

Henry Brodaty - selected publications

- 1 Brodaty, H., Mothakunnel, A., de Vel-Palumbo, M., Ames, D., Ellis, K. A., Reppermund, S. et al. (2014). Influence of population versus convenience sampling on sample characteristics in studies of cognitive aging. *Annals of Epidemiology*, 24, 63-71.

Notes: PURPOSE: We examined whether differences in findings of studies examining mild cognitive impairment (MCI) were associated with recruitment methods by comparing sample characteristics in two contemporaneous Australian studies, using population-based and convenience sampling. METHOD: The Sydney Memory and Aging Study invited participants randomly from the electoral roll in defined geographic areas in Sydney. The Australian Imaging, Biomarkers and Lifestyle Study of Ageing recruited cognitively normal (CN) individuals via media appeals and MCI participants via referrals from clinicians in Melbourne and Perth. Demographic and cognitive variables were harmonized, and similar diagnostic criteria were applied to both samples retrospectively. RESULTS: CN participants recruited via convenience sampling were younger, better educated, more likely to be married and have a family history of dementia, and performed better cognitively than those recruited via population-based sampling. MCI participants recruited via population-based sampling had better memory performance and were less likely to carry the apolipoprotein E epsilon4 allele than clinically referred participants but did not differ on other demographic variables. CONCLUSION: A convenience sample of normal controls is likely to be younger and better functioning and that of an MCI group likely to perform worse than a purportedly random sample. Sampling bias should be considered when interpreting findings
- 2 Brodaty, H., Connors, M. H., Xu, J., Woodward, M., & Ames, D. (2014). Predictors of institutionalization in dementia: a three year longitudinal study. *Journal of Alzheimers Disease*, 40, 221-226.

Notes: Patients with dementia often require institutionalization when they can no longer care for themselves. The study examined demographic and clinical variables that predict the time until institutionalization in patients with dementia attending memory clinics. Of 970 patients recruited from nine memory clinics around Australia, 779 patients had dementia at baseline. Measures of dementia severity, cognition, functional ability, neuropsychiatric symptoms, caregiver burden, and medication use were completed for all patients. Patients were followed for three years. Overall, 197 (25.3%) of the patients with dementia were institutionalized within three years. Lower cognitive ability, lower functional ability, and more neuropsychiatric symptoms at baseline predicted a shorter time until institutionalization, as did use of antipsychotic medication. In addition, greater deterioration in cognitive ability, functional ability, and neuropsychiatric symptoms over the initial three months predicted a shorter time to institutionalization. The findings confirm that clinical features of dementia at baseline predict the time to institutionalization, as do greater changes in symptoms over three months independent of baseline levels
- 3 Brodaty, H., Woodward, M., Boundy, K., Ames, D., & Balshaw, R. (2014). Prevalence and predictors of burden in caregivers of people with dementia. *American Journal of Geriatric Psychiatry*, 22, 756-765.

Notes: OBJECTIVE: To examine prevalence and predictors of burden in caregivers of people with dementia attending memory clinics. METHODS: This Prospective cohort study conducted at nine memory clinics in Australia rated 732 outpatient attendees and their primary caregivers at baseline and at 3, 6, 12, 24, and 36 months. Ratings were based on the following: dementia diagnosis according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Mini-Mental State Exam, Alzheimer's Disease Assessment Scale-Cognitive, Functional Autonomy Measurement System, Neuropsychiatric Inventory, use of psychotropic and antidepressant medications, patient and caregiver resource use, and the Zarit Caregiver Burden Interview (ZBI). RESULTS: Half the caregivers had significantly high levels of burden, rising to 57.7% at 12 months; with moderate to severe burden rates, rising from 14.7% at baseline to 22.8% at 12 months; and mean ZBI levels rising from 22.9 at baseline to 25.5 at 6 months and 27.7 at 12 months. Caregiver predictors of 6- and 12-month

burden were their neuroticism and baseline ZBI score. Patient predictors were their level of behavioral symptoms, use of antipsychotics and antidepressants, and more rapid functional decline. Other predictors (female caregiver, level of cognition and function, diagnosis of frontotemporal dementia) were not significant in regression analyses. CONCLUSION: Caregivers of people with dementia have high and persistent rates of burden. Identification of caregivers likely to have high levels of burden at 12 months may allow more accurate targeting of interventions

