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EVALUATING COGNITIVE THERAPY FOR DEPRESSION IN ELDERLY DEMENTIA PATIENTS: A QUASI-EXPERIMENTAL STUDY IN CHENNAI SENIOR CARE FACILITIES

Vijay Anand S[1,3,*], Fabiola M. Dhanaraj[1]. Anitha J[1], Susila C[3], Elango Ramakrishnan[2], Raja M[3]

[1]Meenakshi College of Nursing, MAHER (Deemed to be University), Chennai

[2]Psychiatric Nursing Department, Institute of Mental Health, Kilpauk, Chennai

[3]Billroth College of Nursing, Chennai

***Corresponding author**- Vijay Anand S

ABSTRACT

Background: Senile dementia combined with depression is a growing concern among elderly populations, especially those residing in institutional care. Cognitive decline and depressive symptoms often coexist, significantly impairing quality of life. There is an urgent need for non-pharmacological interventions to address these challenges in geriatric settings. This study aimed to evaluate the effectiveness of selected cognitive strategies in reducing senile dementia with depression, and to explore the lived experiences of elderly residents in geriatric homes in Chennai district, India. **Methods:** A mixed-method pilot study was conducted in two geriatric homes. Although initially designed as a quasi-experimental study with randomized assignment to study and control groups, the sampling approach was modified to purposive sampling due to feasibility constraints. The intervention group received structured cognitive strategies, while the control group received routine care. Quantitative data were collected through pre- and post-intervention assessments of dementia and depression, whereas qualitative data were obtained using in-depth interviews to explore residents' experiences with the cognitive interventions. **Results:** The findings revealed significant improvement in dementia and depression scores among the intervention group compared to the control group. Additionally, demographic factors such as age, religion, marital status, educational background, presence of health problems, and family visitation patterns were significantly associated with the effectiveness of cognitive strategies. Qualitative analysis identified five major themes: improved cognitive performance, enhanced mood, positive attitude shifts, better sleep quality, and an overall optimistic perception of life. Participants emphasized the supportive and engaging nature of the interventions, which contributed to improved psychological well-being. **Conclusion:** The study demonstrates that selected cognitive strategies are effective in reducing levels of senile dementia with depression among institutionalized elderly. These findings highlight the importance of integrating cognitive interventions into routine geriatric care practices. Such approaches can promote mental health, resilience, and overall quality of life among older adults in residential settings.

Keywords: Cognitive strategies; Senile dementia; Depression; Elderly; Geriatric homes**;** Geriatric; Health.

1. INTRODUCTION

Dementia and depression are significant public health challenges among the global elderly population, with prevalence and burden increasing rapidly in recent years. In 2021, it was estimated that over 57 million people worldwide suffered from dementia, with projections indicating this number will rise to 78 million by 2030 [1]. In India alone, approximately 3.8 million elderly individuals are affected by dementia, emphasizing the growing crisis in low- and middle-income countries [2].

Depression is also highly prevalent among older adults, with global pooled estimates suggesting that 31.7% of the elderly population experiences depressive symptoms, and prevalence rates ranging from 10% to over 30% depending on population and methodology [3]. Comorbid depression and dementia significantly impair quality of life, increase disability, and present major challenges to healthcare providers [4–6].

Non-pharmacological interventions are urgently needed to address these challenges in geriatric care. Cognitive therapy and structured intervention strategies have demonstrated statistically significant reductions in depressive symptoms among older adults, with large-scale studies documenting mean reductions in depression scores and sustained improvements in well-being, especially when compared to standard or routine care. For instance, randomized controlled trials have shown cognitive therapy to improve depression scores by more than 3 points (BDI-II scale) among elderly patients compared to controls, with notable clinical benefits maintained over time [7–10].

In light of this global context, the current study explores the effectiveness of cognitive therapy in reducing the prevalence and severity of comorbid dementia and depression among elderly residents in geriatric care facilities in Chennai, India. This manuscript presents both statistical outcomes and qualitative insights into the lived experiences of institutionalized elderly, highlighting the impact and value of integrating cognitive strategies into routine geriatric mental healthcare.

