

The Blurred Line between Physical Ageing and Mental Health in Older Adults: Implications for the Measurement of Depression

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Clinical Medicine Insights: Psychiatry

Volume 10: 1–5

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DOI: 10.1177/1179557319885634



ABSTRACT

OBJECTIVES: Depression in older adults is assessed using measures validated in the general adult population. However, such measures may be inappropriate in the elderly due to the similarities between ageing and the symptoms of depression. This article discusses whether these measures are fit for the purpose and the implications of using inappropriate tools.

METHODS: A commentary on measuring depression in older adults.

RESULTS: Depression symptoms may be mistaken for signs of ageing. Several measures of depression include items that may have a physical cause and thus generate measurement error. Those studies that have assessed the psychometric properties of depression measures in older adults have failed to conduct appropriate assessments of discriminant validity.

DISCUSSION: Research is needed to determine whether the conceptual similarity between some symptoms of depression and the effects of ageing translate to factorial similarity. If so, there may be a need for a specific depression measure for older adults that prioritises psychological symptoms.

KEYWORDS: Ageing, depression, measurement, questionnaire, discriminant validity

RECEIVED: August 22, 2019. **ACCEPTED:** October 9, 2019.

TYPE: Commentary

FUNDING: The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by The Dunhill Medical Trust (grant number: R431/0715).

DECLARATION OF CONFLICTING INTERESTS: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Improved standards of living and awareness of unhealthy lifestyle factors have contributed to substantial increases in global life expectancies for men and women.¹ In 2010, there were approximately 524 million people aged 65 and older worldwide. By 2050, it is estimated that this figure will rise to 1.5 billion.² Statistics from the Office for National Statistics³ evidence that the current UK population is at its oldest ever, with a median age of 40 years. People aged 65 and older now constitute almost 20% of the UK population. This demographic shift has prompted researchers to pay greater attention to the physical and mental health of older adults.

One area of interest is understanding the cause, maintenance, and treatment of depression for older adults. Cross-sectional data from the Royal Colleges of General Practitioners and Psychiatrists suggest that 1 in 4 older adults reports significant symptoms of depression and that the level of symptomology increases further with age.⁴ Despite its high prevalence, only 5.2% of older people living in the United Kingdom are referred for psychological therapy.⁵ There are several possible explanations for this disparity, the most prevailing of these being problems in identifying symptoms of depression and separating them from the symptoms of other health conditions.^{6,7}

The positive relationship between poor physical health and symptoms of depression in older adults is well-established.^{8,9} Specific conditions such as chronic pain,¹⁰ heart disease,¹¹ and diabetes¹² are experienced concurrently with depression in later life. Older adults with high levels of symptoms of depression will have on average 3.8 additional medical conditions.¹³ However, the intrinsic link between brain and body can make it difficult to establish where a physical health problem ends and depression begins. Current means of quantifying the symptoms of depression are inadequate for this purpose as there is no evidence that such measures can discriminate depression from physical health conditions in the elderly.

Differentiating between the symptoms of physical illness and the symptoms of mental health problems is a greater challenge in the elderly where the prevalence of physical health problems is higher¹⁴ and the body undergoes a number of physical changes associated with ageing.¹⁵ The conflation of ageing and depression has received some attention within the literature. However, the few studies in this area of research used 1 scale to measure depression and focussed on the extent to which symptoms of depression overlap with specific aspects of the ageing process, such as fragility^{16,17} and cognitive impairments.¹⁸ Within this commentary, we aim to review several



measures of depression and approach the concept of ageing holistically. Moreover, and unlike previous studies, we propose that the relationship between ageing and depression may not be linear. Finally, we suggest a solution to this issue, using the postnatal depression literature as a case example.

