this thesis with the permission of the co-authors.
Melinda Stanners (Candidate)
Analysed all data, data interpretation and wrote manuscript. 
I hereby certify that the statement of contribution is accurate. 
Signature...........................................................................Date..................................

Dr Sepehr Shakib (co-author)
Database extraction, data interpretation and manuscript evaluation
I hereby certify that the statement of contribution is accurate and I give permission for 
the inclusion of the paper in the thesis.
Signature...........................................................................Date..................................

Dr Christopher Barton (co-author)
Supervised development of work, data interpretation and manuscript evaluation
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the inclusion of the paper in the thesis.
Signature...........................................................................Date..................................

Professor Helen Winefield (co-author)
Assisted in data interpretation and manuscript evaluation
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the inclusion of the paper in the thesis.
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2.1 Abstract

Background

Depression may be under-diagnosed and under-treated amongst older adults, and chronic illness compounds diagnostic challenges. We aimed to explore the prevalence of depressive symptoms, as measured by the Geriatric Depression Scale (GDS), and depression diagnoses in patients with multiple chronic conditions referred to a multidisciplinary outpatient clinic at a metropolitan hospital.

Methods

Data from 452 patients aged over 64, with chronic conditions present in two or more organ domains, were extracted from the multidisciplinary clinic database. Patient Geriatric Depression Scale scores were also extracted. Frequency calculations, cross-tabulation, logistic and multinomial regression were applied to the data to explore prevalence and relationships between variables and depression diagnosis and GDS categorisations of mild, moderate and severe depression.

Results

Using the recommended cut-off score of 5, 51.4% of patients met the GDS criteria for mild-severe depressive symptoms, and 22.4% met the criteria for moderate-severe symptoms. Agreement between doctor diagnosis of depression and a positive screen for depression using the GDS was poor, but logistic regression found an association between severity of depression and depression diagnosis, OR=1.15, p<0.001 (CI=1.08-1.22). Logistic regression found that musculoskeletal disease increased the odds of a diagnosis of depression. Falls history, endocrine disease and increased number of diseased domains increased the odds of a GDS categorisation of severe depression.
Conclusion

Mild-severe depressive symptoms were found in one half of the sample of clinic outpatients with multimorbidity, although depression diagnosis was only slightly higher than the community average. Whilst likelihood of diagnosis increases with symptom severity, the discrepancy between depressive symptom assessment using the GDS and doctor diagnosis of depression requires further investigation. Additionally, the inconsistent impact of individual variables on depression diagnosis or symptom categorisation odds suggests that conditions in combination have a greater effect on mood than single conditions.
2.2 Introduction

Adults aged 65 years and older will comprise one quarter of the populations of
developed countries in the next forty years, with Australia’s life expectancy projected to
increase to 92 and 95 years for men and women respectively (1). The likelihood of
developing chronic illness increases with age (2), with some chronic conditions
(including arthritis, asthma, cardiovascular disease, heart disease, diabetes, cancer,
stroke, rheumatoid arthritis and osteoporosis) known to increase risk of depression (3,
4).

The risk of developing multiple chronic conditions, or multimorbidity, also
increases with age (3, 5), with the occurrence of two or more chronic conditions also
increasing the risk of depression (5). Although multimorbidity is most often defined as
two or more chronic conditions (6), disease count does not accurately reflect disease
burden (7) and may not be appropriate for explorations of patient mental health. As age-
related increases in depression may be attributable to declines in physical health,
physical function and perceptions of well-being (8), Fortin et. al.’s (7) alternative
interpretation of multimorbidity as the presence of disease in two or more organ
domains is most appropriate for exploring the relationship between multimorbidity and
mental health. Consequently, this is the definition used in the current study.

Where patients present to their clinician with multiple chronic conditions, the
treatment of physical symptoms may take precedence over psychological symptoms (9).
Consequently it is unsurprising that depression is thought to be under-diagnosed and
under-treated amongst older people in Western nations (10-14). A range of tools have
been developed to assist with the diagnostic process, but previous research suggests that
overlap of physical and psychological symptoms may render diagnostic tools that rely
on somatic symptoms unreliable (15, 16).
One tool often used in aged populations is the Geriatric Depression Scale (GDS), developed at Stanford University (17) to screen for symptoms of depression in aged individuals. The 15 question GDS has been validated in numerous aged populations (18-20), ranging from community-dwelling elders (18) to nursing home residents (21). A GDS score of 5 has been found to have a sensitivity of 91% and a specificity of 72% for depression (22), but neither the scale nor the categorisation scores have been validated in patients with multiple chronic conditions. In light of the challenges of depression diagnosis, exploring the use of the GDS in multimorbid patients would make a valuable contribution to clinicians concerned about detecting depression in this population.

The current study aimed to explore the prevalence of depression diagnoses and symptoms in multimorbid community-dwelling outpatients, hypothesising that the presence of disease in multiple systems would increase the likelihood of a) having a diagnosis of depression recorded in their medical file, and b) screening positive for depressive symptoms using the GDS. We anticipated good agreement between doctor-diagnosed depression and GDS scores.

2.3 Method

De-identified data were extracted from the clinic database for 452 patients who were referred to a multidisciplinary clinic at the Royal Adelaide Hospital (RAH) between September 2005 and September 2011. The Multidisciplinary Ambulatory Consulting Service (MACS) clinic provides integrated multidisciplinary care for multimorbid outpatients. Patients complete an extensive self-report questionnaire about their health and lifestyle, which includes demographic information and living circumstances, as well as the 15 question (short form) Geriatric Depression Scale (GDS). All medications, vitamins and other supplements are also recorded in the
database, as well as chronic conditions and acute health events. Depression diagnoses are recorded in the database if the diagnosis appears in a referral letter, or a general practitioner communicates such a diagnosis. The current or remitted state of depression is not recorded in the database; neither is whether the diagnosis was given by a general practitioner or psychiatrist.

Chronic conditions were grouped into Cumulative Illness Rating Scale (CIRS) domains (7), with disease present in cardiac, vascular, endocrine, respiratory, renal, neurological, musculo-skeletal, psychiatric and upper GI domains (see Table 1). The psychiatric domain was excluded due to high co-linearity with the dependent variable, depression diagnosis. Cases with chronic conditions in two or more domains (not including the psychiatric domain) and a recorded GDS score in their file were included in the data set, but excluded if they had a diagnosis of dementia or if they were less than 65 years of age.

**TABLE 1: DISEASE DOMAINS AND CONDITIONS**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac</td>
<td>Atrial fibrillation, heart failure, ischemic heart disease</td>
</tr>
<tr>
<td>Vascular</td>
<td>Pulmonary vascular disease, thrombosis, lipids, hypertension</td>
</tr>
<tr>
<td>Endocrine</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Musculo-skeletal</td>
<td>Osteoarthritis, osteoporosis, gout, arthritis</td>
</tr>
<tr>
<td>Renal</td>
<td>Chronic renal failure</td>
</tr>
<tr>
<td>Respiratory</td>
<td>Asthma, chronic obstructive pulmonary disease, sleep apnea</td>
</tr>
<tr>
<td>Upper GI</td>
<td>Gastro-oesophageal reflux disease</td>
</tr>
<tr>
<td>Neurological</td>
<td>Parkinson’s disease, epilepsy, cardiovascular disease</td>
</tr>
</tbody>
</table>
Data were analysed using PASW Statistics 18.

To estimate the prevalence of depressive symptoms, frequency calculations demonstrated the proportion of patients with a GDS score of greater than or equal to 5 (mild - severe depression) and 9 (moderate - severe depression) respectively (17). Frequency calculations were used to explore demographic data and the prevalence of depression diagnoses. Logistic regression was used to explore association of GDS score severity with depression diagnosis. Pearson’s $r$ was calculated to examine potential correlations between age, GDS score, and total number of chronic conditions. Cross-tabulation, ROC curve analysis and kappa calculations were then applied to explore the agreement between depression diagnosis and GDS categorisation. Logistic regression was performed to explore demographic or disease domain factors that may influence the odds of depression diagnosis. Multinomial regression was performed to explore demographic or disease domain factors that may influence GDS score categorisation. Multinomial regression was used in preference to ordinal regression, due to the increased level of detail and the binary nature of many of the independent variables.

Ethics approval for this study was granted by the Royal Adelaide Hospital Ethics Committee.

2.4 Results

Of the 724 patient records contained in the database, 452 records met the eligibility criteria. Demographic data are described in Table 2. Gender was approximately representative of the population from which the sample was drawn.
<table>
<thead>
<tr>
<th>TABLE 2: FREQUENCY TABLE OF DEMOGRAPHIC, ANTIDEPRESSANT, DEPRESSION AND GDS VARIABLES (N = 452)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Disease Domain Count</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td><strong>Living Circumstance</strong></td>
</tr>
<tr>
<td>Partner Only</td>
</tr>
<tr>
<td>Alone</td>
</tr>
<tr>
<td>With Carer</td>
</tr>
<tr>
<td>Other/Unknown</td>
</tr>
<tr>
<td>Other Family Present</td>
</tr>
<tr>
<td><strong>Tobacco Use</strong></td>
</tr>
<tr>
<td>Non-Smoker</td>
</tr>
<tr>
<td>Ex-Smoker</td>
</tr>
<tr>
<td>Smoker</td>
</tr>
<tr>
<td><strong>Antidepressant Use</strong></td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>SSRI</td>
</tr>
<tr>
<td>Tricyclic</td>
</tr>
<tr>
<td><strong>History of Depression</strong></td>
</tr>
<tr>
<td>No History of Depression</td>
</tr>
<tr>
<td>No History of Depression</td>
</tr>
<tr>
<td><strong>Clinical Depression History</strong></td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td><strong>GDS Category</strong></td>
</tr>
<tr>
<td>No Depression</td>
</tr>
<tr>
<td>Mild Depression</td>
</tr>
<tr>
<td>Moderate Depression</td>
</tr>
<tr>
<td>Severe Depression</td>
</tr>
</tbody>
</table>

* Subject to patient interpretation
Depression diagnoses were recorded for 15.7% of patients. Table 2 shows that more women had a doctor’s diagnosis of depression than men. When the standard GDS scoring categories were applied, approximately half of all patients (49.8%) scored five or more on the GDS, with 21.2% scoring in the moderate-severe range for depressive symptoms.

One hundred and seven (23.7%) patients were taking an antidepressant at the time of their first clinic visit, more than half of whom had no diagnosis of depression (Table 2). Women were twice as likely as men to be taking an antidepressant on their first visit to the clinic (Table 2). Data were missing for 16 patients.

Table 3 describes the GDS categorisations for patients with and without depression who did and did not have an antidepressant at their first visit to the clinic. Of the 71 patients with a diagnosis of depression, 50 (72.5%) were taking an antidepressant. Of the 169 people with no diagnosis of depression and sub-threshold GDS symptoms, 26 (13.1%) were taking an antidepressant upon entry to the clinic. Amongst patients with neither a diagnosis of depression nor an antidepressant prescription, however, 51 (16.4%) scored in the moderate – severe range of the GDS.

Detailed antidepressant data were available for only 94 patients, with 59 taking selective serotonin reuptake inhibitors (SSRIs) and 35 taking tricyclics antidepressants (TCAs). Comparing antidepressant type between the presence or absence of a diagnosis of depression or anxiety, 33.9% of SSRI use and 68.6% of TCA use occurred amongst patients with no recorded history of doctor diagnosis of depression or anxiety (Table 4).
TABLE 3: GDS CATEGORISATIONS FOR PATIENTS WITH AND WITHOUT DEPRESSION, COMPARED BY ANTIDEPRESSANT USE AT FIRST CLINIC VISIT (N=436)

<table>
<thead>
<tr>
<th>GDS Categorisation</th>
<th>No History of Depression</th>
<th>History of Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 367 (84.2%)</td>
<td>N = 69 (15.8%)</td>
</tr>
<tr>
<td>No Antidepressant</td>
<td>N = 310</td>
<td>No Antidepressant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N = 19</td>
</tr>
<tr>
<td></td>
<td>N = 57</td>
<td>Antidepressant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N = 50</td>
</tr>
<tr>
<td>No Depression</td>
<td>172 (55.5%)</td>
<td>26 (45.6%)</td>
</tr>
<tr>
<td>N = 220</td>
<td>86.9 (13.1%)</td>
<td>21.1 (18.2%)</td>
</tr>
<tr>
<td>Mild Depression</td>
<td>87 (28.1%)</td>
<td>18 (31.6%)</td>
</tr>
<tr>
<td>N = 125</td>
<td>82.9 (17.1%)</td>
<td>26.3 (25.0%)</td>
</tr>
<tr>
<td>Moderate Depression</td>
<td>33 (10.6%)</td>
<td>7 (12.3%)</td>
</tr>
<tr>
<td>N = 54</td>
<td>82.5 (17.5%)</td>
<td>21.1 (28.6%)</td>
</tr>
<tr>
<td>Severe Depression</td>
<td>18 (5.8%)</td>
<td>6 (10.5%)</td>
</tr>
<tr>
<td>N = 37</td>
<td>75.0 (25.0%)</td>
<td>31.6 (46.2%)</td>
</tr>
<tr>
<td></td>
<td>14.0 (53.8%)</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 4: HISTORY OF DEPRESSION/ANXIETY AND ANTIDEPRESSANT TYPE (N=94)

<table>
<thead>
<tr>
<th></th>
<th>No Depression History</th>
<th>Depression History</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSRI</td>
<td>20 (33.9%)</td>
<td>39 (66.1%)</td>
</tr>
<tr>
<td>TCA</td>
<td>24 (68.6%)</td>
<td>11 (31.4%)</td>
</tr>
</tbody>
</table>

2.4.1 GDS Scores and Depression Diagnosis

Logistic regression of depression diagnosis and GDS score found a statistically significant association between GDS score and depression diagnosis, OR=1.15, p<0.001 (CI=1.08-1.22).
Table 5: History of Depression and GDS Categorisation

<table>
<thead>
<tr>
<th>GDS Categories</th>
<th>No History of Depression</th>
<th>History of Depression</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Diagnosis</td>
<td>204 (89.9%)</td>
<td>23 (10.1%)</td>
<td>227 (100.0%)</td>
</tr>
<tr>
<td>Mild Depression</td>
<td>109 (84.5%)</td>
<td>20 (15.5%)</td>
<td>129 (100.0%)</td>
</tr>
<tr>
<td>Moderate Depression</td>
<td>42 (75.0%)</td>
<td>14 (25.0%)</td>
<td>56 (100.0%)</td>
</tr>
<tr>
<td>Severe Depression</td>
<td>26 (65.0%)</td>
<td>14 (35.0%)</td>
<td>40 (100.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>381 (84.3%)</td>
<td>71 (15.7%)</td>
<td>452 (100.0%)</td>
</tr>
</tbody>
</table>

Table 5 describes the distribution of data across GDS categories and depression history, and shows that false positives and missed diagnoses decrease as severity increases. Of the 71 patients with a recorded diagnosis of depression in their medical record, 48 patients scored 5 or higher on the GDS, with a kappa statistic of $\kappa=0.112$ ($p=0.001$) demonstrating poor agreement between a positive screen for mild-severe depression and record of a clinical diagnosis of depression. Of the 381 patients with no diagnosis of depression, 177 scored five or more on the GDS.

Kappa was calculated with a GDS cut-off of 9 or more (reflecting moderate-severe depression). Of the 71 patients with a clinical diagnosis of depression, only 28 patients had a GDS score of 9 or more, with a kappa statistic of $\kappa=0.189$ ($p<0.001$) demonstrating poor agreement between a positive screen for moderate-severe depression and a diagnosis of depression. Of the 381 patients with no clinical diagnosis of depression, 68 patients scored 9 or more on the GDS. An ROC graph demonstrated poor discriminatory power of depression diagnosis for the GDS, $AUC = 0.65$. $p<0.001$. A cut-off score of 5 had a sensitivity of 0.68 and a specificity of 0.47, and a cut-off score of 9 had a sensitivity of 0.35 and a specificity of 0.14.
2.4.2 **Logistic Regression – Depression**

Logistic regression was performed to examine the interrelationship between demographic variables, chronic conditions and depression (see Appendix 1 of this chapter). Two models were generated (see Table 6). First, sum of diseased domains was adjusted for demographic and health risk variables (age, gender, living circumstance (with partner only, alone, with carer, with other family members that may include partner, and unknown circumstances or other living arrangements, such as residential care facilities)) and number of falls over the previous six months (none, 1-2 and 3 or more). Number of falls was included as a health risk variable because of the potential for falls frequency to affect mood. Tobacco use was initially included as a behavioural health risk variable, but due to consistently exceeding acceptable levels of standard error in the regression model it was removed. Female gender increased the odds of having a diagnosis of depression, OR=1.82 (1.00-3.31), as did disease in each additional domain, OR=2.13 (1.71-2.64).

The second model removed the sum of domains from the model and included individual disease domains, finding that when controlling for all other variables only the presence of illness in the musculoskeletal domain increased the odds of depression diagnosis, OR=1.93 (1.08-3.45) (Table 6).

2.4.3 **Multinomial Logistic Regression – GDS categories**

Multinomial logistic regression applied to GDS categorisations (no diagnosis, mild, moderate and severe depression using cut-offs described by Yesavage et. al. (23)) is described in Table 7 (indicator condition = No Diagnosis). When controlling for lifestyle and demographic variables, increasing sum of conditions increased the odds of a GDS categorisation for mild depression OR=1.25 (1.06-1.47) and severe depression, OR=1.43 (1.12-1.83). No variables increased the odds of a moderate depression
categorisation, but number of falls in the last six months increased the odds of a severe depression categorisation, OR=1.86 (1.17-2.94).

The second model removed the sum of domains and included individual disease domains as variables whilst controlling for lifestyle and demographic variables. Table 7 shows that number of falls increased the odds of a mild depression categorisation, as did the presence of respiratory disease.

