

**The prevalence and recognition of depression among low-level aged care residents with
and without cognitive impairment**

Abbreviated title: Depression and cognitive impairment in low-level aged care

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Abstract

Previous research has demonstrated a high level of depression in nursing homes. The current study was designed to determine the prevalence of depression, using a structured diagnostic interview, among older people with and without mild-moderate cognitive impairment residing in low-level care facilities. The results demonstrated that, consistent with previous research in nursing homes, 16.9% of older people were diagnosed with Major Depressive Disorder. Less than half of these cases had been detected or treated. Individuals with moderate cognitive impairment were more likely to be depressed, but cognitive impairment did not appear to act as a strong impediment to the detection of depression by General Practitioners. A low awareness of their use of antidepressant medications was demonstrated among older people prescribed this treatment, including those with normal cognitive function. Reasons for the poor recognition of depression among older people are discussed.

Key words: depression, cognitive impairment, older people, residential care, prevalence, treatment.

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Introduction

Depression is a serious, widespread, yet treatable medical condition that affects the quality of life of older people living in long-term residential care. There is general consensus that the prevalence of depression among this population is higher than that found in the older population in the general community (National Institute of Health Consensus Conference, 1992). However, the prevalence estimations reported in the literature vary widely, and there is a particular gap in our knowledge of depression among those residents with cognitive impairment, who are often excluded from research studies. The present study investigated the prevalence of Major Depressive Disorder (MDD) among a sample of low-level care residents with and without mild or moderate cognitive impairment, and investigated the rates at which depression had been recognised and treated by their General Practitioner (GP). The impact of cognitive impairment on the prevalence and detection of depression among older residents was a particular focus of this study.

There are two types of residential care in Australia: high-level care (with facilities known as nursing homes) and low-level care (with facilities known as hostels). The majority of studies into the prevalence of depression have been conducted in nursing homes, with recent research findings estimating the prevalence of MDD among nursing home residents ranging from 9% to 26% (Baker & Miller, 1991; Blank **et al.**, 2004; Gerety **et al.**, 1994; Teresi **et al.**, 2001). However, approximately one third of all aged care residents in Australia were classified as low-level care in 2004 (Australian Institute of Health and Welfare, 2005). Low-level care residential facilities typically offer individual rooms for residents and 24 hour staffing, mostly by nursing assistants (known as personal care assistants), but a small number of Registered Nurses may also be employed. In these settings, residents are usually frail and may require some minimal nursing care, but can often engage in self-care activities more independently than nursing home residents. There are preliminary indications that depression may also be a significant issue in low-level care residential facilities, with Bagley **et al.** (2000) reporting similarly high rates of self-reported depression across both low- and high-level residential facilities. Further research in low-level care settings is required, particularly research that examines the association between depression and the presence of cognitive impairment.

Studies investigating the association between the severity of cognitive impairment and depression have produced mixed findings, with a review article suggesting that opinion continues to be divided on this issue (Ballard **et al.**, 1996). To illustrate, some studies have reported a higher prevalence of depression among those dementia sufferers with minimal cognitive impairment than among those with more severe impairment (Evers **et al.**, 2002; Forsell & Winblad, 1999). In contrast, Teresi **et al.** (2001) reported that major depression was more prevalent among residents with moderate or severe cognitive impairment than among other residents. Meanwhile, Bruce **et al.** (2002) reported no difference in level of cognitive function between home care recipients with and without major depression. Due to the numerous inconsistencies in the literature, it is currently unclear if older people with mild or moderate cognitive impairment are at differential risk of a depressive illness than those with normal cognitive function. Further investigation of the prevalence of depression among older persons with and without cognitive impairment is warranted.

