

The Efficacy of Gerontechnology-Based Cognitive Stimulation Therapy on Cognitive Performance and Well-being of Cognitively Impaired Older Adults

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Background

The advancement of gerontechnology presents significant potential for enhancing psychogeriatric care and cognitive rehabilitation. By integrating digital modalities within structured therapeutic frameworks, clinicians create immersive, multisensory environments that foster neuroplasticity and patient engagement. Distinct from conventional Cognitive Stimulation Therapy (CST), the CST employed in this study incorporates diverse forms of gerontechnology in each session to deliver high-intensity, tailored cognitive interventions. Through interdisciplinary collaboration between occupational therapists and nurses, the study examines its clinical efficacy across four domains: cognitive functioning, psychological well-being, communicative competence, and overall quality of life.

Objective

To evaluate the clinical efficacy of the gerontechnology-based CST program on (1) cognitive performance (2) psychological well-being (3) communication ability, and (4) quality of life among psychogeriatric inpatients with cognitive impairment.

Methodology

Single-arm pre-post intervention feasibility study with 13 participants aged 69-83 years (M=74.6, SD=4.8) from a psychogeriatric inpatient ward. The intervention utilized Smart Care technologies including interactive sensory projection, TV-based games, virtual reality, and cooking activities to strengthen therapeutic outcomes via interprofessional collaboration. A total of 14 standardized CST sessions were administered over seven weeks, with each session lasting 45-60 minutes and twice weekly. Validated outcome measures included the Hong Kong Montreal Cognitive Assessment (HK-MoCA), the Geriatric Depression Scale (GDS), the Quality of Life in Alzheimer's Disease (QoL-AD), and the Holden Communication Scale (HCS).

Result

Paired t-tests revealed statistically significant improvements across all outcomes with large effect sizes ($d > 0.8$) according to Cohen's conventions. Cognitive function improved by 16.4% ($p = 0.043$). Depressive symptoms reduced by 41.7% ($p = 0.030$). Quality of life enhanced by 12.4% ($p = 0.002$). Communication abilities improved by 34.4% ($p = 0.005$). The effect sizes, spanning 0.627 to 1.056, indicate clinically meaningful changes.

Table 1

	Pre-intervention (n=13)	Post-intervention (n=13)	P-value
HK-MoCA	12.23	14.23	0.043
GDS	5.15	3.00	0.030
QoL-AD	30.15	33.85	0.002
HCS	16.31	10.69	0.005

Conclusion

Gerontechnology-Based effectively enhanced cognitive performance, psychological well-being, communication, and reduced depressive symptoms. Moreover, it can also be applied in multidisciplinary psychogeriatric inpatient rehabilitation programs.

Figure 1



Figure 2