Physical Symptoms of Depression

The symptomatic criteria used for diagnosis of clinical depression can be classified into 2 distinct categories: (1) physical (somatic) symptoms and (2) psychological symptoms. The physical symptoms of depression tend to have observable manifestations, for example, changes in weight, appetite, and sleep, in addition to fatigue and psychomotor agitation or retardation.¹⁹ These physical symptoms are distinct from the psychological symptoms such as hopelessness, low mood, and suicidal thoughts. When comparing older adults with depression with younger persons, the elderly adults report more of the physical symptoms.²⁰ However, many of these physical signs of depression can also be attributed to the ageing process.¹⁵

The diagnostic guidelines for major depressive disorder advise that the presence of all symptoms should only be considered relevant if they cannot be attributed to another medical condition.^{19,21} Although making this distinction may be possible for specialists in this field (eg, geriatricians and older adult psychiatrists), access to such specialists is limited in many health services. Most older adults will receive support from a non-specialist practitioner for whom, when working with older adults, the application of this guideline may not be so simple.

Measuring Depression in Older Adults

In clinical practice, questionnaire measures are used as a means of assessing the severity of a person's symptoms, with a 'cut-off' point indicating high levels of depression symptoms. Unfortunately, very few of these measures have been specifically validated for use with older adults (aged 55 or older).²²

The Beck Depression Inventory (BDI-II)²³ was administered to 130 older adults (age: $M=74.89$, $SD=7.45$, no range is reported) in an inpatient mental health service. They found 2 distinct but related factors that mirror the grouping of physical and psychological depression symptoms that we described earlier. The measure had strong internal consistency ($\alpha=.90$), but no further assessments of validity or reliability were reported. Furthermore, recruiting participants from an inpatient service makes it difficult to generalise these results with any confidence to a community sample.

By contrast,²⁴ sought to validate the Center for Epidemiological Studies Depression Scale (CES-D) with a community sample of older adults (age 55-78). The factor structure extracted was the same as that found for younger adults and maintained a good model fit, $\chi^2(164)=280.79$; Goodness of Fit Index (GFI)=.91; Normed-Fit Index (NFI)=.89. Once again no further assessments of reliability or validity were conducted. This study limitation is pertinent in

light of the authors' observation that for some older adults, high depression scores were attributable to a high presence of the physical (somatic) symptoms of depression (rather than the usual combination of physical and psychological symptoms). We postulate that this high incidence of physical symptoms in older adults can result from the ageing process rather than depression.

The Hospital Anxiety and Depression Scale (HADS)²⁵ was designed to be used with those experiencing physical health conditions and posits to exclude somatic symptoms.²⁶ The rationale for the HADS makes it promising for use with older adults, but only 1 study has tested this,²⁷ and the analysis with 100 older adult (aged 69-99) found that the HADS produced 'too many false positives', failing to identify 15 out of 23 patients with depression. It was concluded that the HADS was not suitable for the oldest old.²⁷ Looking in detail at the items included in the HADS and other measures of depression, the overlap between the physical symptoms of depression and ageing, and the potential for measurement error, seems likely (see Table 1 for some examples).

Age-specific measure of depression

More than 30 years ago the Geriatric Depression Screen Scale (GDS)³¹ was developed to address the difficulties highlighted earlier. This 30-item scale was intended to be a valid measure of depression in older adults, controlling for the possibility that a high score could be attributable to the symptoms of ageing. The GDS includes a caveat to each of the items that encourages the participant to compare themselves with the perceived 'norm' for their age group. The GDS was a definite improvement on previous generic measures of depression – it has strong internal consistency ($\alpha=.94$), but the item content is still weak. Several of the GDS items lack specificity between the physical symptoms of depression and ageing. For example, responses to 'Is it hard for you to get started on new projects?', 'Is your mind as clear as it used to be?', and 'Do you enjoy getting up in the morning?' could also reflect mobility problems (eg, morning stiffness), cognitive difficulties, and age-related changes in motivation.

'Ageing Well' as a moderator

Although there are a number of physical health problems associated with ageing,¹⁵ none of these are inevitable.³² If an older adult is ageing successfully, then symptoms such as changes in appetite, sleep, and motivation are less likely to be a function of ageing, and more likely to be indicative of depression. For those adults who are not ageing well, it will be more difficult to discern whether symptoms are related to depression or ageing. We therefore postulate that the relationship between the physical symptoms of depression and age-related physical health problems may vary as a function of how well the individual has aged (see Figure 1). By contrast, we hypothesise that the relationship between the *psychological* symptoms of depression and

Table 1. Items from measures of depression that could be interpreted to reflect physical ageing rather than symptoms of depression.