Aim of the study

The primary aim of this study is to evaluate the effectiveness of selected cognitive strategies in reducing senile dementia with depression, and to explore the lived experiences of elderly residents in geriatric homes in Chennai district, India.

Objectives

Primary Objective

- To assess the effectiveness of selected cognitive strategies on levels of senile dementia with depression among elderly residents in selected geriatric homes in Chennai.

Secondary Objectives

- To assess the prevalence of senile dementia with depression among elderly individuals in the selected geriatric homes.

- To measure pre- and post-intervention levels of dementia with depression in study and control groups.
- To determine the association of demographic variables (age, religion, marital status, education, health problems, family visitation patterns, recreational activities) with post-intervention outcomes.
- To explore the lived experiences and perspectives of elderly residents following the intervention.

Research Question / Hypotheses

- **Research Question**: Does the structured cognitive therapy intervention reduce the severity of senile dementia with depression among elderly residents in Chennai geriatric homes compared to standard care.
- **Quantitative Hypothesis**: Elderly residents receiving cognitive therapy will demonstrate significantly greater improvement in dementia with depression scores than those not receiving the intervention.

Technical Terminology Used

- **Cognitive Strategies**: Structured program involving memory exercises, orientation training, and mood management sessions.
- **Senile Dementia with Depression**: A clinical entity measured by standardized scales applied to elderly individuals.
- **Mixed-method Design**: Combines quantitative quasi-experimental methods (using pre-test and post-test evaluation) with qualitative phenomenological interviews.
- **Prevalence**: The proportion of elderly in geriatric homes diagnosed with both dementia and depression at baseline.

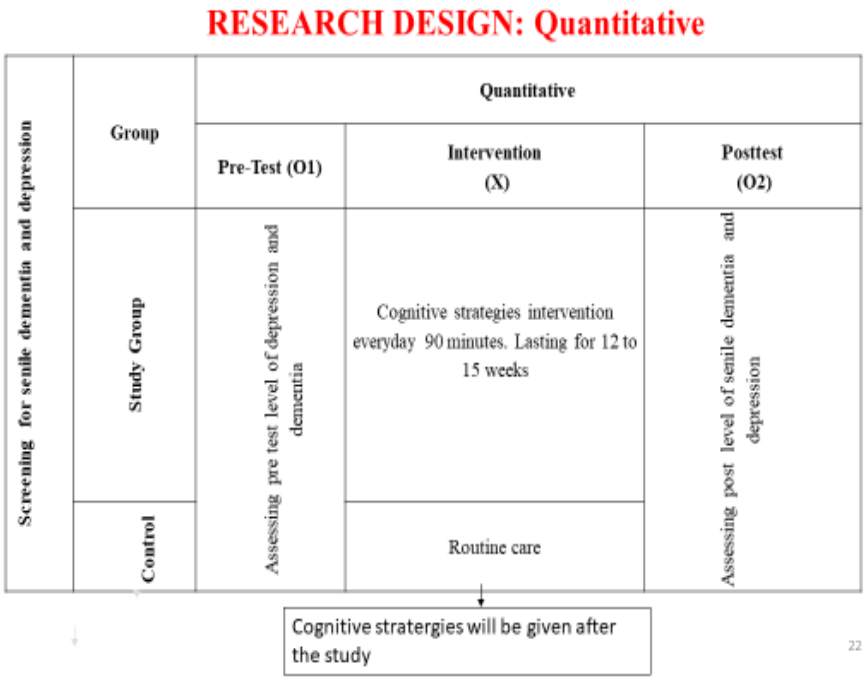
2. METHODOLOGY

2.1 Study Design

- **Research Approach:** Mixed-method (quantitative quasi-experimental + qualitative phenomenological)

- **Design:** Quasi-experimental with study and control groups, supported by qualitative interviews

Fig. 1 [A] Quantitative research design illustrating the process of screening, pre-testing,



intervention, and post-testing to evaluate the effectiveness of cognitive strategies on levels of dementia and depression in study and control group