- 4 Brodaty, H., Heffernan, M., Kochan, N. A., Draper, B., Trollor, J. N., Reppermund, S. et al. (2013). Mild cognitive impairment in a community sample: the Sydney Memory and Ageing Study. *Alzheimers and Dementia*, 9, 310-317.
Notes: BACKGROUND: Mild cognitive impairment (MCI) is associated with an increased dementia risk. This study reports incidence of MCI subtypes, rates of progression to dementia, and stability of MCI classification. METHODS: We examined 873 community-dwelling adults aged 70 to 90 years over 2 years as part of an ongoing population-based longitudinal study, the Sydney Memory and Ageing Study. Neuropsychological testing assessed five cognitive domains, and a diagnosis of no cognitive impairment, MCI, or dementia (follow-up only) was made according to published criteria. RESULTS: The incidence of MCI was 104.6 (95% confidence interval: 81.6-127.7) per 1000 person-years, with higher incidence in men (men, 156.8; women, 70.3). Incidence rates for single-domain amnesic, multiple-domain amnesic, single-domain nonamnesic, and multiple-domain nonamnesic MCI were 47.7, 7.9, 45.0, and 3.9 per 1000 person-years, respectively. The 2-year rate of progression from MCI at baseline to dementia was 4.8%, being highest for multidomain amnesic MCI (9.1%). Of those with MCI at baseline, 28.2% reverted to no cognitive impairment at follow-up. Sensitivity analyses by redefining criteria for cognitive impairment did not affect stability of diagnosis, although changing the threshold of domain impairment reduced baseline MCI prevalence from 36.7% to 5.7% and incidence to 23.5, and increased 2-year progression rate from MCI to dementia to 14.3%. CONCLUSIONS: Incidence rates for MCI are higher than previously reported, particularly in men and for single-domain MCI; rates for amnesic and nonamnesic MCI were comparable. Multidomain amnesic MCI was the most likely subtype to progress to dementia, but overall, the diagnosis of MCI, particularly single-domain MCI, shows considerable instability
- 5 Brodaty, H. & Burns, K. (2012). Nonpharmacological management of apathy in dementia: a systematic review. *American Journal of Geriatric Psychiatry*, 20, 549-564.
Notes: Apathy is one of the most challenging and prevalent behavioral symptoms of dementia. It is associated with increased disability and caregiver frustration as well as reduced quality of life, rehabilitation outcomes and survival after nursing home admission. A literature search to set criteria yielded 56 nonpharmacological intervention studies with outcomes relevant to apathy in dementia. Studies were rated according to quality and categorized into 7 groups: exercise, music, multisensory, animals, special care programming, therapeutic activities and miscellaneous. Despite a lack of methodological rigor, it is apparent that nonpharmacological interventions have the potential to reduce apathy. This review indicates that therapeutic activities, particularly those provided individually, have the best available evidence for effectiveness in dementia. Recommendations are provided for quality research
- 6 Brodaty, H. & Arasaratnam, C. (2012). Meta-analysis of nonpharmacological interventions for neuropsychiatric symptoms of dementia. *American Journal of Psychiatry*, 169, 946-953.
Notes: OBJECTIVE Behavioral and psychological symptoms are common in dementia, and they are especially stressful for family caregivers. Nonpharmacological (or psychosocial) interventions have been shown to be effective in managing behavioral and psychological symptoms, but mainly in institutional settings. The authors reviewed the effectiveness of community-based nonpharmacological interventions delivered through family caregivers. METHOD Of 1,665 articles identified in a literature search, 23 included unique randomized or pseudorandomized nonpharmacological interventions with family caregivers and outcomes

related to the frequency or severity of behavioral and psychological symptoms of dementia, caregiver reactions to these symptoms, or caregiver distress attributed to these symptoms. Studies were rated according to an evidence hierarchy for intervention research. RESULTS Nonpharmacological interventions were effective in reducing behavioral and psychological symptoms, with an overall effect size of 0.34 (95% CI=0.20-0.48; z=4.87; p<0.01), as well as in ameliorating caregiver reactions to these behaviors, with an overall effect size of 0.15 (95% CI=0.04-0.26; z=2.76; p=0.006). CONCLUSIONS Nonpharmacological interventions delivered by family caregivers have the potential to reduce the frequency and severity of behavioral and psychological symptoms of dementia, with effect sizes at least equaling those of pharmacotherapy, as well as to reduce caregivers' adverse reactions. The successful interventions identified included approximately nine to 12 sessions tailored to the needs of the person with dementia and the caregiver and were delivered individually in the home using multiple components over 3-6 months with periodic follow-up