Number of falls also increased the odds of a moderate depression categorisation, in addition to renal disease and upper GI conditions. As shown in Table 7, number of falls also increased the odds of a severe depression categorisation, as did disease in the endocrine system, but history of cancer appeared to decrease the odds.
TABLE 6: ODDS RATIOS AND CONFIDENCE INTERVALS FOR PREDICTORS OF DEPRESSION DIAGNOSIS: MODELS 1 AND 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Depression N (%)</th>
<th>No Depression N (%)</th>
<th>Model 1 N = 452 OR (95% CI)</th>
<th>Model 2 N = 452 OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum of chronic disease domains</td>
<td></td>
<td></td>
<td>2.13 (1.71-2.64)*</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>1.00 (0.96-1.05)</td>
<td>1.00 (0.96-1.05)</td>
</tr>
<tr>
<td>Number of Falls</td>
<td></td>
<td></td>
<td>1.42 (0.97-2.08)</td>
<td>1.40 (0.98-2.02)</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>46 (18.4%)</td>
<td>165 (81.6%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>25 (12.4%)</td>
<td>177 (87.6%)</td>
<td></td>
</tr>
<tr>
<td>Living Circumstances</td>
<td>Partner</td>
<td>27 (14.1%)</td>
<td>165 (85.9%)</td>
<td>0.39 (0.17-0.93)</td>
</tr>
<tr>
<td></td>
<td>Alone</td>
<td>22 (15.9%)</td>
<td>116 (84.1%)</td>
<td>0.49 (0.21-1.16)</td>
</tr>
<tr>
<td></td>
<td>Carer</td>
<td>3 (21.4%)</td>
<td>11 (78.6%)</td>
<td>0.45 (0.09-2.30)</td>
</tr>
<tr>
<td></td>
<td>Family</td>
<td>6 (12.8%)</td>
<td>41 (87.2%)</td>
<td>0.39 (0.12-1.21)</td>
</tr>
<tr>
<td>Other^</td>
<td></td>
<td></td>
<td>13 (21.3%)</td>
<td>48 (78.7%)</td>
</tr>
<tr>
<td>Cardiac</td>
<td></td>
<td>57 (16.7%)</td>
<td>285 (83.3%)</td>
<td>1.47 (0.75-2.88)</td>
</tr>
<tr>
<td>Vascular</td>
<td></td>
<td>63 (15.4%)</td>
<td>347 (84.6%)</td>
<td>0.74 (0.29-1.87)</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>48 (20.2%)</td>
<td>190 (79.8%)</td>
<td>1.93 (1.08-3.45)*</td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>26 (18.2%)</td>
<td>117 (81.8%)</td>
<td>1.55 (0.86-2.79)</td>
<td></td>
</tr>
<tr>
<td>Neurological</td>
<td>16 (13.7%)</td>
<td>101 (86.3%)</td>
<td>1.09 (0.57-2.10)</td>
<td></td>
</tr>
<tr>
<td>Renal</td>
<td>15 (13.6%)</td>
<td>95 (86.4%)</td>
<td>0.66 (0.34-1.27)</td>
<td></td>
</tr>
<tr>
<td>Endocrine</td>
<td>31 (18.6%)</td>
<td>136 (81.4%)</td>
<td>1.79 (0.99-3.21)</td>
<td></td>
</tr>
<tr>
<td>Upper GI</td>
<td>24 (18.3%)</td>
<td>107 (81.7%)</td>
<td>1.18 (0.67-2.08)</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>12 (19.7%)</td>
<td>49 (80.3%)</td>
<td>1.24 (0.59-2.60)</td>
<td></td>
</tr>
<tr>
<td>History of Cancer</td>
<td>42 (14.9%)</td>
<td>239 (85.1%)</td>
<td>0.99 (0.54-1.81)</td>
<td></td>
</tr>
</tbody>
</table>

* = P<0.05
### Table 7: Odds Ratios and Confidence Intervals for Predictors of GDS Categories

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
<th>Model 1</th>
<th>Model 2</th>
<th>N (%)</th>
<th>Model 1</th>
<th>Model 2</th>
<th>N (%)</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MILD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>N = 452</td>
<td>N = 452</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of domains</td>
<td>1.25 (1.06-1.47)*</td>
<td>1.21 (0.97-1.51)</td>
<td>1.43 (1.12-1.83)*</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Age</td>
<td>1.02 (0.99-1.05)</td>
<td>1.03 (0.98-1.08)</td>
<td>1.02 (0.98-1.07)</td>
<td>1.02 (0.96-1.07)</td>
<td>1.03 (0.97-1.09)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Falls</td>
<td>1.36 (0.98-1.86)</td>
<td>1.46 (1.05-2.04)*</td>
<td>1.49 (0.98-2.26)</td>
<td>1.55 (1.01-2.40)*</td>
<td>1.86 (1.17-2.94)*</td>
<td>1.98 (1.23-3.18)*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>75 (30%)</td>
<td>1.20 (0.76-1.89)</td>
<td>30 (12.0%)</td>
<td>30 (12.0%)</td>
<td>0.93 (0.50-1.72)</td>
<td>1.22 (0.62-2.38)</td>
<td>23 (9.2%)</td>
<td>1.43 (0.66-3.06)</td>
<td>1.43 (0.66-3.06)</td>
</tr>
<tr>
<td>Male</td>
<td>54 (26.7%)</td>
<td>26 (12.9%)</td>
<td></td>
<td>26 (12.9%)</td>
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<td></td>
<td>17 (8.4%)</td>
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<tr>
<td>Living Circumstances</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner</td>
<td>52 (27.1%)</td>
<td>0.81 (0.40-1.62)</td>
<td>21 (10.9%)</td>
<td>21 (10.9%)</td>
<td>0.81 (0.31-2.12)</td>
<td>0.94 (0.35-2.56)</td>
<td>23 (12.0%)</td>
<td>2.42 (0.61-9.57)</td>
<td>2.42 (0.61-9.57)</td>
</tr>
<tr>
<td>Alone</td>
<td>42 (30.4%)</td>
<td>0.86 (0.43-1.73)</td>
<td>17 (12.3%)</td>
<td>17 (12.3%)</td>
<td>0.91 (0.35-2.38)</td>
<td>1.02 (0.38-2.76)</td>
<td>7 (5.1%)</td>
<td>1.04 (0.24-4.49)</td>
<td>1.04 (0.24-4.49)</td>
</tr>
<tr>
<td>Carer</td>
<td>3 (21.4%)</td>
<td>0.63 (0.14-2.94)</td>
<td>3 (21.4%)</td>
<td>3 (21.4%)</td>
<td>1.64 (0.32-8.49)</td>
<td>1.69 (0.32-9.03)</td>
<td>2 (14.3%)</td>
<td>2.12 (0.25-17.94)</td>
<td>2.12 (0.25-17.94)</td>
</tr>
<tr>
<td>Family</td>
<td>12 (25.5%)</td>
<td>0.76 (0.30-1.91)</td>
<td>7 (14.9%)</td>
<td>7 (14.9%)</td>
<td>1.17 (0.36-3.78)</td>
<td>1.28 (0.39-4.28)</td>
<td>5 (10.6%)</td>
<td>1.92 (0.39-9.53)</td>
<td>1.92 (0.39-9.53)</td>
</tr>
<tr>
<td>Other^</td>
<td>20 (32.8%)</td>
<td>8 (13.1%)</td>
<td></td>
<td>8 (13.1%)</td>
<td></td>
<td></td>
<td>3 (4.9%)</td>
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<td></td>
</tr>
<tr>
<td>Cardiac</td>
<td>104 (30.4%)</td>
<td>1.52 (0.86-2.68)</td>
<td>44 (12.9%)</td>
<td>44 (12.9%)</td>
<td>1.38 (0.63-3.01)</td>
<td>34 (9.9%)</td>
<td>2.45 (0.91-6.55)</td>
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</tr>
<tr>
<td>Variable</td>
<td>N (%)</td>
<td>OR (95% CI)</td>
<td>N (%)</td>
<td>OR (95% CI)</td>
<td>N (%)</td>
<td>OR (95% CI)</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>MILD</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>N = 452</td>
<td>N = 452</td>
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<td>N = 452</td>
<td></td>
<td>N = 452</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vascular</td>
<td>117 (28.5%)</td>
<td>0.81 (0.35-1.89)</td>
<td>48 (11.7%)</td>
<td>0.65 (0.24-1.77)</td>
<td>37 (9.0%)</td>
<td>1.68 (0.42-6.78)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>70 (29.4%)</td>
<td>0.80 (0.49-1.29)</td>
<td>25 (10.5%)</td>
<td>0.51 (0.26-0.97)</td>
<td>24 (10.1%)</td>
<td>1.08 (0.51-2.29)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>52 (36.4%)</td>
<td>2.27 (1.36-3.80)*</td>
<td>19 (13.3%)</td>
<td>1.72 (0.85-3.47)</td>
<td>14 (9.8%)</td>
<td>1.74 (0.78-3.90)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Neurological</td>
<td>25 (21.4%)</td>
<td>0.68 (0.39-1.19)</td>
<td>15 (12.8%)</td>
<td>0.93 (0.46-1.91)</td>
<td>11 (9.4%)</td>
<td>1.25 (0.54-2.94)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renal</td>
<td>38 (34.5%)</td>
<td>1.68 (0.98-2.87)</td>
<td>19 (17.3%)</td>
<td>2.41 (1.20-4.82)*</td>
<td>9 (8.2%)</td>
<td>1.00 (0.42-2.40)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Endocrine</td>
<td>47 (28.1%)</td>
<td>1.16 (0.70-1.92)</td>
<td>17 (10.2%)</td>
<td>0.83 (0.41-1.69)</td>
<td>21 (12.6%)</td>
<td>2.67 (1.20-5.96)*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper GI</td>
<td>38 (29.0%)</td>
<td>1.08 (0.65-1.79)</td>
<td>22 (16.8%)</td>
<td>1.92 (1.01-3.68)*</td>
<td>9 (6.9%)</td>
<td>0.73 (0.31-1.72)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>108 (27.6%)</td>
<td>1.64 (0.84-3.21)</td>
<td>6 (9.8%)</td>
<td>1.17 (0.43-3.18)</td>
<td>9 (14.8%)</td>
<td>1.91 (0.75-4.87)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Cancer</td>
<td>78 (27.8%)</td>
<td>0.86 (0.52-1.43)</td>
<td>31 (11%)</td>
<td>0.70 (0.36-1.39)</td>
<td>21 (7.5%)</td>
<td>0.45 (0.21-0.97)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a = Reference Category*
2.5 Discussion

The recommended GDS cut-off of 5 or more as a screen for depression suggested a prevalence of depressive symptoms in this outpatient clinic population considerably higher than the prevalence of depression diagnosis, which was also above the community prevalence of depression in Australians aged 65 years and over of 12.5% (24). The poor agreement observed is unlikely to be due to effective depression treatment lowering GDS score by reducing depressive symptoms, as more than fifty percent of patients diagnosed with depression and taking an antidepressant still experienced depressive symptoms, suggesting the possibility of under-treatment in this group. Although logistic regression found that severity of depression as measured by GDS score increased the likelihood of having a diagnosis of depression, supporting previous findings from the Hampshire Depression Study (25), a large proportion of patients with high GDS scores did not have a doctor diagnosis of depression, suggesting under-diagnosis in this group. Furthermore, the weak association between depression diagnosis and GDS categorisation and the poor agreement demonstrated by the ROC curve suggests that the two measures are not evaluating the same phenomenon. A validation of the GDS in this population is needed, as its widespread use warrants an investigation of its diagnostic usefulness.

The GDS may demonstrate a genuinely high prevalence of depressive symptoms in the older multimorbid demographic, but as a GDS score of 5 has a sensitivity of 91% and a specificity of 72% for depression (22), risk of obtaining false positives is present, and may be greater in a high-risk population. Considering the poor agreement between GDS and depression diagnosis demonstrated by the ROC, and the unacceptable sensitivity and specificity scores yielded by cut-points 5 and 9, a cut-off value of 5 may over-estimate the prevalence of depressive symptoms, rendering it inappropriate for this
population. Questions such as ‘Do you feel full of energy?’ and ‘Have you dropped many of your activities and interests?’ may be affected by the complex symptom profile generated by multiple physical illnesses. Future research should generate ROC curves against a gold standard diagnostic tool to identify the most appropriate cut-off scores for diagnostic relevance, as well as investigate individual GDS items for their appropriateness for use in this population. Future research could also evaluate other parameters, such as whether frailty or multimorbidity predicts positive responses to specific questions, resulting in the proposal of different cut-off scores or the removal of questions with poor discriminatory ability when used in this population.

Clinical relevance should be considered when selecting cut-off scores for depression diagnosis in multimorbid patients. Failure to detect mild depression may not affect prognosis, as less severe depression has been found to resolve without detection or intervention in otherwise healthy adults (26); consequently the high proportion of undiagnosed mild cases may not pose a clinical problem (26-28). The current study supports previous findings that although GPs miss mild cases of depression in the general practice population, the likelihood of being diagnosed with depression increases with depression severity (25). Whilst the rate of diagnosis increased with increasing severity in the current study, however, sixty-five percent of all patients who scored as severely depressed using the GDS had not been diagnosed with depression. As false positives were found in only ten percent of cases, where a clinical diagnosis was present but not detected by the GDS, this stands in stark contrast to previous studies that found higher rates of false positives than missed or accurate diagnoses (29), and suggests that severe depression may present differently in older patients with multiple chronic conditions.
Few variables demonstrated an independent increase in the odds of having a diagnosis of depression, or screening as mildly, moderately or severely depressed using the GDS. The increased odds of depressive symptoms for patients who have fallen more frequently in the previous six months is not surprising, as falls are a marker of functional decline. Falls may reflect factors influential to mood that are not captured in disease or demographic variables, such as cognitive or functional decline (30) or sedative medications.

The paucity of individual indicators supports previous findings that psychological distress is more strongly associated with sum of diseased domains than with disease count (31). Whilst the notion of ‘synergy’ of diseases has been explored in relation to perceptions of health (32), the current study suggests that depression in multimorbid patients may be more attributable to ‘synergy’ generated by the combination or interaction between domains, than to individual conditions or domains. Due to the small sample size in comparison to the number of variables explored, however, it is also possible that the increased statistical power of a larger sample size might produce different findings. Future research should explore the possibility of a synergistic effect of disease combinations on depression diagnosis and depression symptoms.

Whilst a sizeable proportion of patients reporting severe depressive symptoms have been neither diagnosed with depression nor treated with an antidepressant, a large proportion of patients in apparently good mental health are taking antidepressants. This finding may in part be attributable to the prescribing of tricyclic antidepressants (TCAs) for a range of different complaints. The prescription of selective serotonin reuptake inhibitors (SSRIs) to 33.9% of patients with no history of depression, however, raises questions about medication practices in this population, as SSRIs are usually used only
for depression or anxiety, as well as the methods used to collect data at the clinic. Exploration of antidepressant medication practices in the multimorbid population is necessary, particularly as patients with severe depressive symptoms measured using the GDS are not receiving treatment.

It is noteworthy that almost one third of patients attending the clinic were under 64 years of age (32.5%), and were excluded from the present analyses because whilst the GDS has been validated amongst older patients, no studies have examined its applicability to patients under 65. As no age classification has been applied to the term ‘geriatric’ it may be appropriate to consider it a description of an individual’s health status and physical function, and examine the applicability of the GDS in younger multimorbid patients. Additionally, as studies of multimorbidity often focus on participants aged 65 and older, the large percentage of younger multimorbid patients in the current study suggests that a substantial proportion of the multimorbid population have been overlooked. This supports previous findings that multimorbidity affects adults of all ages (5, 33-35), and suggests that future multimorbidity research should consider younger multimorbid patients.

2.5.1 Limitations

Depression is unlikely to be diagnosed at the multidisciplinary clinic even where high GDS scores and depressive symptoms are present, as the clinic focuses on the treatment of multiple physical complaints and does not currently include a psychologist or psychiatrist. Consequently, inclusion of a diagnosis of depression in the clinic database was reliant on referral letters, with some derived from patient report, and as such depression may be under-reported for reasons ranging from forgetfulness to stigma (36). Stigma has been raised in the literature as a barrier to depression recognition and
treatment in primary care (37, 38), particularly amongst older adults (36, 38), raising the possibility that patients diagnosed with depression may not have reported it.

Neither the recency nor the method of depression diagnosis were documented. It was not possible to differentiate between historical and current depression, or single depressive episodes and chronic recurrent major depressive disorder from the clinic records. The diagnosis may have been given by a general practitioner, psychiatrist or psychologist, using a clinical interview, a screening questionnaire, or clinical judgement. Consequently there is potential for inconsistency across the database, both in diagnostic definition and criteria, and the term does not capture the breadth of depression experience and severity across the patient group. Future research exploring the experiences of depression diagnosis amongst multimorbid patients is necessary to shed light on the diagnostic process in this population.

2.6 Conclusion

This study revealed that nearly half of patients with multiple chronic conditions treated at a multi-disciplinary outpatient clinic screened positive for depressive symptoms using the Geriatric Depression Scale (GDS), but the rate of doctor-diagnosed depression was only slightly higher than the community average. Although the odds of having a diagnosis of depression increased with symptom severity, there was poor agreement between depression diagnosis and symptom severity, and poor relationships with depression diagnosis and antidepressant prescription, raising questions about prescription practices in this population.

Few variables increased the odds of depression diagnosis or GDS symptom severity. Musculoskeletal disease increased the odds of a depression diagnosis, but falls history and diabetes increased the odds of severe depressive symptoms as measured by the GDS. Further investigation into the usefulness of the GDS as a screening tool for
depression in the multimorbid population is warranted, particularly in relation to the appropriateness of individual items and the diagnostic scores.

2.7 References


perspective on the recognition of depressive symptoms in primary care: The Hampshire
and treatment on the outcome of major depression in primary care: a naturalistic study
The naturalistic course of unipolar major depression in the absence of somatic therapy. J
28. Dowrick C, Buchan I. Twelve month outcome of depression in general practice:
30. Nyunt MS, Lim ML, Yap KB, Ng TP. Changes in depressive symptoms and
functional disability among community-dwelling depressive older adults. Int
32. Galenkamp, H, Braam, AW, Huisman, M, et al. Somatic multimorbidity and
May;66(3):380-386.


3 Chapter Three: Validation of the Geriatric Depression Scale

3.1 Introduction

Depression is often diagnosed and treated in a primary care setting, with the Australian Bureau of Statistics 2007 National Survey of Mental Health and Wellbeing reporting that 80% of participants receiving mental health care received this care from their GPs (1). Some of the challenges facing clinicians in identifying depression where patients have multiple chronic conditions have been discussed in Chapter One, and include patient and clinician prioritisation of physical symptoms (2), somatic manifestation of psychological symptoms, and increased suffering from physical symptoms (3). As many general practitioners are not mental health experts, screening questionnaires are useful as an aid to diagnosis, but the overlap of physical and psychological symptoms limit the reliability of diagnostic tools that rely on somatic symptoms (4, 5). As the exclusion of multimorbid patients from clinical studies (2) inhibits the generalisability of studies of single chronic disease to the multimorbid population, it is important that diagnostic tools be validated in multimorbid populations.

3.2 The Geriatric Depression Scale

The fifteen question short form Geriatric Depression Scale (GDS) is designed to screen for depression in older populations (6, 7). Developed from the original 30 question Geriatric Depression Scale to facilitate its use in clinical settings, it has been validated for use in primary care (8, 9), amongst psychiatric outpatients (10), and with community-dwelling and nursing home patients (11-14), but it has not been validated in patients with multiple chronic diseases.
The sensitivity and specificity of the GDS varies across elderly populations. A study of community-dwelling Asian elders found that when validated using the Structured Clinical Interview for DSM Disorders (SCID), the GDS had a sensitivity of 0.97 and a specificity of 0.95 for detecting major depressive disorder (13). However, Thompson et. al.’s (15) study comparing the GDS with the SCID in patients with Parkinson’s Disease found a sensitivity of 43% and specificity of 96% in diagnosing major depression. Marc et. al. (16) identified a sensitivity of 72.8% and a specificity of 78.2% in elderly home-care patients to whom the SCID and the GDS were administered, also finding that patients with three or more ailments were 2.5 times more likely to be diagnosed with major depression using the SCID. Their data suggested that the GDS may be more sensitive but less specific in patients with multimorbidity; however, these findings were not statistically significant.

Individual items in the GDS may affect its validity in multimorbid patients. Answers to questions such as ‘Have you dropped many of your activities and interests?’ and ‘Do you feel full of energy?’ may relate to respondents’ physical conditions or medication side effects as opposed to the presumed psychological cause; consequently, such questions may inflate scores inappropriately. Examination of the questions to validate their appropriateness in the multimorbid population would be useful in validating the scale overall.

As increasing numbers of patients will be treated for more than one chronic disease as they age, it is important to be able to trust the accuracy of the tools used to screen for depression in this setting. The prevalence of two or more chronic diseases, referred to as ‘multimorbidity’ (17), has recently been estimated at 25.5% of the Australian population (18), highlighting the importance of testing the effectiveness of the GDS in this vulnerable population. This study aimed to examine how accurately the
Geriatric Depression Scale (GDS) reflects depressive symptoms in patients with multiple chronic diseases presenting to the Multidisciplinary Ambulatory Consulting Service (MACS) clinic.

3.3 Methods

3.3.1 Study Design

This cross-sectional study was designed to examine the concurrent criterion validity of the GDS in patients with multiple morbidities, by comparing the convergent validity of the scale scores of the GDS with the Hospital Anxiety and Depression Scale (HADS) and depression diagnoses as determined by the World Health Organisation’s (WHO) gold standard Composite International Diagnostic Interview (CIDI).

Ethics approval was granted by the Royal Adelaide Hospital Research Ethics Committee, and reciprocal ethics approval was granted by the University of Adelaide Human Research Ethics Committee.

3.3.2 Participants and Setting

Patients presenting at the MACS clinic were identified as eligible for inclusion by the clinic nurse, who described the study to patients with two or more chronic conditions, with no diagnosis of dementia, both with and without a history of depression, who were able to engage in an interview in English. The student researcher contacted willing patients by telephone and invited them to take part. Consenting patients were interviewed by the student researcher either at their home or the hospital. As Study One of this thesis found that thirty percent of multimorbid patients attending the multidisciplinary clinic were aged less than 65 and administered the GDS at first consult, and definitions of ‘geriatric’ reflect physical function and not chronological age, younger patients were included in the sample.
3.3.3 **Instruments and procedures**

During the visit, the research student administered the Hospital Anxiety and Depression Scale (HADS) questionnaire, the fifteen question Geriatric Depression Scale (GDS) and the electronic version of the CIDI to each participant. The order of administration was varied to prevent order effects. Whilst the GDS and HADS are designed for self report, and written administration of the GDS is endorsed because of the capacity for greater openness (19), the CIDI is designed for verbal administration; consequently, all measures were administered verbally to maintain consistency of administration, and to accommodate for the increased likelihood of physical frailty in multimorbid patients.