There is evidence that depressive illness frequently goes undetected among older populations (Crawford **et al.**, 1998; Arve **et al.**, 1999; Garrard **et al.**, 1998). It may be expected that depression among individuals who are cared for within a residential facility – which specializes in the care of older persons – may be more likely to be detected than depression among older people living alone in the community, particularly given that residential staff are typically responsible for contacting residents’ GPs with concerns about their health. However, recognition rates have appeared to be comparable, with less than one third to one half of those with depression receiving treatment (Phillips & Henderson, 1991; Rovner **et al.**, 1991; Teresi **et al.**, 2001). High rates of cognitive impairment within residential care settings may impede the detection of depression by primary health services, in line with the finding by Evers **et al.** (2002) that depressed residents with more severe cognitive impairment were less likely to be recognised than other depressed residents.

Early detection and treatment of depression among aged care residents is important. Depression among older people residing in aged care facilities has been associated with an increased likelihood of transfer from low-level care to a nursing home or hospital (Kopetz **et al.**, 2000; Watson, **et al.**, 2003), and increased nursing staff care time (Fries **et al.**, 1993). It has also been suggested that untreated depression in late life is likely to result in a chronic depressive illness, with a poor prognosis for complete recovery (Rovner **et al.**, 1991). These findings highlight the need to investigate factors that may impact on detection and treatment of depression.

The present study aimed to determine the prevalence of depression among a sample of Australian low-level aged care residents, including those with normal cognitive function and those with mild and moderate cognitive impairment. In contrast to much of the previous research within low-level care residential settings which relied on self-report questionnaires, in the current study a clinical diagnosis of MDD was determined through DSM-IV criteria (American Psychiatric Association [APA], 1994). This study also evaluated treatment rates for depression by GPs, as well as any indication in participants’ medical files that symptoms of depression had been detected. It was hypothesized that cognitive impairment would be associated with low rates of detection and treatment of depression.

Method

Participants

Two hundred and ninety residents took part in this study. The participants were 220 women and 70 men, who ranged in age from 65 to 99 years ($M = 85.38$ years, $SD = 6.47$). Over half of the participants (57.9%) were aged at least 85 years. This sample is typical of the gender ratio and age distribution of residents in low- and high-level aged care facilities (Australian Institute of Health and Welfare, 2005).

Measures

The presence of MDD was determined using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; First **et al.**, 1997). This instrument is a semi-structured interview schedule for making DSM-IV Axis I diagnoses (APA, 1994) that has been widely used in clinical and research settings. No distinction was made between MDD, Single Episode, and MDD, Recurrent, due to high levels of memory impairment in this sample, and the absence of an informant in residential facilities who had known the resident over a considerable period of time. The absence of a valid source of psychiatric history also

prevented an accurate assessment of Dysthymic Disorder, which was therefore not considered as a possible diagnosis in this study.

Participants' level of cognitive function was assessed using the Standardized Mini Mental State Examination (SMMSE; Molloy *et al.*, 1991). The Mini-Mental State Examination is the most widely used cognitive screening test in older persons, with 30 items assessing orientation, attention and calculation, immediate and short-term recall, and language and the ability to follow simple written and verbal commands (Folstein *et al.*, 1975). The version used in this study has been standardized with detailed scoring guides. A small number of items were unable to be completed by participants, due to non-cognitive factors, most notably hearing and visual impairment, as well as impaired motor skills that affected the ability to write and draw. To avoid these participants receiving scores lower than their actual cognitive function would imply, total scores were pro-rated. This procedure has been previously demonstrated as reliable with vision-impaired older persons (Reischies & Geiselman, 1997).

The severity of cognitive impairment was assessed according to criteria described by Ward *et al.* (2002). Scores between 25 and 30 indicated normal cognitive function while scores between 19 and 24 indicated mild cognitive impairment, and scores between 10 and 18 indicated moderate cognitive impairment. In the current sample, 161 participants were classified as within the normal range, 89 participants had mild cognitive impairment, and 40 participants had moderate cognitive impairment.

Procedure

Participants were recruited from ten low-level care residential facilities in Melbourne, Australia. Facilities were randomly selected from a list of all facilities within three metropolitan council areas of Melbourne. All facilities approached agreed to participate in the study. Facilities were diverse in terms of size, fees, admission criteria, staff-to-resident ratios, and other indices of quality of care, and included private companies, not-for-profit organisations, and Government funded facilities.