- 7 Berman, K., Brodaty, H., Withall, A., & Seeher, K. (2012). Pharmacologic treatment of apathy in dementia. *American Journal of Geriatric Psychiatry*, 20, 104-122.
Notes: Apathy in patients with dementia is common, underrecognized, and undertreated. We sought to improve understanding of the pharmacologic treatment of apathy in dementia by performing a systematic literature review of studies that used apathy outcome scales to document results of pharmacologic treatments for apathy. There is limited evidence of efficiency of pharmacotherapy for treatment of apathy in dementia. The best results were found for acetylcholinesterase inhibitors. There was some evidence of efficacy for memantine, but less evidence of efficacy for stimulants, calcium antagonists, and antipsychotics. There was no evidence to support the use of antidepressants or anticonvulsants. The research quality of studies was modest. Recommendations for standardizing research and for holistic evaluation and treatment are provided
- 8 Brodaty, H., Altendorf, A., Withall, A., & Sachdev, P. (2010). Do people become more apathetic as they grow older? A longitudinal study in healthy individuals. *International Psychogeriatrics*, 22, 426-436.
Notes: BACKGROUND: The aim of this study was to determine levels, rates and progression of apathy in healthy older persons and to investigate factors associated with its progression. METHODS: Seventy-six healthy elderly subjects, aged 58-85 years (mean 69.9), who were recruited by general advertisement and through local community groups, participated as a control group for a longitudinal study of stroke patients. Data were collected on demographic, psychological, neuropsychological and neuroimaging (MRI) variables and apathy was rated by informants on the Apathy Evaluation Scale (AES). RESULTS: Apathy scores and rates increased over 5 years, especially in men. Change of apathy was associated with informant ratings of cognitive decline in the years prior to baseline assessment but not to subsequent neuropsychological, neuroimaging or functional changes. CONCLUSIONS: Apathy increases with age in otherwise healthy community-dwelling individuals, particularly in men
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- 9 Brodaty, H. & Donkin, M. (2009). Family caregivers of people with dementia. *Dialogues.Clin.Neurosci.*, 11, 217-228.
Notes: Family caregivers of people with dementia, often called the invisible second patients, are critical to the quality of life of the care recipients. The effects of being a family caregiver, though sometimes positive, are generally negative, with high rates of burden and psychological morbidity as well as social isolation, physical ill-health, and financial hardship. Caregivers vulnerable to adverse effects can be identified, as can factors which ameliorate or exacerbate burden and strain. Psychosocial interventions have been demonstrated to reduce caregiver burden and depression and delay nursing home admission. Comprehensive management of the patient with dementia includes building a partnership between health professionals and family caregivers, referral to Alzheimer's Associations, and psychosocial interventions where indicated