3.3.3.1 **The Geriatric Depression Scale**

The short form Geriatric Depression Scale (GDS) is a fifteen question depression screening tool developed to identify individuals experiencing depressive symptoms in an elderly or aged population (20) (see Appendix A at the end of this chapter).

One point is scored for depression-positive answers, the sum of which provides the patient’s GDS score (maximum = 15). For example, question 4 reads ‘Do you often get bored?’ An answer of ‘Yes’ accrues one point, but no points are allocated if the patient answers ‘No’. A score of 0-4 is classified as normal; 5-8 is suggestive of mild depression and indicates a need for further investigation; 9-11 is suggestive of moderate depression; and 12-15 is suggestive of severe depression (21). A score of five points or more flags the need for further investigation.

3.3.3.2 **The Hospital Anxiety and Depression Scale**
The widespread use and validation of the HADS in clinical settings, coupled with its exclusion of somatic symptoms of depression, presented it as the most suitable scale with which to compare the GDS amongst multimorbid patients with complex symptom profiles recruited from an outpatient clinical setting.

The Hospital Anxiety and Depression Scale (HADS) is a fourteen-item screening tool developed for detecting symptoms of depression and generalised anxiety where confounding somatic symptoms may be present (see Appendix B at the end of this chapter). Frequently used in inpatient care, it has been widely validated as a clinical indicator of depression internationally in both hospital and outpatient settings (22-34), but has not been explicitly validated in a multimorbid patient population.

Seven statements assess depression and seven statements assess anxiety. Patients rate the applicability of the statements on a 4-point scale, where statements endorsing the presence of symptoms are scored 0=not at all/never to 3=definitely/always. Reverse scoring is applied to statements endorsing the absence of symptoms, such as ‘I feel cheerful’, where 0=always and 3=never. Scores are summed to produce an anxiety score (HADS-A) and a depression score (HADS-D) from 0-21 respectively, with a higher score indicating a higher level of distress (35). For the purpose of this pilot study, only HADS-D items were included in analyses. A score of 0-7 for the HADS-D items is considered to represent a normal range, 8-10 to suggest mild depression, 11-15 to suggest moderate depression, and 16-21 to suggest severe depression.

3.3.3.3 The Composite International Diagnostic Interview

Both the SCID and the CIDI were considered for use as a gold standard diagnostic interview. The poor performance of the SCID amongst frail chronically ill individuals (15) rendered it less appropriate for interviewing potentially frail multimorbid patients, and unstructured clinical interview administered by a registered
clinical psychologist was unfeasible given the time and financial limitations. Consequently, the CIDI was chosen as the candidate was able to complete the CIDI training from an accredited trainer, and it is a highly-validated diagnostic interview developed by a reputable source from DSM-IV diagnostic criteria.

The Composite International Diagnostic Interview (CIDI), a structured interview developed by the World Health Organisation (WHO) from DSM-IV diagnostic criteria, is considered a ‘gold standard’ diagnostic tool for DSM-IV conditions. The student researcher undertook an accredited training course to obtain an interview license. The current study used versions 2.1 and 3 of the electronic adaptation of the CIDI.

The CIDI is divided into diagnosis-specific sections (described on the WHO CIDI website (36)) including depression and anxiety. Participant responses to a set of screening questions at the beginning of the interview cue the sections relevant to participant experiences (see Appendix C at the end of this chapter). The interview is designed to skip questions regarding conditions for which the participant has endorsed no symptoms, and to direct the interview to probe about conditions for which the participant has reported symptoms. Questions adhere closely to DSM-IV criteria and are asked as written, without deviation from the script, to ensure uniformity of delivery. Answers to interview questions are coded numerically, and the CIDI software produces a file that provides a yes/no diagnosis for a range of psychological conditions.

3.3.4 Data Analysis

Frequency calculations were used to identify the items of the GDS most frequently endorsed. Spearman’s $r$ was applied to raw HADS-D and GDS scores, to find the level of agreement in trend between the two scales. The CIDI could not be correlated with HADS-D or GDS as it does not generate continuous scores. A comparison of the performance of the GDS in older and younger patients was also
planned, but due to the small sample size no comparison of scores between age groups could be made.

The CIDI produces a yes/no diagnosis for different forms of depression. CIDI diagnoses were cross-tabulated with GDS categories to examine agreement between measures. HADS-D categories were also cross-tabulated with GDS categories. Chi-squares were applied to the diagnostic groupings of each assessment tool (no diagnosis, mild, moderate or severe depression), to investigate relationships between the three measures. Where the assumptions for chi-square were not met, Fisher’s Exact Test was applied to investigate the level of agreement between measures. Cohen’s Kappa was also calculated to explore chance agreement in categorisations between tools.

3.4 Results

Seventy-three patients attended the MACS clinic over a period of seven months. Patient profile for recruitment is described in Table 1.

Eighteen patients were interviewed with the GDS and HADS, and 17 patients were interviewed using the CIDI. Ten (55.6) were male and eight (44.4%) were female. Ages ranged from 25 to 91, median age = 66.5 (Inter-Quartile Range (IQR) = 25).

TABLE 1: PATIENT RECRUITMENT

<table>
<thead>
<tr>
<th>Total Patients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not approached due to time constraints</td>
<td>10</td>
</tr>
<tr>
<td>Not multimorbid</td>
<td>2</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>1</td>
</tr>
<tr>
<td>Declined</td>
<td>14</td>
</tr>
<tr>
<td>English inadequate</td>
<td>19</td>
</tr>
<tr>
<td>Agreed to be contacted, declined interview</td>
<td>9</td>
</tr>
<tr>
<td>Participated</td>
<td>18</td>
</tr>
</tbody>
</table>
3.4.1 **The CIDI**

The CIDI interview took between thirty and ninety minutes, depending on the number of sections cued by endorsed symptoms. Problems relating to the CIDI arose during data collection. Informal participant confidences revealed that they found the questions confusing, struggled to recall events long past, grew distressed at their failure to recall events and symptoms experienced, and a small number admitted to giving false answers to progress the interview. This raised serious concerns about the validity of the data, particularly in relation to the answers regarding the last twelve months as these questions are placed at the end of the battery. In light of the apparent participant fatigue by the time they were asked the questions of most relevance to the current study, and the subsequent threat of false answers, it was felt that persisting with the lifetime prevalence interview would not provide useful data.

Consequently, after ten interviews (nine of which included the CIDI) the interviewer reverted to an earlier version of the CIDI, the CIDI 2.1, which focuses on the last twelve months only. As the aim of the study was to validate the use of screening tools that assess current mood, using the twelve-month adaptation of the gold standard was justified. The differences between the two versions were minor, the most notable one being a change in software (from a DOS platform in CIDI 2.1 to BLAISE in CIDI 3) and the deletion of some questions in version 3. Whilst this was expected to reduce participant fatigue, participants continued to report confusion and false responses to end the interview.

3.4.2 **Individual GDS Items**

GDS scores ranged from 1 to 15 (median = 5.00, (IQR) = 8). The number and percentage of participants who endorsed each item are described in Table 2. Notably,
fourteen participants (77.8%) endorsed item 13, regarding not feeling full of energy, and twelve participants (66.7%) endorsed item 2 related to cessation of activities. Items least frequently endorsed were: feeling hopeless about one’s situation; feeling that others are better off than one; and feeling that it is not wonderful to be alive now, each endorsed by only 3 (16.7%) participants. Due to concerns about the validity of the CIDI in this population and the small participant group, the predictive power of each question could not be calculated. Using regression to identify variables predicting total GDS score was not feasible.

**TABLE 2: PARTICIPANT ENDORSEMENT OF GDS ITEMS, N=18**

<table>
<thead>
<tr>
<th>Item</th>
<th>Endorsed by N (%) participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Satisfied with life*</td>
<td>6 (33.3%)</td>
</tr>
<tr>
<td>2. Dropped activities</td>
<td>12 (66.7%)</td>
</tr>
<tr>
<td>3. Life is empty</td>
<td>7 (38.9%)</td>
</tr>
<tr>
<td>4. Often bored</td>
<td>5 (27.8%)</td>
</tr>
<tr>
<td>5. Good spirits*</td>
<td>5 (27.8%)</td>
</tr>
<tr>
<td>6. Fearful of bad events</td>
<td>7 (38.9%)</td>
</tr>
<tr>
<td>7. Happy most of the time*</td>
<td>5 (27.8%)</td>
</tr>
<tr>
<td>8. Often feel helpless</td>
<td>10 (55.6%)</td>
</tr>
<tr>
<td>9. Prefer to stay at home</td>
<td>7 (38.9%)</td>
</tr>
<tr>
<td>10. More memory problems than others</td>
<td>7 (38.9%)</td>
</tr>
<tr>
<td>11. Wonderful to be alive*</td>
<td>3 (16.7%)</td>
</tr>
<tr>
<td>12. Sense of worthlessness</td>
<td>7 (38.9%)</td>
</tr>
<tr>
<td>13. Full of energy*</td>
<td>14 (77.8%)</td>
</tr>
<tr>
<td>14. Situation feels hopeless</td>
<td>3 (16.7%)</td>
</tr>
<tr>
<td>15. Others are better off than self</td>
<td>3 (16.7%)</td>
</tr>
</tbody>
</table>

* Indicates that a negative response (‘No’) accrues one point for the total score.
3.4.3 Individual HADS-D Items

HADS-D scores ranged from 0-17 (median=5.00, IQR = 6.25). Summed variable scores, mean scores and standard deviations also described in Table 3. The small N rendered regression to identify individual score predictors impractical.

**TABLE 3: SUMMED SCORES, MEDIAN SCORES AND INTER-QUARTILE RANGES FOR HADS ITEMS, N=18**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Summed score</th>
<th>Median Score</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel slowed down</td>
<td>30</td>
<td>1.50</td>
<td>2.00</td>
</tr>
<tr>
<td>2. I enjoy what I used to enjoy*</td>
<td>13</td>
<td>0.50</td>
<td>1.00</td>
</tr>
<tr>
<td>3. Lost interest in my appearance</td>
<td>10</td>
<td>0.00</td>
<td>1.25</td>
</tr>
<tr>
<td>4. I can laugh and see the funny side of things*</td>
<td>8</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>5. Look forward with enjoyment to things*</td>
<td>15</td>
<td>0.50</td>
<td>1.25</td>
</tr>
<tr>
<td>6. I feel cheerful*</td>
<td>9</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>7. I still enjoy a good book/radio/TV program.*</td>
<td>7</td>
<td>0.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*= Reverse Scored

3.4.4 Between-Scale Analyses

3.4.4.1 GDS and HADS-D agreement

To examine the agreement between the GDS and the HADS-D overall, participant raw scores from each scale were correlated to establish the strength of agreement. GDS and HADS-D raw scores yielded a Spearman correlation of \( r = 0.86, p < 0.001 \), suggesting strong agreement between continuous GDS and HADS-D scores.
Scores were then categorised as described in the method. As 93.8% of cells violated the chi-square assumption that all cells contain values of five or more, Fisher’s Exact Test was used to explore the relationship between categories, and identified a significant relationship between variables ($12.70, p=0.04$).

Kappa demonstrated only fair agreement between screening tools, $\kappa=0.31$. Closer examination of severity labels attributed to scores identified several key cases of disagreement between GDS and HADS-D categories (see Table 4). Whilst the GDS and HADS-D agreed on the majority of cases, but the HADS-D classified seven cases as ‘Normal’ that the GDS had classified as experiencing mild, moderate or severe depression.

**TABLE 4: AGREEMENT BETWEEN GDS AND HADS-D SCORES, N=18**

<table>
<thead>
<tr>
<th>GDS Diagnosis</th>
<th>HADS-D Depression Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal</td>
</tr>
<tr>
<td>No Diagnosis N (%)</td>
<td>7 (100.0%)</td>
</tr>
<tr>
<td>Mild Depression N (%)</td>
<td>5 (83.3%)</td>
</tr>
<tr>
<td>Moderate Depression N (%)</td>
<td>1 (50.0%)</td>
</tr>
<tr>
<td>Severe Depression N (%)</td>
<td>1 (33.3%)</td>
</tr>
</tbody>
</table>

3.4.5 **GDS and CIDI agreement**

Agreement between the GDS categories and the CIDI diagnoses was much lower than that of the GDS and the HADS-D (see Table 5). As 83.3% of cells contained values of less than 5, Fisher’s Exact Test was used, but no significant relationship between data sets was found ($7.94, p=0.12$). As the categorisations derived from the
GDS differ from the categorisations generated by the CIDI, kappa could not be calculated.

Agreement about who was and was not depressed was poor across all diagnostic categories (see Table 5). The GDS and CIDI criteria agreed that seven participants did not meet diagnostic criteria for any degree of depression, and that two participants met diagnostic criteria for severe depression. The GDS identified one participant as mildly depressed who met CIDI criteria for a severe single episode of major depressive disorder, and the remaining participants were not identified by the CIDI as meeting diagnostic criteria despite meeting GDS criteria for mild, moderate and severe depression.

### Table 5: Agreement Between GDS and CIDI Categories, N=17

<table>
<thead>
<tr>
<th>GDS Categorisation</th>
<th>CIDI Diagnosis &lt;12 Months</th>
<th>Major Depressive Disorder, Recurrent, Severe</th>
<th>Major Depressive Disorder, Single Episode, Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Diagnosis N (%)</td>
<td>7 (100.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Mild Depression N (%)</td>
<td>5 (83.3%)</td>
<td>0 (0.0%)</td>
<td>1 (16.7%)</td>
</tr>
<tr>
<td>Moderate Depression N (%)</td>
<td>2 (100%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Severe Depression N (%)</td>
<td>1 (33.3%)</td>
<td>1 (33.3%)</td>
<td>1 (33.3%)</td>
</tr>
</tbody>
</table>

3.4.6 HADS-D and CIDI Agreement

Agreement between HADS-D and CIDI categories was also low (see Table 6). As 91.7% of cells contained values of less than 5, Fisher’s Exact Test was applied, and found no significant relationship between data sets (9.10, \(p=0.41\), Fisher’s Exact Test).
As the values of the HADS-D variable differ from the values of the CIDI variable, kappa could not be calculated on this data.

Agreement about who was and was not depressed was poor across all diagnostic categories (Table 6). The HADS-D and CIDI agreed that twelve participants did not meet diagnostic criteria for any depressive category. The HADS-D classified two participants as not meeting diagnostic criteria whom the CIDI identified as having experienced a single episode of major depressive disorder, and one participant as mildly depressed who met CIDI criteria for severe recurrent major depressive disorder. The remaining participants were not identified by the CIDI as meeting diagnostic criteria despite meeting HADS-D criteria for mild, moderate and severe depression.

**TABLE 6: AGREEMENT BETWEEN HADS-D AND CIDI CATEGORIES, N=17**

<table>
<thead>
<tr>
<th>HADS-D Categorisation</th>
<th>CIDI Diagnosis &lt; 12 Months</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Diagnostic Criteria Met</td>
<td>Major Depressive Disorder, Recurrent, Severe</td>
<td>Major Depressive Disorder, Single Episode, Severe</td>
</tr>
<tr>
<td>Normal N(%)</td>
<td>12 (85.7%)</td>
<td>0 (0.0%)</td>
<td>2 (14.3%)</td>
</tr>
<tr>
<td>Mild N(%)</td>
<td>1 (50.0%)</td>
<td>1 (50.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Moderate N(%)</td>
<td>1 (100.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Severe N(%)</td>
<td>1 (100.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>

**3.5 Discussion**

The current study was designed to be a formal validation study, but several issues became apparent over the course of the data collection process that impacted on
the overall validation of the GDS, with the small N preventing the comparison of the GDS’ performance between younger and older multimorbid patients.

3.5.1 The CIDI

Despite being cross-culturally validated as a “precise and reliable diagnostic instrument” (37), and viewed as a gold standard for depression diagnosis, the CIDI appeared to be an inappropriate diagnostic tool to apply to older or infirm patients, a notion initially proposed by O’Connor and Parslow (38). Through analysing data from an Australian Mental Health survey, and comparing ICD-10 and Kessler Psychological Distress Scale (K-10) scores with CIDI scores, they noticed that inconsistency between answers to simple and complex questions increased with age. They suggested that this inconsistency could be attributed to working memory and attention span declining with age, proposing that the respondents may default to answering ‘no’ when faced with questions that exceed an individually manageable level of complexity.

Also, in a subset of respondents they found that older patients endorsed CIDI symptoms with the same frequency as younger respondents, but attributed their symptoms to physical illness, which reduced the likelihood of their receiving diagnosis of a depressive syndrome (38). In the current study participant attribution of symptoms or behaviours to depression also presented potential complications. Whilst qualitative data was not formally collected during data collection, it was noted that when asked during the CIDI about feeling sad or depressed, several participants normalised their experiences, acknowledging them but offering dismissive statements about having to get on with life despite feeling sad. Some went on to describe depressed behaviours, but did not perceive these behaviours as indicative of depression. This flagged another potential complication in relation to a mismatch of definitions of depression.
These findings support the possibility that diagnostic methods designed for adults such as the CIDI are less reliable amongst older adults, and support the suggestion of O’Connor and Parslow (38) and Thompson et. al. (15) that simple screening tools may be more appropriate for assessing depressed mood in the elderly.

3.5.2 The GDS

Agreement between CIDI and GDS was very low. Even where participants experienced severe depression the measures only agreed on the categorisation of ‘severe’ depression for two out of three; the third screened in the severe range on the GDS, but was not diagnosed by the CIDI. Whilst issues relating to the administration of the CIDI in the study population have been discussed above, the high sensitivity of the GDS may also have inflated GDS scores. Another point to note is that the GDS was verbally administered by the interviewer, which may have affected patient responses; as administration was consistent across the sample, however, any effect of verbal administration on responses was consistent across the data set.

Overlap of physical and depressive symptoms is one issue that may undermine the trustworthiness of the GDS. During the administration of the GDS in the current study, there were many occasions where participants endorsed depression-positive symptoms but attributed them to their physical illnesses or medication side effects. The most frequently endorsed items related to low energy levels and cessation of activities and interests (see Table 6 for all items). Whilst qualitative data was not formally collected during data collection, interviewer observations noted that endorsement of ceasing activities was often followed by an explanation of how their medical condition prevented them from engaging in previously preferred activities. Lack of energy was frequently attributed to physical illness or medication side effects.
Item nine, which inquires about preferring to stay at home rather than go out and do new things, created some confusion amongst participants. One balked at the use of the word ‘new’, stating that they preferred to go out rather than stay at home, but not explicitly to try new things. Several patients queried whether the item referred to their preferences or their habits, stating that whilst they did stay home more frequently it was not by desire, as their physical illness prevented them from going out.

These observations support findings from a validation of the GDS in palliative care outpatients, where the researchers found several inconsistencies in patient responses and depressive symptoms using both the 30 and the 15 item GDS surveys (39). More than half of the respondents endorsed the GDS question about fatigue, flagging this item as one of which the answers may not reflect depression in a palliative population. It is noteworthy that in the current study 77.9% of multimorbid outpatients reported fatigue, supporting this concern. The majority of palliative patients also endorsed the behaviours of anhedonia, such as dropping activities or interests, but only one third endorsed the perception-related anhedonia items, such as feeling bored. This raises the possibility that anhedonia-related behaviours are not always related to depression in this population, particularly as few participants endorsed high numbers of items. Supported in the current study by the 66.7% of patients who dropped interests compared with the 27.8% who often felt bored in the current study, these findings may be relevant to the use of the GDS with multimorbid patients. Multimorbid outpatients face a number of similar issues, including polypharmacy management and condition monitoring; consequently, further research into the endorsement of individual items of the GDS in the multimorbid population is warranted.
3.5.3 **The HADS-D**

The HADS-D was also verbally administered instead of completed by self-report, such that any resultant effect would occur consistently across the data set.