EXAMPLE ITEMS	ASPECT OF AGEING
Beck Depression Inventory (BDI) ²⁸	
'I can't make decisions at all anymore'	Cognitive decline
'I can't do any work at all'	Mobility problems
	Reduced energy
'I am too tired to do anything'	Reduced energy
Hospital Anxiety and Depression Scale (HADS) ²⁵	
'I feel as if I am slowed down'	Mobility problems
	Reduced energy
	Cognitive decline
'I can enjoy a good book or radio or TV program'	Sight or hearing problems
'I can sit at ease and feel relaxed'	Increased pain
Depression Anxiety and Stress Scale (DASS 21). ²⁹	
'I found it difficult to work up the initiative to do things'	Reduced energy Increased pain
'I was intolerant of anything that kept me from getting on with what I was doing'	Frustration at reduced mobility Pain and stiffness
Patient Health Questionnaire (PHQ9). ³⁰	
'Feeling tired or having little energy'	Mobility problems
	Reduced energy
'Moving or speaking so slowly that other people could have noticed'	Cognitive decline

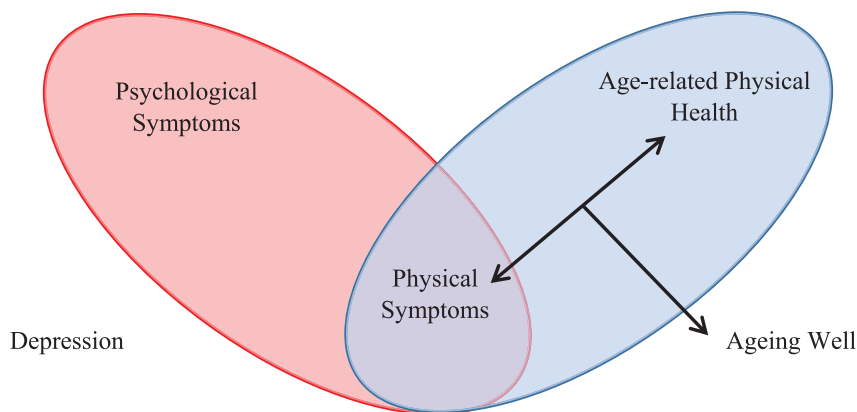


Figure 1. A theoretical model of the relationship between the symptoms of depression and ageing in older adults, moderated by ageing well.

age-related physical health will be impervious to how well a person has aged, as the 2 constructs have little conceptual overlap. Consequently, these psychological symptoms may be the more reliable indicator of depression in older adults, compared with the more physical symptoms.

Clinical Consequences

The blurred boundary between the physical symptoms of depression and ageing is plausible at a conceptual level. An empirical investigation, using latent variable analysis, testing the

hypothesis that items measuring the physical symptoms of depression and the age-related physical health represent 1 underlying factor, is urgently needed. If our suspicions are confirmed, this has implications for the use of questionnaire measures in clinical practice. The formal diagnosis of depression is largely conducted by professionals working in specialist services. However, antidepressants are routinely prescribed in the absence of a formal diagnosis,³³ and instead, evidence from several UK Trusts suggests that depression questionnaires are routinely relied on to inform antidepressant prescribing practices in

primary care.³⁴ The inaccuracy of these measures could lead to either (1) Type I errors (false positive – if the effects of ageing are misattributed as a symptom of depression) or (2) Type II errors (false negative – if the physical symptoms of depression are incorrectly linked to a physical health condition).

Antidepressants are frequently prescribed for depression,³⁵ and for older adults there is a risk that these medications exacerbate common pre-existing conditions such as bladder obstruction, incontinence, constipation, arrhythmias, and syncope.³⁶ Furthermore, antidepressant use is associated with an increased risk of falls – a risk that substantially increases when older adults are prescribed the newer classes of antidepressants such as selective serotonin reuptake inhibitors (SSRIs).³⁷ The overestimation of the symptoms of depression in older adults can therefore have serious health implications by virtue of inappropriate prescribing of antidepressants.

