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Social scaffolding: Enhancing neuroplasticity and Alzheimer's prevention through interpersonal engagement

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ABSTRACT

Introduction: Alzheimer's disease is defined by a relentless accumulation of amyloid-β plaques and neurofibrillary tangles, which drive the progressive cognitive decline seen in aging populations. With pharmacological options currently limited in their ability to halt disease progression, there is an urgent need for non-pharmacological strategies that support 'cognitive reserve'. This project targets the critical gap in social engagement within elderly care, aiming to harness the brain's inherent capacity for neuroplasticity. By focusing on low-cost, high-impact social interventions, we aim to prove that meaningful interpersonal connection can serve as a powerful, accessible tool for enhancing both the neurobiology and the quality of life for the elderly. **Materials and Methods:** The proposed program incorporates a series of structured group activities aimed at enhancing cognitive, emotional, social, and physical functioning among older adults. **Results:** Reminiscence-based discussions are used to facilitate the sharing of meaningful life experiences, thereby supporting memory activation and strengthening social engagement. Complementing this, gardening activities provide opportunities for light physical engagement while promoting motor coordination, psychological well-being and a sustained sense of purpose. Cognitive functioning is further reinforced through interactive tasks such as puzzles, drawing, and board games, which collectively stimulate attention, memory processes, and fine motor skills. Additionally, music and movement sessions are integrated to encourage emotional expression, trigger memory recall and maintain physical activity, ultimately contributing to a holistic improvement in overall quality of life. Based on existing neurobiological studies, we expect the intervention to demonstrate a measurable increase in participant engagement. We hypothesize that these social stimuli will promote hippocampal neurogenesis and strengthen synaptic connections, providing a biological buffer against neurodegeneration in elderly with and without Alzheimer's disease. **Conclusion:** Social scaffolding plays an important role in supporting neuroplasticity and may help reduce the risk of Alzheimer's disease. Regular, meaningful social interaction strengthens cognitive processes, reinforces neural connections, and supports the brain's ability to adapt over time. Through collaborative learning and emotionally supportive relationships, individuals can build cognitive reserves and potentially delay cognitive decline. As Alzheimer's rates continue to increase worldwide, promoting social engagement offers a practical and accessible strategy for maintaining brain health. Further research is needed to better understand how social connections directly influence neuroplasticity and dementia prevention.