Residents were excluded from participation in the research if they met the following criteria: severe cognitive impairment or aphasia; diagnosis of Bipolar Affective Disorder, Schizophrenia, or an intellectual disability; severe hearing impairment; acute illness; inability to communicate in English due to non-English speaking background; or age of less than 65 years. Exclusion criteria were determined through a combination of consultation with the facility managers and assessment by the researchers. A total of 403 residents across the ten facilities were considered eligible for participation in the research. Written consent to participate in the study was provided by the participants themselves or by their next-of-kin in the case of those considered unable to give informed consent due to impaired cognitive function, as determined by the senior staff member at each facility. The final sample consisted of 290 residents, representing 72.0% of eligible older people residing across ten low-level aged care facilities taking part in the research.

All participants took part in an interview from a clinical psychologist to determine the presence or absence of MDD, and to assess their level of cognitive function. Participants were also asked whether they were currently receiving antidepressant medication or a nonpharmacological intervention for depression, such as a psychological therapy. Following the diagnostic interview with each participant, the clinical psychologist interviewed a senior member of staff in the facility to confirm the diagnosis. Finally, each participant's file held at

the facility was reviewed, to determine age, current prescribed medications, and whether or not the participant had ‘depression’, ‘depressed mood’ or any other indication of depressive illness recorded by their GP. Each participant had his or her own GP, some of whom were their long-term ‘family doctor’. However, a proportion of residents were required to change their GP following their relocation to a facility in a different geographical area, and it was common for visiting GPs to have several patients within a single facility. The clinical psychologist reviewed all cases in consultation with a geropsychiatrist prior to assigning a diagnosis of depression.

Data Analysis

Statistical analysis of the data aimed to determine whether aged care residents with mild or moderate cognitive impairment were at a differential risk of being diagnosed with depression compared to residents with normal cognitive function, or were less likely to have their depressive illness detected and treated. Chi-square and the *t*-test for independent samples were used to test these hypotheses, and odds ratios were calculated. In addition, the hypothesis that residents with cognitive impairment were less likely to be aware of receiving treatment for depression was investigated using the *t*-test for independent samples. An alpha of 0.05 was used for all statistical tests.

Results

Prevalence of Depression

Forty-nine participants (16.9%) met DSM-IV criteria for MDD, according to the SCID-I (First **et al.**, 1997). The association between a diagnosis of depression and cognitive function was investigated using an independent measures *t*-test. Participants with depression had a significantly lower SMMSE total score (Molloy **et al.**, 1991) than those without depression, $t(288) = 2.88, p < .01$, implying higher levels of cognitive impairment among depressed participants. Participants with moderate cognitive impairment were significantly more likely to be depressed than participants with mild cognitive impairment or normal cognitive function, $\chi^2(1, 290) = 3.72, p = <.05$ (see Table 1), with an odds ratio of 1.81. There were no significant differences in rates of depression between participants with mild cognitive impairment and normal cognitive function.

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Recognition and Treatment of Depression

The residents’ files and medical charts held at the facilities were examined to investigate whether participants who were diagnosed with MDD at the time of the clinical assessment had previously been recognised as depressed by their GP, according to a listed medical diagnosis, or were currently prescribed an antidepressant medication. Overall, less than half of the participants with MDD were receiving antidepressant medication at the time of the clinical assessment, or had any indication of depression recorded by their GP in their file (see Table 1).

The relationship between cognitive impairment and treatment of depression by GPs was examined. Documentation of depression by GPs was not considered further, given that

there were no cases for which a GP recorded an indication of depression in a file but did not prescribe an antidepressant medication. An independent measures *t*-test found that participants currently prescribed an antidepressant medication did not differ significantly from participants not receiving treatment in terms of their level of cognitive function, $t(47) = 0.05$, $p = .96$.