- 10 Brodaty, H., Low, L. F., Gibson, L., & Burns, K. (2006). What is the best dementia screening instrument for general practitioners to use? *American Journal of Geriatric Psychiatry*, 14, 391-400.
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OBJECTIVE: The objective of this study was to review existing dementia screening tools with a view to informing and recommending suitable instruments to general practitioners (GPs) based on their performance and practicability for general practice. METHOD: A systematic search of pre-MEDLINE, MEDLINE, PsycINFO, and the Cochrane Library Database was undertaken. Only available full-text articles about dementia screening instruments written in English or with an English version were included. Articles using a translation of an English language instrument were excluded unless validated in a general practice, community, or population sample. RESULTS: The General Practitioner Assessment of Cognition (GPCOG), Mini-Cog, and Memory Impairment Screen (MIS) were chosen as most suitable for routine dementia screening in general practice. The GPCOG, Mini-Cog, and MIS were all validated in community, population, or general practice samples, are easy to administer, and have administration times of 5 minutes or less. They also have negative predictive validity and misclassification rates, which do not differ significantly from those of the Mini-Mental Status Examination. CONCLUSIONS: It is recommended that GPs consider using the GPCOG, Mini-Cog, or MIS when screening for cognitive impairment or for case detection
- 11 Brodaty, H., Green, A., & Low, L.-F. (2004). Vascular dementia: consequences for family carers and implications for management. In J.O'Brien, D. Ames, L. Gustafson, M. Folstein, & E. Chiu (Eds.), *Cerebrovascular disease, cognitive impairment and dementia* (2 ed., pp. 363-378). London: Martin Dunitz
- 12 Brodaty, H., Luscombe, G., Anstey, K. J., Cramsie, J., Andrews, G., & Peisah, C. (2003). Neuropsychological performance and dementia in depressed patients after 25-year follow-up: a controlled study. *Psychological Medicine*, 33, 1263-1275.
BACKGROUND: Previous research has yielded conflicting evidence regarding the long-term cognitive outcome of depression. Some studies have found evidence for a higher incidence of subsequent cognitive impairment or dementia, while others have refuted this. METHOD: Depression, neuropsychological performance, functional ability and clinical variables were assessed in a sample of patients who had been hospitalized for depression 25 years previously. RESULTS: Data were available on 71 depressed patients (10 of whom were deceased) and 50 surgical controls. No significant differences were found between depressed subjects and controls on any neuropsychological measure. Ten depressed patients but no controls were found to have dementia at follow-up (continuity corrected $\chi^2 = 5.93$, $P < 0.01$). Presence of dementia was predicted by older age at baseline. Vascular dementia was the most common type. CONCLUSIONS: We conclude that this study did not find evidence that early onset depression is a risk factor for Alzheimer's disease, but that for a small subgroup there appears to be a link with vascular dementia. Several plausible explanations for this link, such as lifestyle factors, require further investigation
- 13 Brodaty, H. & Low, L. F. (2003). Aggression in the elderly. *Journal of Clinical Psychiatry*, 64 Suppl 4, 36-43.
Notes: Aggression is a common behavioral symptom of dementia. Aggression is associated with frontotemporal dementia, greater dementia severity, cognitive decline, and other behavioral and psychological disturbances. It is influenced by the environment and has been correlated with neuropathologic changes and certain polymorphisms. Aggression in dementia patients results in higher psychotropic use and distress to family caregivers and nursing home staff; it is predictive of institutionalization. There is empirical evidence for the efficacy of pharmacotherapy and more limited evidence for psychosocial interventions in the successful management of aggression in persons with dementia. Management of aggression should include comprehensive assessment of medical, psychological, and environmental variables

- 14 Brodaty, H., Luscombe, G., Parker, G., Wilhelm, K., Hickie, I., Austin, M. P. et al. (2001). Early and late onset depression in old age: different aetiologies, same phenomenology. *Journal of Affective Disorders*, 66, 225-236.
- Notes: BACKGROUND: Phenomenological differences between older patients with early onset (EO; onset of first major depressive episode before 60 years) and late onset (LO) depression have been inconsistent but, if real, may reflect differences in aetiology. We aimed to compare aetiological factors, phenomenology and cognitive function in older patients with depression by age of onset. METHODS: Subjects were all patients > or =60 years old (n=73) from 407 consecutive attenders to a Mood Disorders Unit, diagnosed with DSM-III-R Major Depressive Episode, at or close to the nadir of their episode. Putative risk factors were assessed by structured interview. Psychological morbidity and depressive symptoms were assessed by the 21-item Hamilton Rating Scale for Depression, CORE rating of psychomotor disturbance, Newcastle Endogeneity Scale, Zung Depression Scale and General Health Questionnaire. Cognition was assessed by tests of memory, attention, executive function and motor speed. RESULTS: Personality abnormalities, a family history of psychiatric illness and dysfunctional past maternal relationships were significantly more common in EO depression. The two age of onset groups were essentially similar in terms of depressive sub-type and severity, phenomenology, history of previous episode, and in neuropsychological performance. LIMITATIONS: Use of self-report data, moderate sample size, sample not age-matched, tertiary referral patients. CONCLUSIONS: EO and LO depression are similar phenotypically, but differ aetiologically. The pursuit of mechanisms which predispose depressive episodes may be heuristically more valuable than further investigation of individual depressive features in distinguishing early from late onset depression
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