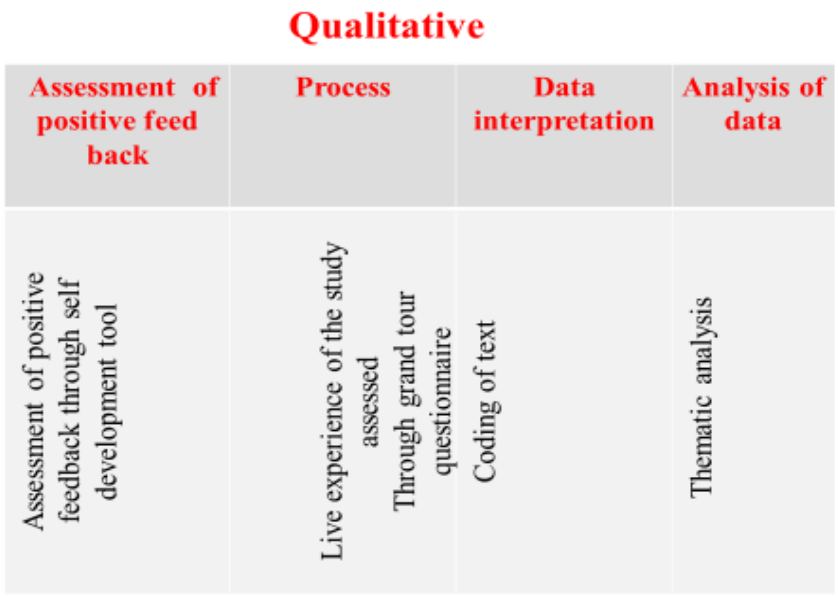


Fig. 1 [B] Qualitatative research design exploring the live-in experience on outcome of intervention among elderly who have senile dementia with depression.

2.2 Setting

- Two geriatric homes in Chennai district, India (Thayin koodu Geriatric Home, unit has 100 inmates (53 Men and 47women). One home assigned as study group (n=20), one as control group (n=20).
- Both settings provide free food, accommodation, and clothing.

2.3 Participants

- **Inclusion criteria:** Elderly aged up to 85 years, diagnosed with senile dementia and depression, residing in the homes during study.
- **Exclusion criteria:** Those not consenting or unable to participate due to severe comorbidities.

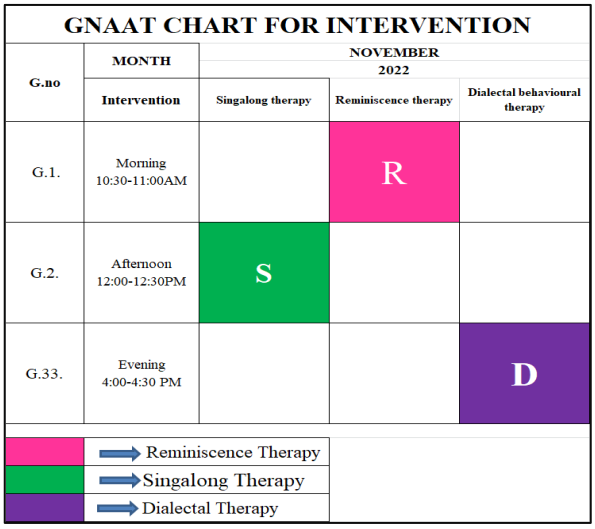
2.4 Sampling

- Purposive sampling due to restrictions during COVID-19 pandemic.
- Initial plan for randomization was altered in response to institutional constraints.

