

Artificial Intelligence Companionship Robots Improving Depressive Symptoms in Older Adults: A Systematic Review

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Abstract:

Background: The global geriatric population is expected to double from 8.5% to 17% (2015-2050), warranting investigation of the health issues most pertinent to this population. A major issue is depression, which is debilitating but often overlooked, with an estimated global prevalence of 7% in older adults. Artificial Intelligence (AI) robot companions have emerged for use in geriatric care, but no recent systematic reviews have clarified their impact on depressive symptoms. This review aims to explore the efficacy of AI robot companions in reducing depressive symptoms within the geriatric population.

Methods: We conducted a systematic review, searching Medline, Embase and Cochrane databases for English-language studies published between January 1 2003 and May 4 2023, with participants >65 years old assessing AI companionship robots for depression. Titles and abstracts were screened by two independent reviewers. Included quantitative results were meta-analyzed using a random effects model and qualitative results were subjected to thematic analysis. Assessments for risk of bias and publication bias were performed.



Results: From 641 results, 7 studies with quantitative results and 6 with qualitative results met the inclusion criteria. Meta-analysis showed AI robots had no statistically significant impact on depressive symptom scores (standardized mean difference = 0.21, 95% confidence interval [-0.10, 0.51]), but qualitative findings demonstrated favourable views towards robot companions, particularly in terms of participant-reported reductions in loneliness (5 of 6 qualitative studies) with use.

Conclusion: In the geriatric population, whilst quantitative data showed no significant difference between AI robots and standard care for depression, qualitative findings demonstrated potential for companionship robots to be considered for depression. However, validity and reliability of results were impacted by the lack of high-quality studies, with many limited by small sample sizes, and short study durations. Further investigation is recommended for more conclusive evidence due to the limitations of some studies.