The non-somatic nature of HADS-D items eliminates the threat of confounding somatic symptoms, and also allows an interviewee to endorse an item to a larger or smaller extent, creating a more comprehensive picture of their experience. It is possible that the HADS-D may be a more appropriate depression screening tool for multimorbid patients; this cannot, however, be assumed on the basis of the current study.

The performance of the HADS-D was inconclusive. A lack of agreement was found with both the CIDI, the performance of which was untrustworthy, and the GDS, the scores of which may reflect the sensitivity of the GDS as opposed to the performance of the HADS-D. The GDS is known to have high sensitivity, and scores may have been inflated by answers influenced by variables other than mental health, but previous comparisons of the HADS-D with other depression scales found it to provide more conservative results than the PHQ-9 and BDI-II (40). Whilst GDS sensitivity and HADS conservative estimates may account for the five participants who screened as mildly depressed with the GDS but within the ‘normal’ HADS-D range, it is also notable that of the three GDS-severe participants, one screened as ‘normal’ and one as experiencing ‘mild’ depression using the HADS-D. Even accounting for differences in questions and symptoms between scales, one expects a moderate level of agreement between scales that intend to measure the same thing, but previous research comparing agreement between measures (40, 41) found that the measurement of different aspects of depression produced inconsistent estimates of depression, limiting inter-scale comparability.
Inter-scale inconsistency aside, however, the difference between ‘normal’ and ‘severe depression’, as well as the low kappa score, warrants the analysis of a larger data set to clarify the relationship between the two scales. Future research should also examine the relevance of individual HADS-D and GDS items in identifying depression in multimorbid patients, and assess the application of the HADS-D in the multimorbid population.

3.6 Conclusion

Agreement between the GDS and the CIDI was poor, with the GDS and the HADS-D reaching slightly better agreement, and this pilot study suggests that depression diagnosis tools and depression screening scales may not measure the same phenomenon. As poor agreement with the CIDI may be associated with problems found with its use in the geriatric multimorbid population, validation of the GDS using a different diagnostic tool would be a valuable contribution to clinical care. Future research may validate the GDS by using diagnostic interview by a clinical psychologist or the Mini-International Neuropsychiatric Interview (MINI) as the gold standard, and should explore its performance in both younger and older patient groups. Investigation of the reliability of each item of the GDS in the multimorbid population would also be useful, as some items may reflect symptoms of physical illness as opposed to depressed mood. Measures of patient frailty may also be of value in determining the impact of illness and disability on GDS responses.

Also, further research examining the use of the HADS-D in the multimorbid population should be undertaken, as its exclusion of somatic symptoms presents it as a potentially advantageous alternative for screening for depression in multimorbid patients.
3.7 References


## 3.8 Appendix A: GDS Questions

<table>
<thead>
<tr>
<th>No:</th>
<th>Questions:</th>
<th>Answer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Are you basically satisfied with your life?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>2.</td>
<td>Have you dropped many of your activities or interests?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>3.</td>
<td>Do you feel that your life is empty?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>4.</td>
<td>Do you often get bored?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>5.</td>
<td>Are you in good spirits most of the time?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>6.</td>
<td>Are you afraid that something bad is going to happen to you?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>7.</td>
<td>Do you feel happy most of the time?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>8.</td>
<td>Do you feel helpless?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>9.</td>
<td>Do you prefer to stay at home, rather than go out and do things?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>10.</td>
<td>Do you feel that you have more problems with memory than most?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>11.</td>
<td>Do you think it is wonderful to be alive now?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>12.</td>
<td>Do you feel pretty worthless the way you are now?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>13.</td>
<td>Do you feel full of energy?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>14.</td>
<td>Do you feel that your situation is hopeless?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>15.</td>
<td>Do you think that most people are better off then you are?</td>
<td>Yes / No</td>
</tr>
</tbody>
</table>

**Total Score**

Answers in bold case are thought to reflect depression, and are allocated one point. The GDS score is the sum of answers in bold (total score).
### 3.9 Appendix B: HADS-D Questions

Questions addressing depression in the HADS questionnaire.

<table>
<thead>
<tr>
<th>I feel as if I am slowed down:</th>
<th>I feel cheerful:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nearly all the time</td>
<td>Not at all</td>
</tr>
<tr>
<td>Very often</td>
<td>Not often</td>
</tr>
<tr>
<td>Sometimes</td>
<td>Sometimes</td>
</tr>
<tr>
<td>Not at all</td>
<td>Most of the time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I still enjoy the things I used to enjoy:</th>
<th>I can enjoy a good book or radio/TV program:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely as much</td>
<td>Often</td>
</tr>
<tr>
<td>Not quite as much</td>
<td>Sometimes</td>
</tr>
<tr>
<td>Only a little</td>
<td>Not often</td>
</tr>
<tr>
<td>Hardly at all</td>
<td>Very seldom</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I have lost interest in my appearance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitely</td>
</tr>
<tr>
<td>I don’t take as much care as I should</td>
</tr>
<tr>
<td>I may not take quite as much care</td>
</tr>
<tr>
<td>I take just as much care</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I can laugh and see the funny side of things:</th>
</tr>
</thead>
<tbody>
<tr>
<td>As much as I always could</td>
</tr>
<tr>
<td>Not quite so much now</td>
</tr>
<tr>
<td>Definitely not so much now</td>
</tr>
<tr>
<td>Not at all</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>I look forward with enjoyment to things:</th>
</tr>
</thead>
<tbody>
<tr>
<td>As much as I ever did</td>
</tr>
<tr>
<td>Rather less than I used to</td>
</tr>
<tr>
<td>Definitely less than I used to</td>
</tr>
<tr>
<td>Hardly at all</td>
</tr>
</tbody>
</table>

Depression Total
3.10 Appendix C: Sample CIDI Questions

SAMPLE DEPRESSION QUESTIONS

*D1a. During the episodes of being sad, empty, or depressed, did you ever lose interest in most things like work, hobbies, and other things you usually enjoy?

YES...........................1 GO TO *D3
NO.............................5 GO TO *D4
DON’T KNOW..............8 GO TO *D4
REFUSED.....................9 GO TO *D4

*D9. Earlier in the interview, you mentioned having periods that lasted several days or longer when you lost interest in most things like work, hobbies, and other things you usually enjoy. Did you ever have a period of this sort that lasted most of the day nearly every day for two weeks or longer?

YES.....................................................1 GO TO *D11
NO......................................................5
DON’T KNOW.................................8
REFUSED.........................................9

*D9a. What is the longest period of days you ever had when you lost interest in most things you usually enjoy?

INTERVIEWER: “LESS THAN ONE DAY” CODE 0

_________ NUMBER

CIRCLE UNIT OF TIME: DAYS ...1 WEEKS ...2 MONTHS....3 YEARS.... 4

PROBE DK: Was it three days or longer?
DON’T KNOW.................................998
REFUSED........................................999

USE THE KEY PHRASE “UNINTERESTED” THROUGHOUT THE SECTION GO TO

*D10
Chapter Four: Patient Symptom Priority Scale Pilot

It was clear during interviews with multimorbid patients that emotional symptoms were often minimised, justified or ignored in comparison to physical symptoms, but interviewer observations were not gathered or interpreted as data. Whilst not part of the original study design, these suspicions prompted the development of a scale designed to explore patient symptom priorities, and their associated psychological and practical burden.

No existing scale elicited patient priority symptoms, and whilst many scales asked about severity, no scales conceptualised ‘symptom burden’ as a two-fold emotional and practical measure. I was consequently employed as a research assistant to the MACS clinic to develop a questionnaire suitable for the aims of the study, and conduct a pilot study of the scale as part of the clinic’s data collection. Ethics approval to extract and analyse the resulting data was granted by the Royal Adelaide Hospital Ethics Committee.

This chapter has been prepared as a manuscript for publication, and was in preparation at the time of thesis submission. It is included in this thesis with the permission of the co-authors.
Statement of Authorship

Melinda Stanners (Candidate)
Performed scale review, developed new scale, collected and analysed data, wrote manuscript
I hereby certify that the statement of contribution is accurate.
Signature...........................................................................Date..................................

Dr Sepehr Shakib
Supervised scale development and refinement, supported recruitment, reviewed manuscript
I hereby certify that the statement of contribution is accurate and I give permission for the inclusion of the paper in the thesis.
Signature...........................................................................Date..................................

Prof Helen Winefield
Reviewed manuscript
I hereby certify that the statement of contribution is accurate and I give permission for the inclusion of the paper in the thesis.
Signature...........................................................................Date..................................
Abstract

Introduction

Patients often prioritise physical symptoms over psychological symptoms in clinical consultations, but may be concerned about psychological symptoms. Whilst existing symptom burden scales address individual conditions, no scales elicit patient priority symptoms, and few differentiate between emotional and functional burdens. The current study describes the Patient Symptom Priority Scale (PSPS), which elicits symptoms of concern, and ratings of concern and functional impact, to explore differences in prioritisation between physical and psychological symptoms.

Method

The scale was developed in consultation with clinicians and patients attending a multidisciplinary outpatient clinic at a metropolitan hospital in South Australia. Patients attending the clinic between March and July 2011 completed the scale. Symptoms were coded as physical or psychological and compared using the Mann-Whitney U Test, the Wilcoxon Signed Ranks test and Spearman’s r.

Results

Fifty seven patients participated. Women rated functional impact of physical symptoms statistically significantly higher than men. Significantly more physical symptoms were described by participants than psychological symptoms, and more physical symptoms were described by women than men. Age correlated positively with sum of conditions and physical symptom count, and negatively with psychological
symptom impact. Geriatric Depression Scale score correlated with all psychological variables.

Conclusion

Patients emphasised physical variables over psychological variables, with few statistically significant differences emerging between gender and depression diagnosis groups. Replication with a larger data set would clarify the nature of relationships between variables. The correlation of the Geriatric Depression Scale with psychological variables suggests that it is a moderately accurate reflection of psychological symptoms.
4.1 Introduction

Previous research suggests that if patients do not complain about emotional symptoms, GPs may be reluctant to broach the subject of depression if they suspect it may be present (1), with mutual avoidance of depression discussion prolonging patient suffering and obstructing engagement with interventions. Chronic illness complicates the diagnostic process amongst older adults, as physical illness may affect the presentation of depression, and age increases the risk of developing one or more chronic disease (2-5). Older patients are more likely to complain of somatic symptoms of depression than emotional distress (6), and are at increased risk of normalisation of depressive symptoms (7). Whilst older patients may downplay emotional symptoms to optimise their time with their GP (8), however, emotional symptoms may still distress or disable patients. Patient prioritisation of physical symptoms over emotional symptoms has been discussed in the literature (9), but the impact of the presence of two or more chronic conditions (referred to as multimorbidity (10)) on patient symptom prioritisation has not yet been explored.

Failure to accommodate patient priorities can have a detrimental effect on patient care. Differing patient care priorities between patients and clinicians have the potential to damage rapport and impede treatment (11), and patients may resist decisions about care when they do not reflect their own priorities (12). No research has identified the subjective importance and impact of psychological symptoms in patients with multiple chronic conditions. As multimorbid patients experience competing symptoms within complex symptom profiles, exploration of multimorbid patient prioritisation of physical and psychological symptoms, and perceptions of their emotional and practical impact, is warranted.
4.1.1 **Review of existing measures of symptom burden**

A comprehensive review of existing scales was undertaken, in an attempt to identify a measure or tool that supported the research aims of the study. Medal.org, the website for the Medical Algorithms Project developed by the Institute for Algorithmic Medicine, Texas (13), was the principle search tool for identifying and assessing scales. Medal.org provides search access to documentation, references, and (where not infringing on copyright) electronic implementation of useful healthcare algorithms and scales.

The search terms ‘symptom burden scale’ yielded 3429 results, many of which were duplicates. Each scale was reviewed by the student researcher for its potential usefulness, with notes retained about elements of potentially useful scales (see Appendix A). Many scales assessed the severity, distress, suffering or importance of symptoms of individual conditions, such as benign prostatic hyperplasia, diabetes, and cancer, with several scales such as the Cumulative Illness Rating Scale (14) and Charlson Index (15) designed to quantify multimorbidity and health-related quality of life by measuring overall severity of pre-determined organ domains or conditions.

Only one rating scale allowed the patient to nominate symptoms of concern. Designed to assess the outcomes of psychological interventions, the Psychological Outcome Profiles (PSYCHLOPS) questionnaire allows patients to nominate their two most troubling problems and rate their degree of effect (16). Although the questionnaire aims to measure a similar phenomenon to that of the current research, PSYCHLOPS is specific to psychological symptoms, and does not differentiate between emotional distress and functional impact.
Whilst exploration of the literature revealed a growing interest in methods of measuring multimorbidity (17) and integrating patient report into health-related outcome measures (18), all scales were prescriptive in the symptoms evaluated, and only allowed patients to evaluate the symptom on one dimension, usually that of severity. As the scales reviewed suggested that ‘severity’ reflected both an emotional and a functional component, it was decided that both dimensions should be measured; consequently, it was necessary to develop a new clinical scale to bridge the gap in the clinical symptom assessment literature.

Patient Symptom Priority Scale (PSPS) was developed to meet the research aims of investigating the proportion of physical symptoms compared with psychological symptoms, and whether differences existed between physical and emotional symptoms in a) emotional distress and b) perceived functional impact. It was hypothesised that patients would report more physical symptoms, and rate the levels of concern and functional impact more highly for physical symptoms than psychological symptoms. It was also hypothesised that patients with a history of depression would report more psychological symptoms and attribute higher ratings of concern and functional impact to psychological symptoms compared with participants with no history of depression.

4.2 Methods

4.2.1 Study Design

A review of existing symptom burden and severity scales resulted in the development of the Patient Symptom Priority Scale. The questions and scale were refined through clinician and patient review at the MACS clinic.
The PSPS was administered to patients presenting to the Multidisciplinary Ambulatory Consulting Service (MACS) clinic between the 1st of March and 31st July, 2011. The questionnaire integrates an interview eliciting priority symptoms with two scales rating perceived emotional and practical burden. Patients nominate physical and psychological symptoms of personal concern, and rate their sense of ‘concern, trouble or bother’ and the impact on patients’ lives of each symptom on a five point Likert scale. Data were analysed using frequency calculations, the Mann-Whitney U test, and the Wilcoxon Signed Ranks test.

4.2.2 Participants and Setting

All patients presenting at the MACS clinic with two or more chronic conditions between 1st March and 31st July were invited by the clinic nurse to participate. Consenting patients were interviewed before or after their clinic consult.

4.2.3 Instruments and procedures

4.2.3.1 The Patient Symptom Priority Scale

Of critical importance in the development of the scale was the aim of eliciting symptoms of genuine importance to patients. When asked whether any symptoms were bothering them, patients presenting at the clinic were observed to repeat the physical diagnoses that they had been told were important, even where the conditions were asymptomatic. The goal of the Patient Symptom Priority Scale (PSPS) was to move away from the medical diagnoses themselves and identify the experienced symptoms that had an emotional or functional impact on patients.

The scale needed to be simple to administer, either one on one or through an interpreter in a clinical setting, and facilitate the reporting of symptoms of genuine
concern. Using the review of pre-existing scales to choose the formats, scales and terminology that would best facilitate the study aims, the Patient Symptom Priority Scale (PSPS) is a questionnaire designed to elicit up to six of the patient’s most troublesome symptoms, and ratings for a) the extent to which the symptom concerned, bothered or troubled them, and b) the extent to which the symptom impacted on their ability to live their lives (Appendix B).

In relation to Valderas et. al.’s Patient Reported Outcome Measures (PROMs) classification system (18), the PSPS aimed to explore the construct of ‘Symptoms’ (spanning ICD-10 codes A00-Y98). Multimorbid patients were the population of interest, but population specificity was not built into the scale. Many of the scales reviewed asked patients to rate symptom ‘severity’, a non-specific term that appeared to reflect two facets of symptom experience that were captured individually in a small number of existing scales – one of emotional distress, and one of functional impact. Consequently, the two dimensions were explored by two five-point Likert scales per symptom – one to rate the degree of concern, bother, or trouble felt by the patients about the symptom, and one to rate the symptom’s impact on the patient’s functional ability – to generate an individualised patient symptom profile. Emoticons were located on the scale at points 1 (😀), 3 (😄) and 5 (😊) as visual aids for patients to conceptualise their experience.

Whilst it was anticipated that patients would be forthcoming about physical symptoms of concern in a clinical setting such as the MACS clinic, it was also anticipated that patients may not mention emotional symptoms even where they posed a concern. Consequently, the interviewer presented patients with their previously-
completed GDS questionnaire to prompt patient thought about their emotional state, and asked whether any of those previously endorsed symptoms were still bothering them.

The questionnaire underwent a series of revisions. Initially drafted by the student researcher, input from the student researcher’s supervisors was used to generate a questionnaire presented to the MACS clinician journal club. After considerable debate about terminology, a refined questionnaire and rating scale was prepared on the basis of clinician critical review and piloted to a small number of clinic patients. The final revision incorporated feedback from the pilot patients for administration in the current pilot study (Appendix B).

4.2.3.2 Administration

The questionnaire was administered verbally, using the script in Appendix B. The first question invited participants to volunteer symptoms that have bothered them over the previous two weeks, which included both physical and psychological symptoms. If a patient cited a medical diagnosis, the interviewer probed for details about what troubled them about the condition.

The participant was then presented with a list of the GDS symptoms that they had endorsed at their first presentation to the clinic, and asked whether any of the symptoms still bothered them. Patients were asked to place an X on the first five-point scale to reflect how much each symptom troubled or bothered them, and an X on the second five-point scale to indicate the functional impact of each symptom. The number of physical and psychological symptoms was recorded, as well as the numeric value for their ratings of concern and functional impact. Whilst the dimension attribution for the majority of symptoms was obvious, there were several symptoms for which the attribution to a physical or psychological cause was unclear. When this occurred, the
DSM-IV was used to guide coding. For example, as fatigue is included in the DSM-IV depression diagnosis criteria set, reports of tiredness were attributed to the psychological domain.

4.2.4 Analyses

The aim of the study was to explore differences in patient perception of physical and psychological symptoms. Frequency calculations were performed to identify the median and inter-quartile-range values for the number of physical and psychological symptoms listed, and also for the ratings for level of concern and impact on life assigned to each symptom. Frequency calculations were repeated to explore the data by gender and history of depression. Due to the ordinal nature of the data, the Mann-Whitney U test was performed to examine median and IQR differences between gender and depression diagnosis groups. To explore differences between physical and psychological symptoms, the Wilcoxon Signed Ranks test was then applied first to the whole data set, then differentiated by gender and history of depression. Spearman’s \( r \) was also applied to age, sum of chronic conditions, Geriatric Depression Scale score, symptom counts and ratings to explore relationships between variables.

4.3 Results

4.3.1 Administration

Patients engaged positively with the scale (Appendix B), with the majority describing at least one symptom that had bothered them over the previous two weeks. Most patients were able to conceptualise emotional concern as a different phenomenon than functional impact without difficulty. Although a small number of participants were interviewed using an interpreter, no difficulties emerged through such administration.
Patients frequently described physical issues first, with patients often spontaneously volunteering somatic psychological symptoms such as tiredness. The majority of patients required prompting with the GDS to elicit other psychological symptoms, such as helplessness, anhedonia or depression.

4.3.2 Data Analysis

Fifty-seven patients (males = 26; females = 31) with a mean age of 75.2 (standard deviation = 13.02) were interviewed. Fourteen (24.6%) had a history of doctor-diagnosed depression.

Sum of chronic conditions ranged from 1 to 19, (mean = 8, standard deviation = 3.5). Frequently cited physical symptoms included shortness of breath and breathing problems, localised pain, stomach upsets and dizziness. Common psychological symptoms included feeling down, tiredness, boredom, helplessness, forgetfulness, anxiety, and depression. Figure 1 describes the distribution of physical and psychological symptom counts across the data set.

![Figure 1: Frequency Distribution of Physical and Psychological Symptoms](image-url)
Figure 2 demonstrates a trend amongst all patients to describe more physical than psychological symptoms, and attribute higher ratings of concern and impact for physical symptoms than psychological symptoms.