An examination of the cases suggested that treatment rates for depression appeared to be somewhat lower for participants with mild or moderate cognitive impairment (see Table 1). Odds ratios were calculated for the treatment of depression for participants with and without cognitive impairment, as indicated by their SMMSE score (Molloy *et al.*, 1991). Depressed participants with normal cognitive function were found to be 1.28 times more likely to have received treatment than depressed participants with mild or moderate cognitive impairment. However, the association between depression treatment and the absence of cognitive impairment was not statistically significant, $\chi^2(1, 49) = .55$, $p = .46$. There was no significant difference in treatment rates between depressed participants with mild and moderate cognitive impairment.

Participant Awareness of Treatment for Depression

All participants (including those presenting with and without MDD at the time of interview) were asked if they were currently receiving pharmacological or psychological treatment for depression. All participants were included, as there were some residents in the hostels who did not present with MDD in the clinical interview, but were currently receiving treatment. It was considered important to include those participants in an examination of treatment awareness.

Only one participant reported receiving a non-medical treatment, which consisted of cognitive behavioural therapy, delivered by a clinical psychologist, with concurrent medical treatment from a GP. An examination of those 88 participants who were currently prescribed an antidepressant medication revealed that only one quarter ($n = 22$) were aware of this treatment. Responses by participants suggested a low knowledge about their medications generally, but they appeared particularly unclear about their use of psychotropic medications. Those who were unaware of their treatment ($n = 66$) had a lower level of cognitive function, as indicated by their SMMSE score (Molloy *et al.*, 1991), than those who were aware, $t(86) = 3.45$, $p < .001$. Indeed, only one participant from the group of 36 residents with mild or moderate cognitive impairment reported knowledge of their treatment (see Table 1). However, a lack of knowledge of antidepressant use was also found among 59.6% of the group who scored within the normal range of cognitive functioning.

Discussion

There was a high prevalence of depression among this sample of low-level care residents, with 16.9% meeting DSM-IV criteria for MDD (APA, 1994) at the time of the interview. The prevalence of MDD in this low-level care sample falls within the 9% to 26% prevalence estimations found in previous research in nursing home settings using DSM criteria (Baker & Miller, 1991; Blank *et al.*, 2004; Gerety *et al.*, 1994; Teresi *et al.*, 2001). This indicates that clinically significant depression is a problem that characterizes low- as well as high-level care. The results from the current study demonstrated a somewhat higher prevalence than findings from international research with older persons receiving low-level care, for example among residents from assisted living facilities in the US (13%; Watson *et al.*, 2003), although there were methodological differences between the studies. The

prevalence of MDD in the current study is also higher than that found among older persons living in their own homes who required home health care services (13.5%; Bruce **et al.**, 2002).

Previous research exploring the relationship between depression and the severity of cognitive impairment has produced inconsistent results (Ballard **et al.**, 1996; Evers **et al.**, 2002). In this study, individuals with moderate cognitive impairment were more likely than other residents to present with MDD. This finding is consistent with the research by Teresi **et al.** (2001), who reported a higher prevalence of MDD among nursing home residents with moderate to severe cognitive impairment than among those with mild cognitive impairment or normal cognitive function. Similarly, Watson **et al.** (2003) found higher levels of depression among low-level care residents with moderate cognitive impairment than among other residents. However, other research has found lower rates of depression among those with severe cognitive impairment (Evers **et al.**, 2002), or no association between cognitive function and depression (Bruce **et al.**, 2002).

The variation in the research findings may be, in part, due to methodological differences. For example, Eisses **et al.** (2004) found no relationship between cognitive function and scores on a depression scale. However, the authors excluded those with a Mini-Mental State Examination score of less than 15, and may not have had enough participants with moderate cognitive impairment to find an effect. This current study focused on the severity of cognitive impairment, and no distinction was made between age-related cognitive decline, and dementia of varied types. It is likely that symptoms of depression are differentially associated with various dementing illness processes (see Alexopoulos **et al.** (2002b); Ballard **et al.** (1996); and Lee and Lyketsos (2003) for reviews of longitudinal research in this area). The findings from this study do, however, highlight the need to be particularly vigilant to the presence of depression among aged care residents with substantive levels of cognitive impairment.