The poor recognition of depression in older people is equally undesirable. Besides the problems of prolonged and unnecessary suffering, there is evidence to suggest that an extended duration of untreated depression is associated with reduced efficacy of antidepressants (when they are eventually prescribed)³⁸ and increased risk of relapse.³⁹ An additional complication is reduced hippocampal volume,⁴⁰ this is of particular concern as there is some evidence to suggest that depression-related hippocampal atrophy is associated with pervasive mild cognitive impairments,⁴¹ and an increased risk of developing dementia.⁴²

We need to ensure that we have valid and reliable means of measuring depressive symptoms in older adults who are sensitive and specific, ensuring that help is directly appropriate to those with mental health needs. We postulate that to achieve this more weight will need to be given to the psychological symptoms of depression and less to the physical symptoms. With more valid measures of depression for older adults we will not only be able to screen symptoms more accurately but also be able to conduct more meaningful exploratory research of the relationship between mental and physical health in older adults.

Determining Causality

The main driver for addressing the conceptual and measurement overlap between ageing and depression is to avoid the negative clinical consequences that can come from misattributing symptoms. However, as an added benefit it will progress our understanding of how mental and physical health are related in older adults. To date, studies exploring this research question are largely cross-sectional. There is some suggestion that physical health conditions can increase the risk of mood disorders,⁴³ but it is equally plausible that the self-neglect experienced with depression can lead to physical health problems.⁴⁴ This ‘chicken and egg’ dilemma will be better understood once we have a valid and reliable means of discriminating between the 2 constructs. Determining the direction of causality would facilitate active management of the primary difficulty and potentially the prevention of sequelae.

An Example of Good Practice: Measuring Postpartum Depression

Much like with older adults, the experience of depression postpartum cannot be easily distinguished from physical health. The act of giving birth has a profound impact on the body. It is common for women to experience sleep problems, chronic pain, and exhaustion during the postpartum period.⁴⁵ Akin to the older adult literature, the presence of these physical health problems is associated with symptoms of postpartum depression.⁴⁶

In the postpartum context, unlike the older adult literature, the impact that this comorbidity could have on outcome measurement has long been acknowledged. Generic measures of depression (such as the BDI²⁸) are not recommended for use with women postpartum because of the overlap between the physical symptoms of depression and the physical impact of giving birth on the body.⁴⁷ The most widely used measure of postpartum depression, the Edinburgh Post Natal Depression Scale [EPDS],⁴⁸ was purposely designed to address this issue. The EPDS is composed of 10 items, all of which target the psychological symptoms of depression, such as feeling overwhelmed, worried, and unable to have a positive outlook. The EPDS is sensitive to the context within which depression may occur; we propose that a similar approach is needed for the measurement of depression in older adults. As there is insufficient evidence to support the use of current depression measures for older adults,²² it may be pertinent to first test the suitability and psychometric properties of the EPDS with older adults, including assessment of its discriminant validity when compared with measures of physical health and ageing. However, this research should be mindful of the demographic (sex) and generational (age) differences between the postpartum and older adult populations, and the potential impact that this might have on willingness to disclose psychological symptoms of depression.⁴⁹



Conclusions

Consultation with a specialist older adult psychiatrist or geriatrician can help distinguish between ageing and depression. However, these clinicians cannot be routinely accessed. There is a need for measures of depression that are specific to older adults. At the conceptual level, there are substantial similarities between the physical symptoms of depression and ageing. All measures of depression that have been validated in the general adult population need also to be validated with older adults, including the oldest old, with an assessment of their discriminant validity compared with a measure of age-related physical health. Moreover, these validity checks need to be assessed in light of potential moderators. If existing tools are not amenable to modification, there will be a need to develop an instrument de novo.

Author Contributions

The initial draft of the paper was produced by CMH, with content and editorial contributions from CJJ and HES. The final draft of the paper was approved by all of the authors.

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