FIGURE 2: MEDIAN COUNT OF PHYSICAL AND PSYCHOLOGICAL SYMPTOMS AND RATINGS OF CONCERN AND FUNCTIONAL IMPACT

Median ratings and inter-quartile ranges (IQR) are reported in Table 1. Frequency calculations found that women reported a higher median number of physical symptoms and accompanying ratings regarding concern and life impact than men, but the Mann-Whitney U test found that this was only significant for ratings of functional impact (Table 1). No statistically significant gender differences were found in the reporting of psychological symptoms or ratings of concern or impact.

Patients with a history of depression listed more psychological symptoms than patients without depression, and higher ratings of concern and life impact, but these differences were not statistically significant (see Table 2).
### TABLE 1: MEDIAN AND MANN-WHITNEY MEAN RANK AND Z-SCORE DATA BY GENDER

<table>
<thead>
<tr>
<th>Physical</th>
<th>Symptom N</th>
<th>Total (N=57)</th>
<th>Male (N=26)</th>
<th>Female (N=31)</th>
<th>Z, p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concern</td>
<td>2 (2.0)</td>
<td>2.0 (1.0)</td>
<td>2.0 (2.0)</td>
<td>Z=-0.91,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>26.88</td>
<td>30.77</td>
<td>p=0.37</td>
</tr>
<tr>
<td></td>
<td>Impact</td>
<td>3.5 (2.5)</td>
<td>3.0 (2.63)</td>
<td>3.5 (2.5)</td>
<td>Z=-1.55,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>25.31</td>
<td>32.10</td>
<td>p=0.12</td>
</tr>
<tr>
<td></td>
<td>Impact</td>
<td>3.0 (2.5)</td>
<td>2.25 (2.63)</td>
<td>3.5 (2.00)</td>
<td>Z=-2.20,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>23.75</td>
<td>33.40</td>
<td>p=0.03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Psychological</th>
<th>Symptom N</th>
<th>Total (N=57)</th>
<th>Depression (N=15)</th>
<th>No Depression (N=42)</th>
<th>Z, p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptom N</td>
<td>1.00 (1.0)</td>
<td></td>
<td>1.0 (1.5)</td>
<td>1 (1.0)</td>
<td>Z=-0.30,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>27.96</td>
<td>28.44</td>
<td>p=0.77</td>
</tr>
<tr>
<td>Symptom N</td>
<td>3.00 (3.0)</td>
<td></td>
<td>3.0 (2.75)</td>
<td>3.0 (3.0)</td>
<td>Z=-0.44,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>27.96</td>
<td>29.87</td>
<td>p=0.66</td>
</tr>
<tr>
<td>Symptom N</td>
<td>2.50 (3.5)</td>
<td></td>
<td>2.0 (3.13)</td>
<td>3.0 (3.0)</td>
<td>Z=-1.62,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>25.15</td>
<td>32.21</td>
<td>p=0.11</td>
</tr>
</tbody>
</table>

### TABLE 2: MEDIAN AND MANN-WHITNEY MEAN RANK AND Z-SCORE DATA BY HISTORY OF DEPRESSION

<table>
<thead>
<tr>
<th>Physical</th>
<th>Symptom N</th>
<th>Total (N=57)</th>
<th>Depression (N=15)</th>
<th>No Depression (N=42)</th>
<th>Z, p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptom N</td>
<td>2 (2.0)</td>
<td></td>
<td>2.0 (1.25)</td>
<td>2.0 (2.0)</td>
<td>Z=-1.77,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35.61</td>
<td>26.85</td>
<td>p=0.77</td>
</tr>
<tr>
<td>Symptom N</td>
<td>3.5 (2.5)</td>
<td></td>
<td>2.5 (2.25)</td>
<td>3.5 (3.0)</td>
<td>Z=-0.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>29.96</td>
<td>28.69</td>
<td>p=0.80</td>
</tr>
<tr>
<td>Symptom N</td>
<td>3.0 (2.5)</td>
<td></td>
<td>3.25 (1.13)</td>
<td>3.0 (3.0)</td>
<td>Z=-0.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>32.68</td>
<td>27.80</td>
<td>p=0.34</td>
</tr>
<tr>
<td>Psychological Symptom</td>
<td>N</td>
<td>Mean Rank</td>
<td>Z</td>
<td>p</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>----</td>
<td>-----------</td>
<td>------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Concern</td>
<td>3.00 (3.0)</td>
<td>3.25 (3.25)</td>
<td>3.0 (3.5)</td>
<td>Z=-1.05</td>
<td></td>
</tr>
<tr>
<td>Impact</td>
<td>2.50 (3.5)</td>
<td>3.25 (3.0)</td>
<td>2.0 (4.0)</td>
<td>Z=-0.98</td>
<td></td>
</tr>
</tbody>
</table>

The Wilcoxon Signed Ranks Test found the overall difference between the number of physical and psychological symptoms reported to be statistically significant, \( z = -2.33, p = 0.02 \). No statistically significant difference was found between physical and psychological concern rankings, \( z = -1.05, p = 0.30 \), or between physical and psychological symptom impact, \( z = -1.61, p = 0.11 \).

The Wilcoxon Signed Ranks Test found that amongst men, no statistically significant differences were present between the number of physical and psychological symptoms listed (\( z=-1.00, p = 0.32 \)), or ratings of concern (\( z = -0.29, p = 0.77 \)) or life impact (\( z=0.63, p = 0.53 \)) between the two variables. Amongst women, significantly more physical symptoms were reported than psychological symptoms, \( z = -2.23, p = 0.03 \), but no differences were present for ratings of concern (\( z=-1.11, p = 0.27 \)) or life impact (\( z=-1.40, p = 0.16 \)).

No significant difference was found for patients with a history of depression in reported number of physical vs psychological symptoms, \( z=-1.52, p=0.13 \) or ratings for concern (\( z=-0.21, p=0.83 \)) or life impact (\( z=-1.03, p=0.30 \)). No significant differences were found amongst patients without a history of depression in the reporting of symptoms, \( z=-1.80, p=0.07 \), or ratings of concern (\( z=-1.34, p=0.18 \)) or life impact (\( z=-1.17, p=0.24 \)) for physical and psychological symptoms.
Spearman correlation of continuous variables found several statistically significant relationships. A moderate association was found between age and total number of chronic conditions, \( r=0.32, \ p<0.05 \), and a weak correlation was found between age and number of physical symptoms described, \( r=0.30, \ p<0.05 \). Small negative associations emerged between age and number of psychological symptoms, \( r=-0.27, \ p<0.05 \), and age and psychological impact, \( r=-0.27, \ p<0.05 \). Total number of chronic conditions demonstrated significant weak associations with number of physical symptoms, \( r=0.26, \ p<0.05 \), and GDS score, \( r=0.28, \ p<0.05 \).

Geriatric Depression Scale score correlated weakly but significantly with psychological symptom count, \( r=0.28, \ p<0.05 \) and psychological concern ratings, \( r=0.33, \ p<0.05 \), but moderately with psychological impact ratings, \( r=0.42, \ p<0.01 \).

4.4 Discussion

The Patient Symptom Priority Scale appeared to effectively elicit symptoms most bothersome to patients, and patient estimations of the emotional and practical burden of the symptoms. All patients demonstrated an overall trend to list more physical symptoms than psychological symptoms, attributing higher ratings of concern to physical symptoms and rating them as having more impact on their everyday lives than psychological symptoms.

The pilot study found that whilst patients with a history of depression are more aware of and concerned about psychological symptoms when compared with physical symptoms and non-depressed patient scores, this difference is not statistically significant. The non-significance of the differences may be attributable to the small sample size; future replication with a larger sample would clarify the magnitude of the difference. No significant gender differences in physical symptom count or perceptions.
of psychological burden emerged, but women reported higher ratings of functional impact. Qualitative interview would be useful for exploring whether this finding relates to a higher degree of functional disability amongst women, or whether the ratings of greater functional impact reflects perceptions of limitations related to tasks inherent in the traditional female gender role, such as housework, food preparation and childcare.

Positive correlations between age and sum of conditions, and age and physical symptoms, are unsurprising in light of releases from the Australian Bureau of Statistics that demonstrate an increase in chronic conditions over the life-span (14, 15). Sum of chronic conditions only had a moderate association with number of physical symptoms listed, suggesting that good quality care might act as a mediating factor in the manifestation of symptoms. The negative correlation between age and psychological symptom functional impact may be related to the minimisation of psychological symptoms, but this explanation is inconsistent in light of the absence of statistically significant relationships between age and psychological symptom count, and age and rating of concern. A larger data set would clarify the relationships between age and psychological variables.

The Geriatric Depression Scale score correlated with all psychological variables, but more strongly with psychological functional impact. This suggests that in this population, the Geriatric Depression Scale provides a moderately accurate reflection of patient psychological symptoms, but further research is needed to validate its performance amongst multimorbid patients. This is particularly important in light of the causal ambiguity of some symptoms, such as tiredness, that are attributed by both the Geriatric Depression Scale and the DSM-IV to depression. Such symptoms may reflect depression, but may alternatively reflect medication side effects or effects of illness,
creating challenges for clinicians and undermining the face validity of screening tools and diagnostic measures. Future research should explore the usefulness of the individual items of the Geriatric Depression Scale in identifying depression in multimorbid patients. Additionally, future research should attempt to quantify functional disability or frailty, with a view to identifying and eliminating the impact of physical elements in such scales.

4.4.1 Limitations

The questionnaire was administered in a medical clinic setting; consequently it is unsurprising that patients prioritised and emphasised physical symptoms, as found in previous studies (8, 9, 16). Whilst these findings cannot be assumed to reflect a patient’s genuine concerns, they support the suggestion that even when given the opportunity to raise concerns about emotional symptoms in a clinical setting, patients may choose not to. Different results may have been obtained by administering the questionnaire in a different setting or manner. Future research should explore whether the use of the PSPS increases patient openness about emotional symptoms, to clarify whether its potential usefulness extends beyond epidemiological research into clinical settings.

Additionally, using the GDS to prompt discussion about emotional symptoms may have given more weight to the emotional symptom than genuinely attributed to it by the patient. Whilst the motivation for prompting was to give the patient permission to discuss emotional symptoms in a clinical setting that may generate assumptions about perceived symptoms of interest, future revisions of the scale should incorporate a less intrusive method of allowing patients to discuss emotional symptoms.
4.5 Conclusion

The Patient Symptom Priority Scale is the first symptom burden scale to facilitate discussion of patient priority symptoms, and to differentiate between the emotional burden of concern and the physical burden of functional limitation. It found that irrespective of gender or depression history status, patients emphasise physical symptoms over psychological symptoms. Correlations of the Geriatric Depression Scale with psychological variables suggest that it is a moderately accurate reflection of psychological symptoms amongst patients with multiple chronic conditions. In addition to being a potentially valuable tool for research exploring patient priorities and burdens in depression and multimorbidity research, the scale also has the potential to support clinicians in addressing the priorities of patients with complex symptom profiles. Future research should validate the scale against disease-specific symptom burden scale to ensure that it elicits accurate accounts of symptom burden and severity, and replicate the pilot study of physical and psychological symptom comparison with a larger data set.

4.6 References


### 4.7 Appendix A: Scale Review

<table>
<thead>
<tr>
<th>Author</th>
<th>Scale</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desbiens et al 1998</td>
<td>Factors associated with symptom burden in hospitalised patients</td>
<td>Factors derived through yes / no responses to fact-based questions. Does not ask for patient’s evaluation of severity or burden.</td>
</tr>
<tr>
<td>Miller et al 1991</td>
<td>Cumulative Illness Rating Scale for Geriatric Patients</td>
<td>Evaluates illness rating by body system, so does not reflect multiple conditions in one system. Assessment is by Likert scales from ‘not a problem’ to ‘extremely severe condition’ and summed. I like this. Averages severity scores to provide an overall severity score.</td>
</tr>
<tr>
<td>McCorkle and Quint-Benoliel, 1983</td>
<td>Symptom Distress Scale</td>
<td>List of cancer-specific symptoms/issues. Rates using Likert from no distress to extreme distress</td>
</tr>
<tr>
<td>Desbiens, Muller, 1998</td>
<td>Evaluating symptom burden using Desbien’s Criteria</td>
<td>Symptoms listed, with Likert values ‘none’ - ‘severe’ of severity. Reflects impact on quality of life. Good but does not evaluate perceived importance. Can be adapted?</td>
</tr>
<tr>
<td>Author</td>
<td>Scale</td>
<td>Comments</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Kroenke et al 2001</td>
<td>PHQ-9</td>
<td>9 depression-specific items rated from ‘not at all’ – ‘nearly every day’ with summed score. No assessment of perceived burden.</td>
</tr>
<tr>
<td>Linn et al 1968</td>
<td>CIRS</td>
<td>Assessment by system. Degree of impairment measure on scale of ‘none’ – ‘extremely severe’. Criticisms regarding system approach underplaying severity compared with multiple-system mild impairments.</td>
</tr>
<tr>
<td>Greenfield et al 1993</td>
<td>Index of Coexistent Disease (ICED)</td>
<td>Lists specific diseases and rates from none (absent) to moderate/severe despite treatment. Also rates impairment from none - severe. Not symptom specific, but can be tailored perhaps? Or ‘derived’ from?</td>
</tr>
<tr>
<td>Levine et al 1993</td>
<td>Questionnaire for clinical assessment of carpal tunnel syndrome</td>
<td>Set symptoms listed. Asks about severity (normal - abnormal) AND functional status (no difficulty – cannot do). Fundamentally sound but normal-abnormal is not what we’re interested in, we want a qualitative score. Also, functional items irrelevant.</td>
</tr>
<tr>
<td>Blatt and Kupperman 1953</td>
<td>Blatt Kupperman menopausal index</td>
<td>Specific symptoms none-severe.</td>
</tr>
<tr>
<td>Barthel Lawton, 2005</td>
<td>Barthel Index Physical self maintenance scale</td>
<td>Assesses independence and mobility – objective scale. Has items listed, allocates prescribed points based on patient’s function.</td>
</tr>
<tr>
<td>McCorkle and</td>
<td>Symptom distress scale</td>
<td>10 Cancer-specific items scored 1-5 no distress-</td>
</tr>
<tr>
<td>Author</td>
<td>Scale</td>
<td>Comments</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Young 1978</td>
<td>for a patient with cancer</td>
<td>maximal distress and summed</td>
</tr>
<tr>
<td>Flachenecker 2006</td>
<td>Fatigue in a patient with multiple sclerosis</td>
<td>List of symptoms identified as present or absent, and assesses them by severity (none-severe) and frequency (none-constant). Would be perfect if they only asked about perceived burden/how big a problem.</td>
</tr>
<tr>
<td>Perz 1997</td>
<td>Menopause symptom list of Perz</td>
<td>List of symptoms with Likert scale for frequency (never - almost always) and severity (not felt - extreme). Symptoms divided into psychological, vaso-somatic and somatic and weighted either 1 or 2.</td>
</tr>
<tr>
<td>Taylor 1979</td>
<td>A daily menstrual rating scale</td>
<td>Symptoms associated with menstrual cycles rated on Likert scale from not at all – very large amount. Burden/perceived importance/impact not rated.</td>
</tr>
<tr>
<td>Kuykendall et al 1998</td>
<td>Dyspepsia related health scale questionnaire of Kuykendall et al</td>
<td>List dyspepsia symptoms and rates severity on a 5pt Likert scale from ‘no problem’ to ‘very severe problem’. Two questions re pain intensity 0-10 (none-extreme). Three questions re pain disability rated from 0-10 (no interference/change – extreme interference/change) regarding impact of symptoms on daily life, work and social activities. Also two questions re satisfaction with health and with level of control over health rated by Likert 1-5 (definitely true – definitely false). Scoring equations as follows:</td>
</tr>
<tr>
<td>Author and Year</td>
<td>Scale Description</td>
<td>Comments</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Aldenkamp et al 1997</td>
<td>Neurotoxicity Scale II for the Cognitive Impact of Antiepileptic Drugs</td>
<td>Lists symptoms and can add additional ones. Attributes 0-3 points on a scale of ‘no problem’ – ‘serious problem’.</td>
</tr>
<tr>
<td>Wilson et al 2007</td>
<td>Suffering score of Wilson et al</td>
<td>Designed for patients with cancer. Measures ‘sense of suffering’ from ‘none’ to ‘extreme’, and ‘extent to which suffering is viewed as a problem’ from ‘none’ to ‘constant’. IDEAL for measuring sense of suffering and perceived burden – could be adapted to individual symptoms! We may wish to change the term ‘suffering’, though, as older patients tend to downplay their experiences.</td>
</tr>
<tr>
<td>US Coastguard research centre 1998</td>
<td>US Coastguard motion discomfort scale</td>
<td>Grades motion sickness by Likert discomfort (none-severe) and disability (none-completely disabled and unable to work).</td>
</tr>
<tr>
<td>Barry et al 1995</td>
<td>Symptom Problem Index and BPH Impact index of Barry et al</td>
<td>Measures specific symptoms on Likert 0-4 (normal-poor), and then asks how big a problem they’ve been/impact 0-3 or 4 (normal-poor).</td>
</tr>
</tbody>
</table>

severity of common symptoms (non pain symptom scale) =
= (-100 / 28 * (score)) + (3500/28)

pain disability =
= (-10 / 3 * (score)) + (100)

satisfaction with dyspepsia-related health =
= (-25 / 2 * (score)) + (125)
Possibly a good model to follow.
4.8 Appendix B: Patient Symptom Priority Scale

1. Thinking about how you have felt over the last two weeks, what symptoms have you been most concerned about?

2. [Present GDS] When you first came to the clinic, you said that you had experienced these symptoms. Are any of these still bothering you?

3. We would like to ask two questions about each symptom. The first relates to the emotional impact of the symptom. Please place an X on the line to indicate how much each symptom concerns/ troubles/ bothers you.

4. The second relates to the practical impact of the symptom. Please place an X on the line to indicate how much each symptom impacts on your ability to live your life, on a scale of one to five.
<table>
<thead>
<tr>
<th>What symptoms are you most concerned about?</th>
<th>How much does it concern, trouble or bother you?</th>
<th>How much does it impact on your ability to live your life?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>Extremely</td>
</tr>
<tr>
<td></td>
<td>☻ ☻ ☻</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>Not at all</td>
<td>Extremely</td>
</tr>
<tr>
<td></td>
<td>☻ ☻ ☻</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>Not at all</td>
<td>Extremely</td>
</tr>
<tr>
<td></td>
<td>☻ ☻ ☻</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>Not at all</td>
<td>Extremely</td>
</tr>
<tr>
<td></td>
<td>☻ ☻ ☻</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>Not at all</td>
<td>Extremely</td>
</tr>
<tr>
<td></td>
<td>☻ ☻ ☻</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>6.</td>
<td>Not at all</td>
<td>Extremely</td>
</tr>
<tr>
<td></td>
<td>☻ ☻ ☻</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>
Chapter Five: Interviews with GPs

The analysis of the MACS clinic database (described in Chapter Two) revealed that according to the Geriatric Depression Scale (GDS), more than half of the clinic’s patients experienced mild-to-severe symptoms of depression, many of whom had received neither a diagnosis of depression nor treatment for depression. Whilst an attempt to validate the GDS for use with multimorbid patients was unsuccessful, it raised fresh questions about the manifestation and presentation of depression in multimorbid patients. As discussed in Chapter One, the literature identified difficulties in detecting depression in the elderly as well as in patients with chronic illness, leading to questions about depression diagnosis in the multimorbid population. For example, as the majority of mental health care occurs in the primary care setting, how do General Practitioners (GPs) detect depression in this patient group? What do they look for? How do clinicians differentiate symptoms of depression from symptoms of illness? And how do they approach treatment in this complex population? Qualitative interviews with GPs experienced at caring for multimorbid patients appeared to be the most direct method to answer these questions.

Semi-structured interviews with GPs generated a number of themes around the effect of multimorbidity on their practice. The following manuscript describing the grounded theory model generated from the data was accepted for publication in ‘Aging and Mental Health’ in 2012 (17) and is included in this thesis with the permission of the co-authors.
Statement of Authorship

Melinda Stanners (Candidate)
Interviewed GPs, transcribed and coded interviews, performed analysis and developed model, wrote manuscript, acted as corresponding author.
I hereby certify that the statement of contribution is accurate.
Signature............................................................Date..............................