A key finding in the current study was the low rate of recognition of depression among low-level care residents. Less than half of the older people who were diagnosed with MDD in the assessment had received a previous notation of depression from their GP in their file, or were receiving any treatment for this illness. The current low recognition rate confirms previous research with community (Arve **et al.**, 1999; Garrard **et al.**, 1998), primary care (Crawford **et al.**, 1998), home care (Bruce **et al.**, 2002), and nursing home samples (Phillips & Henderson, 1991; Rovner **et al.**, 1991; Teresi **et al.**, 2001). The current findings confirmed that poor recognition of depression continues to present serious challenges to health care delivery across varied aged care settings.

The hypothesis that GPs would experience particular difficulty in detecting depression among residents with high levels of cognitive impairment was not supported in this study. Treatment rates appeared slightly lower for those with mild or moderate cognitive impairment than for residents with normal cognitive function, but this finding was not significant. However, there was a limitation in the methodology used to examine the relationship between cognitive impairment and treatment rates for depression. According to Cohen (1992), a sample size of 26 is required to demonstrate a large effect (at $p < .05$), with statistical power of .80. The sample size in the present study of 49 individuals with MDD may have been insufficient to demonstrate a medium effect of cognitive impairment on treatment rates with an acceptably high level of statistical power, which Cohen (1992) determined would require a sample size of 87. Further research with larger sample sizes is required to confirm the absence

of a relationship between level of cognitive function among older people and non-detection by primary health care providers.

A number of other reasons for the poor recognition of depression among older people, other than cognitive impairment, have been documented in the clinical literature. These reasons include poor knowledge about mental health problems among the current cohort of older people; hopelessness about the potential for improvement in their mental state; stigma associated with mental disorders; or the tendency among older adults to under-report symptoms of depression or to present with somatic rather than affective symptomatology (Lyness *et al.*, 1995; Reynolds, 1995; Rothschild, 1996). The participants in the current study presented in a manner consistent with this tendency, with few residents spontaneously using the term 'depression' to describe their mood or experiences.

Overall, this sample of aged care residents appeared ill-informed about their medications, with only one quarter of them being aware of the treatment they were receiving for depression. Cognitive impairment was associated with poor knowledge of treatment for depression, and participants with even mild levels of cognitive impairment were generally unaware they were taking antidepressant medications. However, a lack of awareness of treatment was also common among those with normal cognitive functioning, which suggests that a sub-optimal level of psychoeducation had been provided by GPs to aged care residents. It has also been suggested that many older adults do not report affective symptoms because they do not expect to receive treatment for non-physical problems from their GP, or because they view discussion of psychological distress as inappropriate (Mellor *et al.*, in press)..

The clinical literature has also suggested a number of aspects related to health service providers that may impede the recognition of depression in aged care settings. These factors include poor training of GPs in mental health, and misattributions of depression symptoms to 'normal ageing', or to symptoms of dementia or other medical conditions (Alexopoulos *et al.*, 2002a). It has also been suggested that GPs are less likely to diagnose depression among older people compared to younger adults (Harman *et al.*, 2001), and may not routinely inquire into non-physical symptoms during medical consultations (Mellor *et al.*, in press). Time pressures may act as a barrier to the routine assessment of depression among elderly patients (Glasser & Gravdal, 1997).

While the current finding that cognitive impairment did not act as a strong impediment to the recognition of depression by GPs was reassuring, depressed older people in aged care appear to be poorly served by health service providers for a variety of reasons, some of which are listed above. However, the impact of these characteristics of older people and health service providers on the detection of depression in aged care requires further empirical investigation. Such research is important to assist in the development of procedures that improve the detection of depression and the quality of care for this vulnerable population.

