

Grip strength, sleep status and depression

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Frailty screening in community-dwelling older adults offers an opportunity for early identification to mitigate downstream disease burden. Hand grip strength as a simple, reliable and easy-to-administer screening tool for the early detection of physical frailty has garnered significant interest in large-scale cohort studies.¹

This prospective cohort study of European middle-aged and older adults, by Ma et al., examined the independent and combined associations between grip strength, sleep disturbance and the risk of depressive symptoms.²

The study was derived from the Longitudinal Survey of Health, Ageing and Retirement in Europe, which spanned 11 years. With its prospective design, the study appears to address a crucial gap in literature. The prospective design, exclusion of pre-existing depressive symptoms and large sample size are notable strengths of the study.

The most important findings were that low baseline grip strength and sleep disturbance were each independently and synergistically associated with a significantly elevated risk of a single occurrence of depressive symptoms. Combined low grip strength and sleep disturbance had a substantially higher risk of depressive symptoms than with either factor alone. The synergistic effects between the 2 factors were particularly associated with a significantly elevated risk of recurrent depressive symptoms.

This longitudinal and sizable study highlights the importance of muscle health, mood and psychological well-being as components of healthy ageing, which aligns with both the Asian Working Group for Sarcopenia Consensus Update³ and the World Health Organization's Integrated Care for Older People approach,⁴ with its emphasis on the intrinsic domains of locomotion, vitality and psychological well-being.

Lifestyle factors, including smoking and alcohol use, were used as covariates in adjusted models. Older adults with depressive symptoms, had a higher prevalence of low grip strength and sleep disturbance but lower alcohol consumption. The counterintuitive findings, discussed by the study authors, indicate reverse causation. Social engagement patterns are

arguably understandable in a European context; nevertheless, they highlight the role of culture in mediating lifestyle factors and limit generalisability to other populations.

These data can be considered confirmatory but offer greater precision than previous analyses. For example, a 2026 meta-analysis demonstrated that low grip strength was associated with a higher odds of depressive symptoms over time; however, the magnitude of that association was small.⁵ Previous studies have also shown that lower grip strength is associated with sleep disturbance.⁶⁻⁸

While the study results by Ma et al. seem plausible, the methodological limitations are worth considering. The assessment of outcomes, while appropriate for a study of this scale, limits the validity of the results. Self-reported sleep measures, rather than objective measures, are prone to bias. This is especially true when considering mental health issues such as depression. Another methodological challenge when assessing sleep and depression is the potential for incorporation bias, as disturbed sleep is a key feature of depression screening tools.

In a secondary analysis of an existing cohort, there will always be variables of interest that are not easily available. In this case, nutritional status and more granular measures of medication use would have been relevant. A pilot study found that frailty and depression were strongly interconnected; higher grip strength was associated with better nutritional status.⁹

Psychotropic drugs are frequently prescribed in older adults. They are among the common causes of polypharmacy in older adults and are associated with adverse events such as falls, frailty and disability.¹⁰⁻¹¹ Unmeasured confounders in this study, such as psychotropic medications, polypharmacy and over-the-counter sleeping aids, warrant inclusion in future studies. Finally, the population is limited to a European cohort, and replication in other geographically and ethnically diverse populations is needed.

Age and sex-related differences in muscle loss variability are important confounders highlighted in the prevailing literature on grip strength.⁸ Ma et al.

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accounted for these through stratified analyses. The study found a significant association between low grip strength and the risk of depressive symptoms among adults aged 70 years and older, while sleep disturbance was associated with an increased risk of depressive symptoms across all age groups with the effect size increasing with age. A synergistic effect of low grip strength and sleep disturbance was observed across all age groups, with the highest risk among those aged 50–59 years.

An Asian study by Kamide et al. found that grip strength declined with age in both men and women.¹² A cross-sectional study by Wang Y et al. among older adults aged 60 years and over, explored the relationship between physical activity, physical frailty and depressive symptoms.¹³ In this study, grip strength, gait ability and muscle mass were measured. The study participant demographics included measurement of body mass index. The authors concluded that grip strength and gait ability may be better indicators of frailty for predicting depressive symptoms in older men, whereas physical activity may be a more useful predictor of depressive symptoms in older women.

Ma et al. adjusted for health status and chronic diseases; however, body weight, an important consideration when assessing muscle strength, was not adjusted for. Depressive symptoms in this study cohort were screened using a self-rating scale, i.e. the 12-item European Depression Scale.^{2,14} Wang et al. highlighted the usage of Geriatric Depression Scale-15, a self-rated scale, validated among older adults in urban China.^{15–16} Despite the methodological and measurement differences, both studies have shown that low grip strength was significantly associated with a greater risk of depressive symptoms in men. Additionally, the study by Ma et al. showed that combined low grip strength and sleep disturbance was associated with a significant risk in both sexes, with higher risks in men.

Notwithstanding the limitations of Ma et al.'s study, what are the implications for clinicians and policy-makers? The high prevalence of depressive symptoms in middle aged and older adults, and the synergistic effects of low grip strength and sleep disturbance could support arguments for screening for these conditions. A holistic approach to frailty screening and identification warrants the inclusion of mental health; refreshingly, the study attempts to address that.

Ethics statement

Not applicable, as no study participants were involved.

Declaration

The authors declare there are no affiliations with or involvement in any organisation or entity with any

financial interest in the subject matter or materials discussed in this manuscript. All authors have no conflicts of interest to declare.

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