Dr Christopher Barton
Assisted with analysis and model development, evaluated manuscript.
I hereby certify that the statement of contribution is accurate and I give permission for the inclusion of the paper in the thesis.
Signature............................................................Date..............................

Dr Sepehr Shakib
Supported recruitment, model and manuscript evaluation.
I hereby certify that the statement of contribution is accurate and I give permission for the inclusion of the paper in the thesis.
Signature............................................................Date..............................

Professor Helen Winefield
Evaluated manuscript.
I hereby certify that the statement of contribution is accurate and I give permission for the inclusion of the paper in the thesis.
Signature............................................................Date..............................
5.1 A qualitative investigation of the impact of multimorbidity on GP diagnosis and treatment of depression in Australia.

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¹ Discipline of Psychiatry, School of Medicine, University of Adelaide, Australia
² Social Health Sciences, Flinders University, Bedford Park, Australia
³ Clinical Pharmacology, Royal Adelaide Hospital, Australia

Abbreviated title: The impact of multimorbidity on GP diagnosis and treatment of depression.

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Phone: +61 416 204 256
Email: melinda.stanners@adelaide.edu.au
Fax: +61 8 8222 2865
5.2 Abstract

Objectives

Primary care providers often struggle to identify depression, with patients with multiple chronic conditions presenting additional unique challenges. Whilst the diagnosis and treatment of depression has been explored in a range of contexts in the literature, there is a paucity of information on the impact of multimorbidity on GP’s attempting to diagnose and manage depression in primary care.

Methods

Eight general practitioners with multiple referrals to a multidisciplinary clinic at the Royal Adelaide Hospital engaged in a semi-structured interview to discuss the impact of multimorbidity on the diagnosis and detection of depression. Interviews were transcribed and thematic analysis was used to identify key themes. Grounded theory was generated from data relating to the role of multimorbidity.

Results

Participants described multimorbidity as obscuring symptom causation, but also creating time to investigate causation and negotiate the depression diagnosis with the patient, and generating relationship through frequent presentations. Knowledge of the patient impacted on intervention recommendations, and trust facilitated patient
receptivity. Treatment was affected by a range of variables, and included medical and social interventions.

Conclusion

GP process for multimorbid patients is similar to that of patients with chronic illness. Further research is needed into whether different processes or diagnostic categories are warranted where multiple chronic illnesses are present. Also, GPs recommend social interventions where medical interventions are perceived as inappropriate. Research into the efficacy of social interventions in multimorbid patients is needed.
5.3 Introduction

Research conducted over the last twenty years has reflected that primary care providers experience challenges with defining depression, detecting cues, and the process of diagnosis, as well as negotiating treatment with their patients (18-21). Claims of under-recognition of depression have been thoroughly discussed in the literature (18, 22-25), with claims of over-diagnosis also present (26).

Several patient groups present unique challenges, such as older patients and patients with chronic conditions. Qualitative explorations of the perceptions of general practitioners (GPs), nurses and counsellors revealed that clinicians struggle to distinguish between physical and mental illness in older patients (6, 27). Clinicians may be less likely to identify depression in older patients than younger patients (28), possibly because age affects the presentation of depression (29). Somatisation, attribution of symptoms to physical illness, stigma, normalisation of symptoms, and gender and culture-related elements compound the challenge for the clinician of unravelling depressive symptom causation in older patients (6).

Additionally, chronic disease occurs with greater frequency as individuals age (14), as does the likelihood of developing two or more chronic conditions (referred to as ‘multimorbidity’ (10)) (30). Whilst the relationships between depression and individual chronic conditions such as diabetes, cardiovascular disease, asthma, cancer, osteoporosis and arthritis have been examined in the literature (see Clarke and Currie’s (31) thorough systematic review), the increased complexity of symptoms, contexts, medications and side effects for patients with two or more chronic conditions limit the usefulness of generated guidelines in this population.
Age and chronic illness also create challenges in depression treatment, with previous research identifying polypharmacy, fear of side effects, and fear of medicalising patient unhappiness impacting on GP treatment recommendations for chronically ill older patients (6, 27). Patient prioritisation of depressive symptoms also plays a role in both GP recommendations (1) and patient’s treatment preferences (16).

In Australia, general practitioners take the lead in diagnosing and treating depression (32). Whilst research has often focused on the symptom profile of younger adults, depression in older adults with a complex symptom profile is less well understood. Qualitative studies have explored depression diagnosis in older adults, and encompassed the care of patients with and without other comorbid illnesses (6, 27), but no study has as yet explored the impact that multimorbidity has on their practice. Whilst themes similar to those found in aging research may emerge from such research, the anticipated increase in older multimorbid patients (33) warrants a closer look at how primary care providers currently conceptualise, identify and treat depression in the multimorbid population.

The current study aims to develop a grounded theory model (34) around the impact that multimorbidity has on GP practice. An understanding of how GPs currently identify and manage depression in this population will support the development of practical and effective GP support structures and patient interventions.

5.4 Methods

5.4.1 Grounded Theory

This qualitative study was conducted within a pragmatic constructivist epistemology using an interpretivist theoretical perspective. To generate a theoretical model grounded in the data collected, all methodology, methods and thematic analysis
were guided by grounded theory using the strategies developed by Corbin and Strauss (34). This involves conducting semi-structured one-on-one interviews, performing thematic analysis on the transcripts, and integrating themes to produce a refined theory (34).

5.4.2 Participants

Eight general practitioners (GPs) who had referred five or more patients to a multidisciplinary outpatient clinic (employing nurses, cardiac and generalist specialists, a pharmacologist and a pharmacist) at a major metropolitan hospital in Adelaide were contacted by the clinic director. All had extensive experience managing multimorbid patients, and all agreed to participate. One was female and seven were male. All had been in practice for more than thirty years. Practice sizes ranged from 400-800 patients.

TABLE 1: INTERVIEW QUESTIONS

- How prevalent is the occurrence of multiple chronic conditions in your patient group?
- How common are mental health complaints?
- What symptoms or signs do you use to identify depression in patients with multimorbidities?
- What challenges do you face in identifying depression in patients with multiple chronic conditions?
  How do you reach a confident diagnosis?
- How do you decide what course of action to recommend?
- How do you manage these patients in the long-term?

5.4.3 Procedures

The interviewer called each GP to arrange a time to meet them at their clinic to discuss their perceptions of depression and experiences with patients with multiple chronic conditions and comorbid depression. Each GP received an explanatory letter and information sheet before the interview. GPs were reimbursed for their time at a rate
of $148.00 an hour. Interviews ranged from twenty to forty-five minutes (see Table 1 for question list).

5.4.4 Analyses

All interviews were digitally recorded and transcribed verbatim using transcription software program Express Scribe v 5.13. Thematic analysis of transcripts took an iterative approach, whereby as new themes were added to the thematic framework during interview coding, earlier transcripts were recoded. Analysis was performed concurrently with interviews until thematic saturation was reached. Interrater reliability was confirmed by an experienced qualitative researcher (CB) coding two interviews independently.

A grounded theory model was developed from emergent themes relating specifically to multimorbidity’s impact on GP identification and treatment of depression. Analysis of transcripts was facilitated using the computer program QSR Nvivo v9.

Ethics was approved by the Royal Adelaide Hospital Research Ethics Committee.

5.5 Results

Thematic saturation was reached after seven interviews, and confirmed by interview eight. The interviews elicited description of the diagnostic and treatment process that each GP engaged in with multimorbid patients. To generate grounded theory, refinement of themes focused on ways in which multimorbidity differentiated practice, and is described in Figure 1. Two distinct threads of multimorbidity impact emerged – detection/diagnosis, and treatment.
5.5.1 Diagnosis

Within diagnosis, multimorbidity was described as having both negative and positive influences on the process of depression diagnosis.

The presence of multiple chronic conditions appears to amplify the challenges of identifying the origin of depressive symptoms and having an adverse effect on the diagnostic process.

Participants reported that patients often present with somatic symptoms of depression, which may be attributable to diagnosed or undiagnosed physical illnesses, or medication side effects. GPs described a process of testing, facilitated by the repeated patient visits for the management of their diagnosed chronic conditions, to eliminate other causes and reach a confident diagnosis.

“...we run a few tests depending on their symptoms, and if we find pretty well nothing physically then we have to sort of say to them well look, are you depressed?” - D7
All participants reported that patient framing of symptoms also compounded challenges in identifying the origin of depressive symptoms. Participants described a trend of patients preferring to view their symptoms in relation to their physical ailments. Patient normalisation of symptoms was also mentioned, with one participant describing patient acceptance of their depressive symptoms thus:

“... they don't necessarily see as part of depression or, you know, to go with the lack of motivation and stuff they just think oh, I'm getting old. You know. They're not really depressed, that's their life.” – D4

One participant reported that the presence of other chronic conditions, in combination with a medicalised explanation of depression, actually facilitated patient acceptance of a diagnosis of depression, a statement in contradiction to the other participants.

Beneficially, the frequent presentations of multimorbid patients generated what many GPs reported as a sense of ‘having time’. Time was presented as a two-fold benefit, facilitating a thorough investigative process as well as relationship with the patient.

Time generated by frequent presentations allowed GPs to engage over time in a process of testing to identify symptom causation, convincing the patient of the diagnosis, and persuading them to engage in treatment. Where the patient is reticent to discuss diagnosis or treatment, GPs reported being able to address these issues over time.

“...and you don't have to do it all at once, because you'll see them again. So I can introduce the idea, and then follow it up...” – D8
Time facilitated a process of relationship-building with the patient, allowing GPs to develop knowledge of the patient such that they could perceive when they were ‘not themselves’ or exhibiting signs of depression. This in-depth knowledge of the patient provided a baseline of wellbeing against which they could measure any departure from the patient’s usual state. Many GPs referred to this experience as ‘intuition’.

“... I suppose when you deal with people for so long you can, you know when they're different, and you know... it's more of an... intuitive thing, more often than not. You know when they're not happy...” – D4

Long-term relationship was described by the majority of GPs as promoting the development of trust, whereby several GPs felt that they could raise subjects that the patient would not otherwise have been receptive to discuss.

“I think it is a relationship, and I think that's how I approach it, and therefore I guess in some ways once you get to know somebody you can get away with asking questions that maybe would just get you a straight denial otherwise.” – D8

5.5.2 Treatment

Patient and practitioner variables governing the treatment decision-making process were affected by the presence of multiple chronic conditions, and also impacted upon the treatment options offered to the patient.
Relationship with patients directly influenced a theme labelled ‘capacity’, which encompassed culture and patient cognitive capacity. Culture impacted on treatment recommendations, as members of some cultural groups were described as being ‘not psychologically minded’, and consequently psychological therapy was deemed inappropriate. Poor patient cognitive capacity was attributed by GPs to both age and multimorbidity, with several GPs inferred that symptoms and side effects of medication impacted on the cognition of some multimorbid patients.

Perceptions of patient capacity, in combination with GP beliefs about age, depression, and the patients, influenced the GP evaluation of which interventions to recommend. Many participants stated that they recommended specific interventions based on their relationship with the patient.

“I mean most of my patients I see I've known for quite a while and I know their personalities, and... I know how they would benefit the most, and I know which type of people would probably benefit from talking, psychologically.” –D7

In particular, several participants perceived some patients as lacking capacity or willingness to engage with psychological therapy techniques. Cultural background, gender and education influenced their decision to not recommend such interventions. Beliefs about age also impacted on this decision, with one participant stating that psychological therapy could not benefit elderly chronically ill patients:

“Psychology in someone who's 80, their thinking patterns are already... fully entrenched, and they've usually got a fair idea why they're
down, and it's usually because they're bloody sick, and is a psychologist going to help that? I don't think so.” –D6.

Polypharmacy fears influenced the GP evaluation, and were described as the primary reason that participants would choose to not prescribe an antidepressant to a depressed multimorbid patient. A minority stated that polypharmacy did not influence their recommendation, and one participant stated that their use of drug contraindications software eliminated this fear.

Participants cited patient receptivity to treatment as a complicating factor, with participants describing beliefs about gender preferences, stigma, and patient motivation to engage in treatment. Several participants expressed the belief that men preferred pharmacotherapy and women preferred psychotherapy. Stigma was described as an artefact of age, and several participants raised stigma as a barrier to receiving antidepressant treatment. Multimorbidity also impacted on patient motivation to engage in pharmacological treatment, as some participants reported reluctance in patients already taking a large number of pills to take another.

“They're on a lot of medication, and when you start mentioning yet another one, a lot of people do get quite exasperated and just seem to think, you know, 'Where is all this going to end,' you know, ‘all these pills you're throwing at me?’” –D3

5.5.2.1 Treatment Types

Patient capacity, GP evaluation of the patient and interventions, and patient receptivity influenced the treatment interventions that GPs recommended. Treatment options fell into two categories that were ultimately labelled ‘Guideline Prescribing’ and
'Social Prescribing'. Guideline-driven interventions include psychotherapy and pharmacotherapy, and social interventions encompass recommendations that fall outside of the guideline-driven model of care.

5.5.2.1.1 Guideline Prescribing

Several participants mentioned prescribing psychotherapy and pharmacotherapy in combination, but the majority described pharmacotherapy as the primary treatment option.

In spite of some GPs reporting concerns regarding safety and sizing of doses, antidepressants were reported as the preferred treatment approach, though in low doses to accommodate for the perception of patient frailty. Disrupting current medication balances was mentioned by several as a challenge in pharmacotherapy prescription. Several participants expressed fears that antidepressant side effects, such as dizziness or nausea, could present risk to already frail patients. Because of the potential for interactions, disruptions or side effects, some participants expressed reluctance to add an additional medication to a patient’s list, particularly where the patient did not perceive their mood state to be problematic.

“One of the issues of course is that, as a doctor the last thing you want to do is make somebody worse. So you're very very mindful of, for example side effects of medications, of the anti-depressants. Some of them cause a lot of nausea, for example. You don't want to see people, you know, losing their balance and falling over and breaking a hip because of your wretched medications. Equally you don't want to engender some sort of interaction with their pre-existing medication, so you develop a situation
which becomes quite, you know, problematic and they can become unwell from that.” D3

Whilst referral for psychotherapy was considered by most GPs to be generally beneficial for resolving underlying issues contributing to mood disorders, the majority of participants did not favour psychotherapy for multimorbid patients. Several participants perceived psychotherapy as having limited usefulness in some patient groups, and referred patients only where they felt that the depression was non-endogenous or situational (although one participant stated that he prescribed antidepressants in both cases). Several GPs endorsed psychotherapy for pain management.

Access to psychotherapy services was described as both good and poor by different participants, with some describing it as accessible, and some describing it as difficult to access, citing long waiting lists. Cost was described as a substantial challenge for older patients on a pension.

5.5.2.1.2 Social Prescribing

Many participants described non-medical approaches to treating depression that fell outside of the guidelines of the medical model of care. Exercise and socialisation were endorsed most frequently, with pet ownership and mental stimulation also mentioned. Socialisation interventions featured prominently in participant responses, with several GPs expressing the belief that depression in multimorbid patients is partially attributable to isolation.
Whilst many participants referred to antidepressant prescription as being their first recommendation, some described attempting non-medical interventions before undertaking medical interventions.

“...the first thing I look at is the non-pharmacological strategies, where we'll go through and just exactly talk about what's actually happening at home in their social situation with their support, talk about their outside interests, look at things they potentially can do, whether we can get them involved in community groups and things, that sort of thing... any more severe and we might talk medication, I don't push too hard unless I feel they're really very depressed.” –D1

Referral to rehabilitation centres was mentioned by several GPs, with one stating that it had the added benefit of promoting social interaction. Socialisation was enthusiastically endorsed by the vast majority of participants, particularly where depressive symptoms were attributed to isolation. One GP raised physical incapacity and severe depression as challenges to patients engaging in socialisation strategies.

The most frequently described social intervention, facilitated by the frequent presentations of the multimorbid patient, was clinician support. Several participants reported that their patients would sometimes present for one reason, and then engage the GP as a counsellor.

“But sometimes they're happy to talk about their problems. And they can quite happily sit and cry about it and stuff, but then they feel better going, but they were actually coming to see the doctor about their blood pressure or their heart failure or COAD or they're worried about their
grandkids or something. But the fact is they've actually been treated for depression sort of, that's just part of their physical treatment...” –D5

The role of general practitioner as counsellor falls outside of the medical model of care because they perform this role without training or therapeutic paradigm (35). Whilst GPs appeared to accept this role as part of their generalist care role, one participant stated that he felt undertrained for it.

“It's a real problem, and I have to admit, apart from just lots of reassurance I haven't really got the skills to do any CBT or any of that stuff.” –D4

5.6 Discussion

The current study provides insight into the experiences of GPs attempting to detect and manage depressive symptoms in patients with multiple chronic conditions. Emergent themes were similar to those reported in earlier qualitative studies of primary care providers caring for patients with chronic depression (35) and older patients with depression (6), suggesting that chronicity, and not multiplicity, of disease governs the decision process. In spite of this, a model focusing on the role of multimorbidity is a worthy addition to the literature, if only to clarify the context in which GPs and multimorbid patients negotiate depression.

Time restrictions have been reported as a challenge to GP diagnosis of depression in the past (36). Enabled by the Australian universal health care system, Medicare, which provides access to free or low cost medical services, multimorbidity and the consequent re-presentations generate time in the current model. In the current
model time enables a GP to reach a confident diagnosis and, where necessary, raise the subject with the patient over a series of consults.

Higher likelihood of depression detection in frequently-presenting patients has been suggested before (25). The current model identified that frequent visits create time, time facilitates relationship development and familiarity with the patient, and this in turn creates trust. Almost every participant stated that they relied on relationship and patient knowledge for depression detection and management. Whilst previous research has validated unaided GP diagnosis in identifying depression in a cross-section of patients (39), studies have also found that they may not accurately identify which patients will benefit from treatment (40). Where GPs make assumptions about patient treatment benefits without confirming the diagnosis and severity, they may compromise the patient’s treatment outcome (40), with the current study suggesting that improvements in GP education, and possibly in depression screening tools for multimorbid patients, are necessary.

GPs take an holistic approach to multimorbid patient mental health, however, with GPs considering the patient’s medical and social context when recommending interventions. Multimorbidity compounded the variables that affected perceived patient receptivity and capacity, such as reticence to add another pill to their medication course, and impacted on GP confidence in recommending a course of action. Multimorbidity also impacted directly on GP assessment of benefit and intervention recommendation, particularly where GPs believed the depression to be situational. The majority of GPs in the current study expressed confidence in the efficacy of antidepressants when depression is perceived as a medical illness, but reported doubts around prescribing medications for symptoms that they attributed to social factors. This sense of dissonance
in GP perception of depression, where it is perceived both as a biochemically-driven medical condition and also an externally-influenced state of patient distress, has been raised in the literature (35) but in light of the potential threat of unaided diagnosis to patient outcomes (40) future research is required to explore its impact on practice and outcomes.

Echoing previous research (6, 41), the current study found that GPs described using social interventions to address the cause of distress where they attributed depressive symptoms to a non-endogenous source. The term ‘social prescribing’ was first used to describe GP social interventions, such as getting involved in family disputes, recommending social or exercise groups, and visiting patients at home, in a qualitative study of GP experiences with treating chronically depressed patients who did not respond to guideline treatment (35). The current study found a similar approach taken by GPs caring for multimorbid depressed patients, inferring that social prescription is resorted to when guideline interventions fail (35) or, as in the current study, they may be deemed inappropriate or unsafe. Previous research has suggested that psychiatric criteria-based treatment goals do not affect clinical outcomes of importance to patients (42, 43). The current study adds to the growing body of evidence that GPs engage with patient priorities to offer interventions that matter to patients (6, 19, 35). Consequently, as social prescribing is actively employed in primary care, investigation of the effectiveness of social strategies in the reduction of depressive symptoms is urgently needed to either validate the interventions for incorporation into the medical model, or support the development of effective interventions in the multimorbid population.
5.6.1 Limitations

All participants were GPs who had practised within the inner city suburbs of Adelaide for thirty years or more, the majority of whom reported relationships with their patients that spanned many years. Different themes may have been reported by GPs new to a practice or with less experience. Also, the possible selection bias towards GPs with smaller patient loads may limit the usefulness of the current study. A recent Australian study of GP to patient ratios that included inner city suburbs of Adelaide reported a GP:Patient per capita ratio of 1:846 amongst inner suburban Adelaide as compared with ratios as high as 1:1367 in outer regions of the Adelaide metropolitan area (44). It has been posited that a smaller patient load facilitates the development of relationship; a GP with nearly twice the load may not have the time to forge such relationship with their patients, and may rely on different factors to detect depression in multimorbid patients.