2.5 Intervention

- **Cognitive Strategies:** Structured program involving memory exercises, orientation training, and mood management sessions.
- **Duration:** Four weeks

Fig. 2 GNAAT chart for intervention



2.6 Data Collection

Quantitative Component

- **Assessment Instruments:** Standardized scale for dementia and depression
- **Outcomes Measured:** Pre- and post-intervention scores

Qualitative Component

- **Method:** In-depth phenomenological interviews with participants in the study group
- **Focus:** Themes around cognition, mood, attitude, behavior, sleep, sensory and thought perception

2.7 Data Analysis

- **Quantitative:** Descriptive statistics, t-tests, association tests

Qualitative: Thematic analysis

2.8 *Ethical consideration*

Formal ethical approval was obtained from the Institutional Ethics Committee of Meenakshi Academy of Higher Education and Research (CMCH-21-PR-323) Little Drops Public Charitable Trust (Home for Aged Destitutes) before initiating the research. All participants and, when necessary, their legal guardians were fully informed about the purpose, procedures, benefits, and potential risks of the study. Voluntary participation was emphasized, and it was clearly communicated that individuals had the right to withdraw from the study at any point without any consequences to their care.

3. RESULTS

3.1. To assess the prevalence of senile dementia with depression among elderly individuals in selected geriatric homes in Chennai District

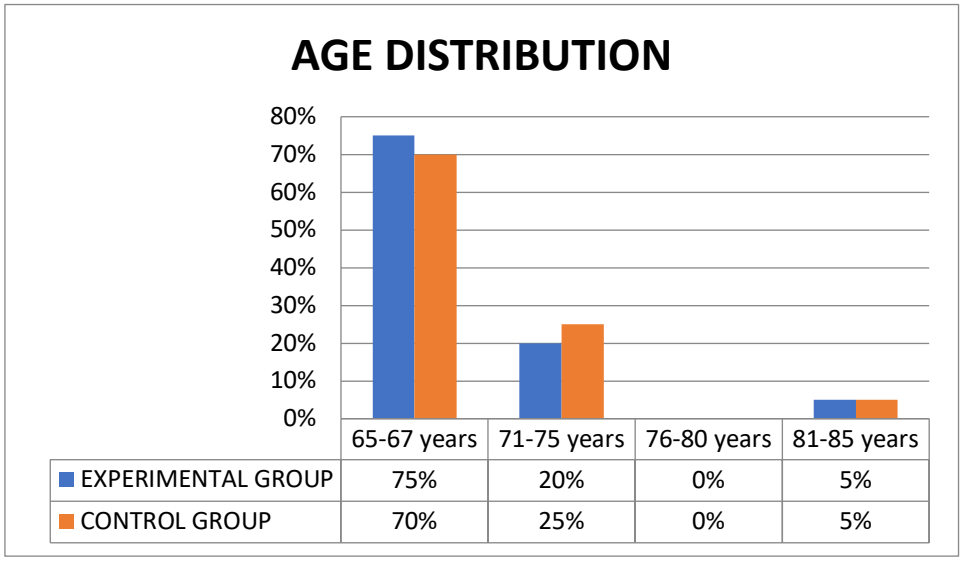


Fig. 3 Percentage distribution of age of elderly people with dementia and depression

Fig. 3 shows the age distribution of two groups: the experimental group and the control group. In both groups, the majority of participants are in the 65-67 years age range, with 75% in the experimental group and 70% in the control group. The 71-75 years age group makes up 20% of the experimental group and 25% of the control group. There are no participants in the 76-80 years category in either group, and both groups have an equal proportion (5%) of participants aged 81-85 years. Overall, the age distribution is fairly similar across both groups, with most participants in the younger age brackets (65-75 years).

3.2. To assess pre- and post-treatment levels of senile dementia with depression among elderly individuals in the study and control groups.

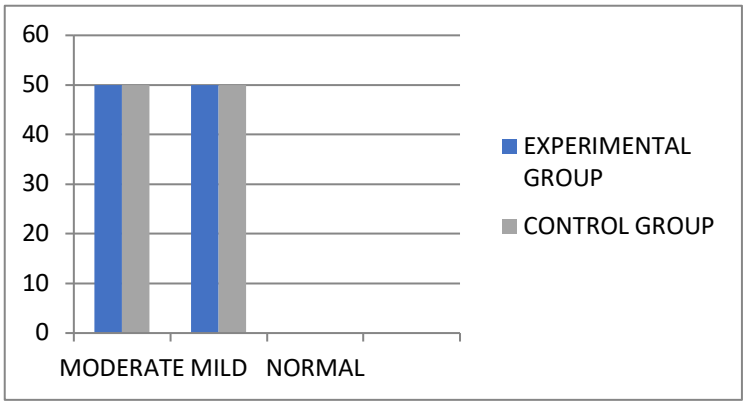


Fig. 4 Percentage distribution of dementia with depression in pre-test among elderly people