Further research exploring the factors contributing to the poor recognition of late life depression may help inform educational approaches for GPs. There are indications in the literature that further education may be of benefit (Lebowitz *et al.*, 1997; Llewellyn-Jones *et al.*, 1999), although it has yet to be adequately demonstrated that education consistently leads to improved detection rates. Discussions with residential care facility staff in this project indicated that residents commonly reported symptoms of depression to nursing staff rather than to their GP during their short medical consultations. It is typically seen as the responsibility of the care staff to report changes in the health or general functioning of residents to GPs. These staff members are a potentially valuable source of information about

the mental state of older care recipients, and it is suggested that good communication between care staff and the various GPs who visit each facility may aid in early detection and improved outcomes for residents with depression. Specialized training for nursing staff in residential facilities in the recognition of signs of depression may also be beneficial.

There are a number of limitations to this study. Firstly, this research employed a cross-sectional design, the use of which limits the interpretation of the findings. Prospective research is needed to fully explore the link between cognitive impairment and depression over time. Secondly, while facilities were randomly selected and appeared to be representative of aged care residents from a range of socioeconomic, religious and cultural backgrounds, data on these characteristics were not collected. It is also important to note that this study was conducted in Australia, and the results may not be generalizable to other countries with different health care structures and aged care systems.

Thirdly, prevalence data were limited by the method of diagnosis. While every attempt was made to ensure that symptoms were due to a depressive illness rather than other factors, such as a medical illness or medication side-effects, the scope of this project did not allow for a medical examination and comprehensive history, including informant reports, to fully determine the aetiology of symptoms. The differential diagnosis of dementia and MDD among older adults is particularly difficult, given overlapping characteristics (Alexopoulos **et al.**, 2002a; APA, 1994; Ballard **et al.**, 1996; Lee & Lyketsos, 2003). Limitations of the diagnostic procedure may have resulted in an over- or under-estimation of the prevalence of MDD, a common methodological problem in research of this nature with older persons (Katz **et al.**, 1995; Reynolds, 1995). In addition, this study did not assess for the presence of Dysthymic Disorder. It is important to note that a proportion of the participants in this study who did not present with MDD may have met diagnostic criteria for Dysthymic Disorder, and resulted in an under-estimation of the extent of depressive illness among aged care residents. Future studies into comparative rates of depression should account for this diagnosis, and investigation into the relationship of cognitive impairment to Dysthymic Disorder is warranted.

Finally, this study was limited by the sampling procedures. Although all eligible residents who agreed to take part were included in this study, a large number did not participate, mostly due to non-return of consent forms by next-of-kin. This suggests that the sample under-represented residents with cognitive impairment. In addition, residents with severe cognitive impairment were not eligible for participation in the study, due to practical difficulties in making a diagnosis of depression in the context of severe impairment without a suitable informant who had known the resident for long enough to give a reliable history, and without access to a detailed medical history. Future research may utilize an instrument that reliably indicates the presence of depression among those with dementia, such as the Cornell Scale for Depression in Dementia (Alexopoulos **et al.**, 1988). Replication is required with a broader aged care sample to examine the impact of severe cognitive impairment on the prevalence and recognition of depression.

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Table 1

Diagnosis of Major Depressive Disorder, General Practitioner Recognition and Treatment of Depressed Participants, and Participant Awareness of Treatment for Depression

Cognitive function	Diagnosis of MDD <i>n</i> (%)	Depression recorded on medical file <i>n</i> (%)	MDD treated with medication <i>n</i> (%)	Awareness of antidepressant prescription+ <i>n</i> (%)
Normal	25/161 (15.5%)	12/25 (48.0%)	12/25 (48.0%)	21/52 (40.4%)
Mild impairment	13/89 (14.6%)	5/13 (38.5%)	5/13 (38.5%)	1/25 (4.0%)
Moderate impairment	11/40 (27.5%)	3/11 (27.3%)	4/11 (36.4%)	0/11 (0.0%)
Total	49/290 (16.9%)	20/49 (40.8%)	21/49 (42.9%)	22/88 (25.0%)

+Note: Awareness of antidepressant prescription was calculated for all participants currently prescribed an antidepressant, not only participants who presented with MDD in the clinical interview