The act of referring patients to the multidisciplinary clinic may also create selection bias. When asked about how they first became aware of the clinic, the majority of GPs stated that a patients who had been referred to the clinic during hospital admission brought the clinic to their attention, and subsequent improvements in patient health led to their referral of others. The patients of GPs practising outside of the Adelaide metropolitan area would be less likely to be admitted to the hospital in the current study, and consequently less likely to connect the GP with the clinic.

5.7 Conclusion

The current model suggests that GPs rely on instinct derived from long-term relationship to identify depression in multimorbid patients, and that relationship and trust impact directly on GP recommendations and patient receptivity. Future research
into the epidemiology of depression in multimorbid patients is necessary to clarify the accuracy and efficacy of GP diagnoses and intervention recommendations, and in particular the efficacy of social interventions in reducing depressive symptoms.

5.8 References


Chapter Six: Interviews with Patients

The previous four studies raised questions about the experience of the depressed multimorbid patient, such as, ‘What happened when multimorbid patients were successfully diagnosed with depression? What were the symptoms, and to what did they attribute them? How did they feel about the diagnosis?’ and ‘What interventions were they offered?’ The most direct approach to answering these questions was to interview multimorbid patients with a diagnosis of depression about their experiences.

Whilst grounded theory was the qualitative approach of choice, subsequent analysis of the themes failed to identify any unifying theory on which action could be taken. Thematic saturation had most definitely been reached, and a clear linear process had emerged, but no unifying theory followed that brought the threads together into an actionable outcome. In spite of this, the outcomes of thematic analysis were of sufficient interest to prepare the chapter in manuscript format. At the time of thesis submission it was a manuscript in preparation.
Statement of Authorship

Melinda Stanners (Candidate)
Interviewed patients, transcribed and analysed data, performed data interpretation and wrote manuscript.
I hereby certify that the statement of contribution is accurate.
Signature..........................................................Date.................................

Dr Christopher Barton (co-author)
Assisted with data interpretation and manuscript evaluation.
I hereby certify that the statement of contribution is accurate and I give permission for the inclusion of the paper in the thesis.
Signature..........................................................Date.................................

Dr Sepehr Shakib (co-author)
Supervised patient recruitment and evaluated manuscript.
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Signature..........................................................Date.................................

Professor Helen Winefield (co-author)
Assisted with data interpretation and manuscript evaluation.
I hereby certify that the statement of contribution is accurate and I give permission for the inclusion of the paper in the thesis.
Signature..........................................................Date.................................
6.1 Introduction

Research over the last twenty years suggests that depression is under-diagnosed and under-treated amongst older people in Western nations (1-5), and the literature suggests that GPs are less successful at identifying depression in older patients than younger patients (6). Differences between patient and clinician perceptions of depression may contribute to poor diagnosis (7), as well as age-related effects on the manifestation of depressive symptoms (8, 9), with older adults being more likely to report somatic symptoms, and less likely to complain about emotional distress (9). Additionally, as older adults are at increased risk of developing one or more chronic illness (10-13), physical illness may affect the manifestation of depression and increase the risk of normalisation of depression (14).

Research finding that the PHQ-9 missed symptoms relevant to patient wellbeing suggest that depression scales may not adequately reflect the lived experience of patients (15). Other studies exploring patient lived experiences of illness and depression have varied in focus and content. Exploration of patient experiences of depression diagnosis and antidepressant adherence have found themes of guilt, perceived stigma, duty to be well, and shame regarding self-regulation of mood amongst depressed adults (16, 17). Chronic heart failure has been reported to generate exhaustion, restrictions on living and fear and uncertainty (18), with uncertainty driving depression in gynaecological cancer (19). Both healthy and medically ill depressed adults reported depression symptoms congruent with depression diagnostic criteria (20, 21), however, suggesting that under-diagnosis of depression amongst multimorbid patients may relate to age, multiplicity or chronicity of disease, or patient and clinician attitudes to depression. Patients with heart failure reported managing depressive symptoms by engaging in activities that ‘take their minds off it’ (22), and as patients may resist
formal treatment where GP and patient care priorities clash (23), informal symptom management may play an important role in depression treatment for patients with chronic illness.

The occurrence of multiple chronic illnesses, or multimorbidity (24), increases the risk of depression with each chronic condition acquired (13), but no research to date has explored the experiences of multimorbid patients diagnosed with depression. Detecting depression in multimorbid patients will become increasingly important, as increased longevity will increase the number of people experiencing multiple chronic conditions over the next forty years (25). As the experience of chronic illness is thought to have an independent impact on patient experience beyond the impact of individual conditions (26), so too might multiplicity of disease. A recent model of ‘cumulative complexity’ – a patient-centred framework in which patient illness and burden is reframed as patient workload and capacity – presents a useful clinical approach to facilitate discussion about multimorbid patient burden (27). As patient mental health is encompassed by the broader concept of patient capacity, decision-support tools developed using this framework would benefit from incorporating patient conceptualisations of mental health and depression. Exploring multimorbid patient perspectives of the development, diagnosis and treatment of depression could provide insights to aid the development of such tools, and support GPs in the identification and treatment of depression in this patient group.

The current study aimed to explore the experiences of multimorbid patients in the development, diagnosis and treatment of depression, in an attempt to gain a clearer understanding of the processes by which depression develops and is successfully identified and managed in this population.
6.2 Method

This qualitative study was conducted within a constructivist epistemology, in which concepts of reality are considered to be socially constructed, using an interpretivist theoretical perspective, where one explores patient interpretation of their lived experiences whilst acknowledging that data is interpreted by the researcher (28). As the goal of the study was to generate theory through exploring multimorbid patients’ experiences of the identification and treatment of depression, grounded theory methodology was used to guide data collection and analysis (29).

Patients who were referred to a multidisciplinary clinic at a metropolitan hospital in Adelaide for the management of multiple chronic conditions, who had two or more chronic conditions and a diagnosis of depression between the 1st January and the 30th of June, 2011, were invited to participate in the study. Patients were excluded if they did not have two or more chronic conditions, or if they suffered cognitive impairment, lived in a residential care facility, or their language skills did not support an independent conversation in English.

Eligible patients were invited to participate. Table 1 describes the distribution of patients attending the clinic over the six month period of recruitment. Recruitment opportunities were lost where patients were not approached due to competing clinic priorities or patient non-attendance at their clinic appointment. Additionally, three patients who agreed to participate were found to be ineligible due to cognitive dysfunction or inaccurate diagnoses, and one who agreed could not be contacted.
TABLE 1: PATIENT RECRUITMENT

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<tr>
<td>Depressed patients identified</td>
<td>35</td>
</tr>
<tr>
<td>Not approached</td>
<td>9</td>
</tr>
<tr>
<td>Excluded due to language</td>
<td>6</td>
</tr>
<tr>
<td>Refused participation</td>
<td>4</td>
</tr>
<tr>
<td>Agreed but were ineligible/not contactable</td>
<td>4</td>
</tr>
<tr>
<td>Participated</td>
<td>12</td>
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Clinic nurses explained the aims of the study to potential participants, gave them an information sheet, and obtained consent for them to be contacted. The interviewer (MS) telephoned each participant to arrange a time to meet at the clinic or the participant’s own home, or to speak on the telephone to undertake a semi-structured, one on one interview discussing their experiences of depression diagnosis and treatment. Of those who initially agreed to participate, only one could not be contacted to arrange a time for interview.

Seven women and four men were interviewed alone; one man was assisted by his wife during the interview due to recall and language limitations. Ages ranged from 48 to 86 years of age (median = 64.5). Interviews ranged from 17 to 68 minutes in length (average = 46.7 minutes), and were digitally recorded and transcribed verbatim using transcription software program Express Scribe v 5.13. Audio recording failed during one interview, and a transcript was prepared from the researcher’s written notes. The transcripts were entered into QSR NVivo9 to assist data management and facilitate analysis. Questions were used to prompt discussion, and are recorded in Table 2.
TABLE 2: INTERVIEW QUESTIONS

- Tell me about the first time you experienced depression.
- Who did you talk to about how you were feeling?
- What does the word ‘depression’ mean to you?
- I’d like you to think back to when you were first diagnosed with depression. How was it eventually diagnosed? Tell me about that.
- Tell me about what treatment was suggested. How did you feel about the options that they recommended? What affected your decision about whether or not to follow their recommendation?
- Did anything prevent you from accessing or continuing to access treatment?
- Did you receive any follow-up care from your GP?
- What other support or information would you have liked to have received?

Inductive thematic analysis, by which themes are generated from the data as opposed to a pre-existing thematic framework, was performed concurrently with interviews until no new themes were generated from the data, at which point thematic saturation was considered to have been reached (29) and recruitment ceased. Thematic analysis took an iterative approach, whereby as new themes were identified and added to the thematic framework, earlier transcripts were recoded for new or transformed themes (29). Abstract or conceptual themes were then generated to encapsulate and describe descriptive themes. The coding structure was confirmed through the independent coding of two interviews by an experienced qualitative researcher (CB). Journal entries and memos were also recorded throughout the interview process and included in the analytical process to inform the development of the thematic structure.

Ethics approval was granted by the Royal Adelaide Hospital Research Ethics Committee.
6.3 Results

Thematic saturation was reached after ten interviews, and was confirmed by subsequent interviews. The interviews elicited description of multimorbid participant contexts for developing depression, and their experiences of the detection and management of depression. The core category, ‘Everyone’s different, everyone’s the same’ summarises a number of common themes identified in the data, suggesting a strong common experiential trend; a unifying grounded theory, however, was not identified. The results of the thematic analysis are described below.

6.3.1 Depression Development: The loss of the ‘normal’

Participants consistently described depression as developing subsequent to a life event that resulted in the loss of their normal life. Two subthemes were reported: the loss of elements critical to their normal life, such as functional and role loss, and the gaining of unwanted elements such as fear or pain.

The most frequently endorsed event was onset or exacerbation of illness (n=7 participants) where increased symptom burden prevented participants from performing their normal work or family roles. Participants described the loss of such roles, and subsequent impact on their sense of identity, as causative of depression.

“I started to get depressed because I couldn't do the things that I was always doing. You know, looking after my family, cooking, things like that because I was told I had to get off my feet, I wasn't allowed to walk... So my life sort of just, you know, from being a normal mother, wife and that, running around and doing my thing, to doing nothing at all.” – Pt7, Female aged 59, 10 chronic conditions
Other non-illness-related circumstances that caused a loss of normal life included personal or family loss, such as workplace bullying, the death of a loved one, exposure to war, and loss of culture.

Participant stories also included a description of unwanted gains. For participants who described depression development in the context of multiple chronic illnesses, many described accompanying burdens such as pain, fear of the unknown, and family tension. Pain was the only symptom of physical illness that participants reported as a perceived contributor to depression, with several describing the development of depression as being embedded in their ongoing struggle with pain.

“Every day's so hard, you know, to cope, well that's with-- the [morphine] pump’s good, but all it does is take the edge off, you still have severe, you still have severe pain.” – Pt3, Male aged 49, 7 chronic conditions

6.3.2 Depression Diagnosis: I’m not ‘depressed’

Multimorbid patient beliefs about depression and their personal identity affected their receptivity to the diagnosis. The majority of participants reported being diagnosed by their GP, with one diagnosed following GP referral to a psychiatrist, and two diagnosed whilst admitted to hospital for physical illness. Three participants stated that they were not informed of the diagnosis at the time that it was made, and two remained unaware of their diagnosis until the interview.

Whilst a small number of participants had anticipated the diagnosis and were receptive to the interventions recommended by their clinician, the majority were surprised by the diagnosis, and many participants reported rejecting the diagnosis at the time of delivery. Multimorbid participants who rejected the diagnosis described incongruence between their beliefs about depression and their beliefs about themselves.
‘I guess initially it sort of shocked me, because I thought that I wasn't sort of in that category…’ – Pt5, Male aged 65, 10 chronic conditions

‘…I'm very strong person, and I don't allow myself, you know, to be how shall I say, overcome, you know, by emotions… Well, I was surprised.’ – Pt8, Female aged 80, 8 chronic conditions

When probed about the meaning of depression, the majority of participants described cognitive and emotional symptoms. A very small minority (n=3) described depression as a response to the behaviour of other people, or a consequence of poor response management. Some participants interpreted their symptoms through their beliefs about depression, perceiving themselves to be anxious but not depressed, or believing that their emotional symptoms were inadequately severe to warrant a diagnosis of depression. One participant drew her interpretation of depression from television advertisements for national mental health initiative BeyondBlue, stating that because her symptoms were not the same by comparison, the diagnosis was inaccurate.

“See, on TV now there's adverts about depression with young people, and that type of thing? So I haven't felt like that, just maybe down for a little while.” – Pt1, Female aged 61, 5 chronic conditions

A subtheme of perceived justification for depression also emerged. On the one hand, several participants expressed the belief that they did not have the right to feel depressed, despite the impact of multiple chronic conditions on their physical function. These participants devalued their emotional distress by minimising the impact of their physical symptoms in comparison to those of others, and stating that they “had no
reasons for being in this [state]” (Pt2, Male aged 62, 5 chronic conditions). On the other hand, some participants believed that their physical illness justified their depressive symptoms and nullified the veracity of the depression diagnosis.

“But because I know why I'm like that and I feel that it's justified, I don't think that I'm clinically depressed, do you know what I mean? Because I feel that my condition justifies my feelings.” – Pt4, Female aged 75, 12 chronic conditions

Whilst many participants described rejecting the diagnosis, only one expressed overt stigma, reporting that her initial reaction to the diagnosis was ‘...here I go, I’m nutsville’ (Pt10, Female aged 48, 8 chronic conditions), and she refused to accept the diagnosis until she accepted that she was unable to cope with her emotional symptoms. Stigma regarding depression may have influenced rejection of the diagnosis more frequently than described, as stigma was suspected where participants used words that either devalued their emotional experience, or distanced them from the diagnosis and presented themselves as normal (‘So there's highs and lows, but I wouldn't say, like, great depression.’ --Pt1, Female aged 61, 5 chronic conditions ). Several participants also suggested stigma during the interviews through their body language (leaning back, crossing arms, and looking down), tonal variation, and facial expressions.

6.3.3 Depression Interventions: Prescription, self efficacy and coping

Multimorbid patients reported being prescribed interventions within the medical framework, such as psychotherapy and pharmacotherapy, and social interventions outside of the medical framework, such as exercise and pet ownership. Acceptance of treatment recommendations was strongly influenced by their beliefs about the interventions and anticipated outcomes, the cause of their depression, and their sense of
self-efficacy. Whilst one participant admitted that he had benefitted from psychotherapy, for example, he perceived it as ultimately unsuccessful because the benefit was temporary. The inference that treatment should have a permanent effect suggests a belief that depression is a temporary dip in mood, as opposed to a chronic recurrent condition.

“Yeah yeah, it was helpful, unfortunately it doesn’t last forever. . . .
You get it off your chest. But as I said it doesn't last forever.” – Pt5, Male aged 65, 10 chronic conditions

Negative beliefs about antidepressant safety and efficacy stemmed from observing another person’s experience, the risk of side effects, and the threat of disruption to their existing medication regimen. The majority of participants described trialling at least one medication, however, which either changed or reinforced their pre-treatment beliefs. Experiencing side effects led to accepting different medication, or refusing medication. Refusal occurred particularly where participants attributed their depression to a circumstance that medication could not change.

“I was pretty down on myself in all respects, and couldn't understand how I fucked up my life, excuse me. . . . and I just didn't think a tablet could take that away.” – Pt 2, Male aged 62, 5 chronic conditions

Participants described actions to alleviate negative mood, either in addition to or instead of prescribed interventions. Activities of empowerment generated a sense of control in spite of their multimorbidities, and demonstrated positive self-efficacy beliefs about their role in mood management. Participants described a diverse array of activities including exercise, pet ownership, meditation, rationalisation, knowledge-seeking and
being able to work, as actions that generated a sense of control and alleviated negative mood. Medication non-compliance was reported by one participant as providing a sense of control, but this did not reduce negative emotion. Disempowering activities reflected relinquishment of control and poor self efficacy, and included chronic alcoholism, physical withdrawal, and wishful thinking.

Additionally, several participants described the adoption of actions and attitudes designed to prevent emotional stress and mood deterioration, labelled ‘coping strategies’. These included accepting their multimorbidities, setting health goals, letting go of formerly important values, thinking of themselves as lucky, and adopting a philosophical approach to their life.

“Because you've got to accept what you've got. If you don't accept it, well, there's nothing you can do about it anyway.” Pt4, Female aged 75, 12 chronic conditions

6.4 Discussion

Although grounded theory methodology guided the approach to gathering and analysing the data, the emergence of common themes did not give rise to a unifying theory. Despite the heterogeneity of the group this is surprising, as thematic analysis revealed that the common variables of multiplicity of chronic disease and a diagnosis of depression generated a common trend across this diverse group. The results do, however, add to the current body of knowledge.

The current study suggests that GPs should be vigilant for the development of depressive symptoms where loss of ‘normal’ life has occurred. A systematic review of depression and chronic illness, which was published after the current study had been completed, found that participants cited one or more causes for their depression, with
the majority believing that the cause of their depression was external (30). Supporting these findings, multimorbid patients in the current study uniformly described situational depression arising from a life-changing event. Participants perceived physical symptoms, functional limitations or events related to their multiple chronic illnesses as causative, inferring that participants believed depression to be a response to changes in their circumstances. Karasz et. al.’s 2012 meta-analysis found that patients who presented their emotional distress as situational were rarely offered anti-depressant medications (31); all patients in the current study, however, reported being offered medication for their circumstantially-attributed depression, suggesting that GPs adhered to depression treatment guidelines for these multimorbid patients in spite of situational influences. Few patients reported being offered referral for psychological intervention, however, with several stating that they would have appreciated the opportunity to talk with a psychologist or counsellor. This reflects previous findings from GP interviews in this study series, in which GPs acknowledged the benefit of psychotherapy for situational depression, and recognised that depression amongst multimorbid patients was sometimes situational, but withheld psychotherapy referral due to doubts about its efficacy in older patients (32). In light of multimorbid patients’ situational attribution of depression, future research should explore the efficacy of psychotherapeutic intervention amongst multimorbid patients.

Multimorbid patient interpretation of their symptoms and views about depression often conflicted with self-concept, which created barriers to acceptance of the diagnosis. It is unsurprising that patient beliefs emerged as a key theme, as previous research has emphasised the importance of patient beliefs in the diagnosis and treatment of depression in primary care (17, 33, 34). Beliefs about depression and expectations about interventions emerged as an important influence, supporting previous findings of
dissonance in understanding of depression and treatment amongst older patients (35), with one participant’s inference that treatment should have a permanent effect reflecting a conceptualisation of depression as a temporary dip in mood as opposed to a chronic recurrent condition. Both findings emphasise the importance of GP relationship and communication (17), to ensure that patients have an accurate understanding about depression and realistic expectations about treatment.

It is unsurprising in light of earlier research (36, 37) that activities outside of the medical model, such as exercise and pet ownership, featured in multimorbid patient narratives alongside prescribed interventions. This supports previous research into self efficacy and depression symptoms (38), with the diversity of activities in the current study suggesting that in addition to benefits inherent in exercise or meditation, engaging in activities promoting self-efficacy improves mood. Multimorbid patients should be encouraged to generate and engage in activities within their functional limitations that promote a sense of control.

An unexpected finding emerged throughout the interviews – several multimorbid patients did not recall having been given a diagnosis of depression, although their medication regimens included antidepressant medications. Additionally, during the recruitment process two multimorbid patients with a history of depression refused to participate because they were unaware of the diagnosis, and believed that they were ineligible. Whether this is due to failures in clinician communication or patient memories, both possibilities reflect poor follow-up about mood problems and are concerning where medication has been prescribed, as several participants reported accepting medication without knowing its purpose. It may also reflect previously-reported trends where both patients and GPs prioritise physical health over psychological health when multiple chronic conditions create medical and functional
issues (39). In light of the negative effect of poor mental health on patient physical wellbeing, and the increased complexity generated by multiple chronic conditions, clear communication about symptoms and priorities is of utmost clinical importance.

Finally, many participants exhibited signs of discomfort whilst talking about depression. As most participants were forthcoming about intimate details of their personal lives and multiple chronic illnesses, the interviewer interpreted such behaviour as suggestive of stigma. Overt and verbalised stigma was observed with one participant, but also where another initially verbose participant’s posture and expression became defensive and he refused to discuss depression. Another participant (Pt8) expressed her willingness to talk, but consistently avoided answering any questions about depression even where the interviewer reframed and clarified questions. Post-interview confidences regarding family rules prohibiting the display of weakness explained her reluctance to identify herself as depressed. The continued presence of stigma regarding depression amongst multimorbid participants who have been diagnosed with depression reinforces that conscious and subconscious stigma may create additional challenges for clinicians attempting to identify and treat depression in multimorbid patients (9, 40). Research developing strategies to overcome stigma felt by older multimorbid patients would benefit from addressing issues of perceived stigma, guilt regarding self-regulation of mood, and shame relating to inability to cope as raised in previous studies (16, 17, 30). Possible strategies may include approaching the treatment of depression from the perspective of its impact on their physical health.

6.4.1 Limitations

Although the diagnosis and treatment of depression occurred outside of the multidisciplinary clinic, it is possible that referral to the clinic may reflect or generate differences between the study population and patients not referred to such a clinic.
Whilst the number of participants who declined to participate suggests that it is unlikely that clinic association acted as a coercive force, it is also possible that the association may have promoted increased willingness or obligation to participate in interviews. Additionally, the participant group was limited to multimorbid patients willing to be interviewed about depression. This may reflect greater openness to discuss their emotions, and where emotions are discussed with a GP, depression is more likely to be diagnosed and treated (41). A personal quality of openness may create participant bias, as less forthcoming patients may be less likely to be diagnosed with depression, and even when diagnosed may be less likely to be willing to participate in research about depression.

Furthermore, the interviewer’s association with the clinic may have influenced patient responses. The project and interviewer were introduced by nursing staff during appointments at the hospital clinic, and during interviews many patients described their medical conditions in detail without interviewer prompting. This, in addition to patient use of terminology that medicalised their experience of depression, led the interviewer to suspect that association with the clinic may have ‘medicalised’ patient responses.

6.5 Conclusion

Multimorbid patients attributed depression to the losses and gains generated by life-changing events, many of which were related to their physical health. Beliefs about depression, about themselves, and about symptom causation and treatment efficacy strongly affected the diagnostic and treatment process. Conscious and unconscious stigma may create challenges for GPs attempting to help multimorbid patients to negotiate depression, and should be addressed by communicating openly with the patient about their complex symptoms and the impact of depression on physical health. Multimorbid patients appear to benefit from interventions both within and without the
medical framework, but further research exploring the epidemiology of multimorbid depression is needed to validate the use of both types of intervention.

6.6 References


33. Hansson, M, Chotai, J, Bodlund, O. What made me feel better? Patients’ own explanations for the improvement of their depression. Nord J Psychiatry [serial on the


Chapter Seven: Discussion

The mixed method explanatory study series reported in this thesis has generated valuable insights into the phenomenon of depression amongst patients with multiple chronic conditions. This chapter begins with a summary of the aims and key findings of each study. The following section describes an integration of the findings, a critical stage of mixed methods research in which the findings of all studies are integrated to generate a comprehensive understanding that addresses the research questions (1). Suggestions for future research directions are discussed, and the chapter concludes with a brief summary of the key findings of the thesis.

7.1 Summary of Findings

7.1.1 Study one

Chapter Two describes the comparison of depression diagnoses with depressive symptoms amongst patients with multimorbidities, a relationship hitherto unexplored in the literature, and found poor agreement between patient reported symptoms and doctor diagnosed depression. The study aimed to explore the prevalence of depression diagnoses and depressive symptoms amongst patients with chronic illness in two or more organ domains, as well as identify any demographic or disease variables that influenced the odds of having a diagnosis of depression, or the severity of depressive symptoms experienced. Whilst the prevalence of depression diagnoses amongst multimorbid patients attending an outpatient clinic (15.7%) was only slightly higher than the community average for Australia over 64 years of age (12.5%), half of this population experienced threshold depressive symptoms as measured by the Geriatric Depression Scale (GDS). Logistic regression identified that when controlling for all other variables, female gender and chronic disease in each additional organ domain
increased the odds of a depression diagnosis, but that when individual domains were substituted for sum, musculoskeletal disease increased the odds of a clinical diagnosis of depression. Multinomial regression explored the relationship between variables and severity of depressive symptoms, finding that each additional domain affected by chronic disease increased the odds of mild or severe depressive symptoms, but that falls history and diabetes were associated with increased severity of depressive symptoms.

7.1.2 **Study Two**

The high prevalence of depressive symptoms found in Study One led to an attempt to validate the GDS in the multimorbid population. Study Two (Chapter Three) aimed to validate the GDS using the Composite International Diagnostic Interview (CIDI) as a gold standard diagnostic interview, and also compare its performance with a popular scale that omitted somatic symptoms, the Hospital Anxiety and Depression Score (HADS). The study was ended early due to problems that arose from the use of the CIDI in the multimorbid population, and consequently did not achieve its aim of validating the GDS. Analysis of the data revealed poor agreement between the GDS and the CIDI, and weak agreement between the GDS and the HADS; the non-somatic nature of the latter may, however, render it more appropriate for use in the multimorbid population, which is a subject for future research.

7.1.3 **Study Three**

Interviews with patients generated suspicions that patients minimised the impact of psychological symptoms. With the aim of exploring patient perceptions of physical and emotional symptoms, I developed and piloted the Patient Symptom Priority Scale. Many scales exist that address the symptoms of individual diseases; the Patient Symptom Priority Scale is the first, however, to elicit patient priority symptoms, making it ideal for the exploration of complex symptom profiles in multimorbidity research.
The PSPS is also the first scale to differentiate between emotional and functional symptom burden, with the data generated from the scale’s pilot administration supporting preliminary suspicions that patients prioritise and perceive greater burden from physical symptoms.

7.1.4 Study Four

Whilst several qualitative studies about general practitioner (GP) experiences of depression diagnosis and management have been reported in the literature, Study Four (Chapter Five) is the first to aim to explore the impact of multimorbidity on GP diagnosis and treatment of depression. The interview data facilitated the development of a model of the impact of multimorbidity on GP diagnosis and treatment of depression, with themes of relationship, intuition and personal judgement emerging as influential in GPs’ diagnostic and treatment processes.

7.1.5 Study Five

Study Five (Chapter Six) is the first to explore the experiences of diagnosis and treatment of depression in multimorbid patients. Qualitative interviews with patients with two or more chronic conditions and a diagnosis of depression aimed to generate knowledge about the patient experience of the diagnostic and treatment process. The data revealed several themes in common across genders, ages and comorbidities, and revealed that whilst the medical model defines and treats depression as a biochemical disease, all participants attributed the onset of depression to an event that resulted in negative life change.

7.2 Integration of findings

This study series has raised several important issues relevant both to research and clinical practice.
Firstly, Study One highlighted that many patients with multiple chronic conditions experience high levels of depressive symptoms as measured by the Geriatric Depression Scale (GDS), but few receive a doctor diagnosis of depression. The GDS scores may be inflated by items that overlap with physical symptoms, but Study Two’s attempt to validate the GDS in multimorbid patients was unable to explore this possibility successfully. Subsequent interviews with GPs and patients suggested that although GPs report vigilance for DSM-IV symptoms, and rely on relationship-derived intuition to detect symptoms of depression, patients often avoid discussing psychological symptoms until the symptoms reach a level of severity that patients cannot ignore.

Previous research has found that frequent presenters more likely to have their mental health problems diagnosed (2). Whilst some research suggests that GPs are able to accurately detect depression using intuition (3), Study One’s finding that few patients with threshold-level depression symptoms had a corresponding diagnosis of depression suggests that reliance on intuition may lead to under-diagnosis in this group. The GPs interviewed in Study Four emphasised the role of long-term relationship with multimorbid patients in the development of intuition, with all GPs practicing in the Adelaide metropolitan area for over twenty years. The GPs in the study would have had more opportunity to develop relationships with their patients due to the length of time in practice and smaller practice sizes (4), and intuition may play a less influential role for younger GPs, GPs with larger practices, or general practice settings where patients do not see the same GP.

Whilst few GPs reported using scales to explore depression symptoms, scales may be useful in light of the apparent unreliability of GP intuition in patients with multiple chronic conditions. Scales may also prove valuable where GPs do not have the
opportunity to build relationships that facilitate intuition about depressive symptoms with their patients, as well as in specialist referral settings. This is particularly important in light of Chapter Four’s findings that patients emphasise physical symptoms in a clinical context, as a depression scale can promote dialogue about, and give patients permission to raise, psychological symptoms.

The value of reliable diagnostic aids is highlighted by findings from the patient interviews in Study Five. Patients associated the onset of depression with an event or circumstance that brought about unwanted life changes, and whilst GPs with long-term relationship with their patients may be aware of such life changes and their emotional impact, GPs without such relationship may not be aware of such events, or may not be in the patient’s confidence regarding their emotional response to the events. A screening tool may also be useful if administered routinely after such life-changing events, such as three or six months, as this would enable the clinician to not only monitor the patient’s mood state, but also engage in preventative interventions such as psychotherapy. As Chapter Four suggests that psychological symptoms are perceived as being of lower priority than physical symptoms, reducing the likelihood of patients raising them at a clinic appointment, a trustworthy depression screening tool can facilitate communication about emotional symptoms before they reach clinical levels of severity.

Additionally, the qualitative studies reinforce the importance of relationship and rapport in general practice, and in particular the importance of the role of trust for multimorbid patients. Rapport in primary care is not a new concept; previous research has identified rapport as an important element of care for patients with diabetes, asthma, epilepsy and cancer (5), as well as patient engagement with their GPs for preventative care strategies (6). Norfolk, Birdi and Walsh (7) derived a clinician rapport-development model from interviews with psychologists and GPs, identifying four key
elements labelled empathetic motivation, empathetic attention, empathetic skills, and empathetic understanding as necessary for developing good rapport. Although they did not incorporate a patient perspective, it is unsurprising to note that in the current study, patients who perceived their rapport with the GP as being poor (with some addressing elements of professional integrity, warmth and accuracy of understanding (7)) reported lack of trust in relation to both diagnosis and treatment, lending support to Norfolk, Birdi and Walsh’s (7) model.

Trust also relates to integration of the diagnosis of depression with patient sense of self. Patient identity emerged as a strong influence in the development, diagnosis and treatment of depression throughout the qualitative studies. Patients reported that the acquisition of a socially undesirable and unwelcome role, that of chronically ill person, in addition to the loss of valued roles in the home and the workplace, influenced the development of depression. This suggests that patient identity is already negatively affected by multimorbidity (8) and the accompanying unwanted deviant role of ‘chronically ill person’ (9), as many patients reported rejection of depression diagnosis and treatment due to their rejection of the deviant role of depressed person. The significance of patient identity highlights the importance of trust, as patients who trusted their GPs reported more openness to accepting the diagnosis and treatment in spite of the new and existing threats to their sense of identity.

Finally, the study series revealed that GPs hold contradictory beliefs about the nature of depression and consequent intervention pathways. Patients attribute the onset of depression to life-changing events or circumstances, but although GPs espouse the neurochemical model of depression, they are also sensitive to circumstantial or environmental influences on mental health in multimorbid patients. Whilst GPs monitor for DSM-IV symptoms and espouse the organic attribution of depression, they are also
sensitive to person-specific symptoms and social influences on mood, with GP interviews supporting previous research finding that GPs recommend interventions in accordance with patient representations of symptoms (10). In contrast to this sensitivity, however, it emerged that whilst GPs reported that sometimes depression in multimorbid patients is situational, and GPs also reported that psychotherapy is beneficial where depression is situational, the majority of GPs believe that psychotherapy will not benefit older multimorbid patients. This is concerning in light of their professed belief in the efficacy of psychotherapy for situational depression, particularly in light of patient statements that they were not offered referral to a counsellor or psychiatrist but wanted to talk to someone. This conflicting set of beliefs results in psychotherapy being withheld from multimorbid patients.

In addition to answering the research aims of this thesis, this body of work has highlighted problems with the use of the term ‘depression’. Whilst this issue was most apparent in Study One, where the data were unclear as to the recency, severity and duration of the depression, inconsistency in the use of this term has significant implications for mental health research and clinical practice.

‘Depression’ is a term applied to a broad range of experiences that differ in manifestation and severity. Different forms of depressive disorder are experientially and symptomatically different, and benefit from different treatment strategies. As the front line of health management in the community, general practitioners are expected to manage a range of different forms of mood conditions using guidelines developed for major depressive disorder. With one label addressing a plethora of symptoms and clinical conditions, and limited guidelines regarding effective interventions, GPs look for the most common signs of major depressive disorder, and attempt to address the different needs of each patient as evidenced by the use of ‘social prescribing’ (11, 12).
Despite GP attempts to manage ambiguously-defined conditions, however, the findings from Study One suggest that even where label of depression is given, treatment is not always effective. Differentiation between the nature and needs of each type would support GPs in providing effective treatment appropriate to the condition.

Barriers to effective treatment exist, however, in the form of patient self awareness, reticence to discuss emotional symptoms, and stigma around depressive symptoms. These barriers highlight the importance of generating a thorough depression profile for patients with multiple chronic conditions. Whilst the symptoms described by patients who have been successfully diagnosed with depression are congruent with DSM-IV criteria, the large percentage of undiagnosed patients with moderate to severe depressive symptoms suggests that a different depression profile may exist where multiple chronic conditions are present.

In the interests of reflexivity (13), there are several factors that may have affected the data collected through participant engagement. In addition to the personal characteristics of each participant, my own personal characteristics may have influenced participant responses. Interviews with general practitioners may also have been affected by my non-medical background. Association with the MACS clinic may have influenced patient participant responses, particularly for patients describing and rating troubling symptoms, or recounting their experiences of depression diagnosis and treatment in the medical setting. Finally, despite attempts to reduce bias through journaling and reflection, interpretation of data is strongly influenced by the personal characteristics and subconscious biases of the interpreter (13); consequently the findings reported have been influenced by my own unconscious biases and beliefs. Whilst the impact of these influences is not measurable, the inextricable role of the researcher in this thesis is acknowledged.
7.3 Future Research

This thesis makes several important contributions to understanding depression in the context of multimorbidity. No research to date has compared depression diagnoses with self-reported depressive symptoms amongst multimorbid patients; nor has an attempt to validate the Geriatric Depression Scale (GDS) in the multimorbid population been reported in the literature. This thesis describes the first symptom burden scale to both elicit patient priority symptoms and differentiate between emotional and functional burden, which has the potential to support both clinical and epidemiological work. The role of multimorbidity on GP depression diagnosis and treatment had been hitherto unexplored in the literature, as had multimorbid patient experiences of depression diagnosis and treatment.

Additionally, this thesis highlights a range of possible directions for future research. The development and validation of accurate diagnostic tools for use with multimorbid patients remains a worthy goal, despite Chapter Five’s findings that GPs rarely use scales to diagnose depression. Diagnostic scales such as the GDS are valuable tools for supporting GPs in validating their intuition and identifying whether a patient’s symptom profile reflects depression. The current attempt to validate the GDS in the multimorbid population (Chapter Three) was hindered by the choice of a gold standard that, whilst validated in the broader community, proved problematic for older multimorbid patients. The Composite International Diagnostic Interview (CIDI) has been found to generate untrustworthy data in the older population due to its repetitive construction and arduous application (14); future attempts to validate the GDS would fare better with a briefer diagnostic interview, such as the Mini-International Neuropsychiatric Interview (MINI), as the gold standard. Validation of the GDS in the multimorbid population should establish its effectiveness in the population, determine
appropriate severity cut-offs, and also identify whether scale items are appropriate indicators for depression. The weak correlation between GDS scores and psychological variables found in Study Three suggests that future research should also validate individual GDS items to confirm their usefulness as depression assessment items, and also consider utilising other measures of physical function such as frailty assessment tools to assess the discriminatory value of individual questions.

Additionally, the depression component of the Hospital Anxiety and Depression Scale (HADS-D), in which somatic symptoms are omitted and questions address mood symptoms, may be more appropriate than the GDS for use in the multimorbid population. Future research exploring the performance of the HADS-D in the multimorbid population would also be valuable, due to the non-somatic nature of its content. Future research needs to identify or develop a scale that is valid and trustworthy in a multimorbid population, to better support GPs attempting to differentiate depressive symptoms from physical illness symptoms in patients with complex symptom profiles.

Future research should explore possible symptoms beyond the currently-applied diagnostic criteria, as these symptoms were derived from work with younger adults. In particular, the roles of loss and loneliness should be explored for their role in depressive disorders, as all patients interviewed attributed the development of depression to significant personal losses. Additionally, the role of chronic illness and age on hormonal and neurochemical balances needs to be considered in the multimorbid population, as physical influences, such as obstructed conversion of thyroid hormone T4 to T3, promote symptoms of depression (15, 16) and may result in misdiagnosis and inappropriate treatment due to poorly defined depression diagnosis criteria.
Future research should also address the Patient Symptom Priority Scale (PSPS) as a potentially useful tool for clinical practice, to facilitate managing complex care needs by integrating patient priorities, for mental health management, to give patients the opportunity to raise pressing psychological symptoms, and for research, to explore patient prioritisation and perceptions of psychological and physical symptoms. Future research should validate the PSPS by comparing symptoms raised against the symptom burden scales of individual conditions, to see whether each reflect the same concerns. Additionally, differences between perceptions of physical and psychological symptoms should be explored with a larger data set, as the small N acquired for the pilot study limited the usefulness of the findings.

The issue of patient identity and the deviant role warrants further exploration, due to the role reported in patient acceptance of diagnosis and treatment. Future research should investigate whether the presence of multimorbidity has an additional impact on patient integration of a diagnosis of depression with their sense of identity, taking into account the effect of acquiring a second unwanted deviant role, that of ‘depressed person’. Additionally, further exploration of stigma in multimorbid patients would reveal whether multimorbidity has a unique effect on the development or nature of stigma, and facilitate targeted approaches to combating stigma.

Finally, the contradictory beliefs of GPs regarding the efficacy of psychotherapy in multimorbid patients should be addressed by future research. The needs of this future research are two-fold. Firstly, as the accuracy of GP perceptions of who benefits from which intervention have been found to be poor (17) a clearly defined, evidence-based concept of multimorbid depression is needed in order to ensure that multimorbid patients suffering depression are treated in a timely, relevant and effective manner. Secondly, research validating the efficacy of psychotherapy in the multimorbid
population is needed to inform clinician intervention recommendations. This may also have implications for depression prevention, as patient interviews suggested that depression onset had a situational component, and might have been arrested by the provision of psychotherapy at the time of crisis. In light of the situational attribution of depression, psychotherapy as a preventative strategy should also be explored in future research.

7.4 Conclusion

In conclusion, the study series described in this thesis makes a substantial step towards understanding the prevalence, perceptions and management of depression in the multimorbid population. It is clear that many patients with multiple chronic conditions report high levels of depressive symptoms without receiving diagnosis or treatment. Patients may be reluctant to raise psychological symptoms in the clinic setting; consequently, the Patient Symptom Priority Scale may create opportunities for patients to raise psychological symptoms of concern.

Patients’ situational attribution of depression is an important finding, particularly as current interventions appear to have limited effectiveness. Future research should explore the efficacy of psychotherapy as an intervention strategy for multimorbid patients, and also consider its usefulness as a preventative strategy.

This thesis makes a contribution towards the future clarification of the nature and causation of depression in multimorbid patients. Future research will facilitate improvements in screening, diagnosis and treatment, and may even give rise to preventative strategies, in this vulnerable population.
7.5 References


5. Martin CM, Peterson C, Robinson R, Sturmberg JP. Care for chronic illness in Australian general practice - focus groups of chronic disease self-help groups over 10 years: implications for chronic care systems reforms. Asia Pac Fam Med [serial on the Internet]. 2009 16/05/2012]; 8(1).