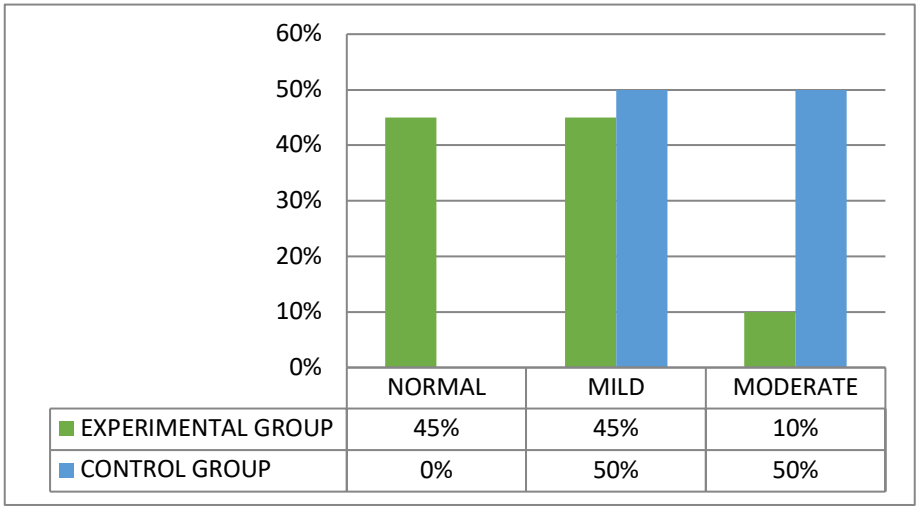


Fig. 5 Percentage Distribution Of Dementia With Depression Level In Post-Test Among Elderly People

Fig. 5 compares the distribution of subjects in experimental and control groups across three categories: Normal, Mild, and Moderate. In the experimental group, 45% of subjects fall within the Normal range, 45% are classified as Mild, and 10% as Moderate, whereas in the control group, none are Normal, 50% are Mild, and 50% are Moderate. This suggests that normal outcomes are exclusive to the experimental group, while the control group has higher percentages of subjects experiencing mild and moderate conditions, indicating that the experimental group performs better overall compared to the control group.

3.3 To evaluate the effectiveness of selected cognitive strategies on senile dementia with depression among the elderly in the study group.

Table 1 Effectiveness of the intervention on depression among elderly people residing in selected geriatric areas for the study group

Group	Effect Score on Senile dementia with Depression		
	Mean	SD	Paired t value and p value

Study group post-test	1.28	1.39	t = 9.236 p=0.000 ***
control group post-test	0.14	0.60	t = 2.320 p=0.076 (N.S).
Independent t-test and p-value	t =7.542 p=0.000 ***		

Note: ** - p<0.01 Level of Significant, N.S. – Not Significant

The table illustrates the effectiveness of an intervention aimed at reducing depression among elderly individuals with senile dementia. The study group showed a significant improvement post-intervention, with a mean effect score of 1.28 and a standard deviation of 1.39. This improvement was statistically significant, as indicated by a high paired t-value of 9.236 and a p-value of 0.000 (***), suggesting a strong impact of the intervention. In contrast, the control group, which did not receive the intervention, had a much lower mean effect score of 0.14 with a standard deviation of 0.60, and the result was not statistically significant (t = 2.320, p = 0.076). Furthermore, an independent t-test comparing the post-test scores of both groups yielded a significant result (t = 7.542, p = 0.000 ***), confirming that the intervention was effective in reducing depression among the elderly in the study group compared to the control group.3.4. To correlate the level of senile dementia with depression among the elderly in both study and control groups.

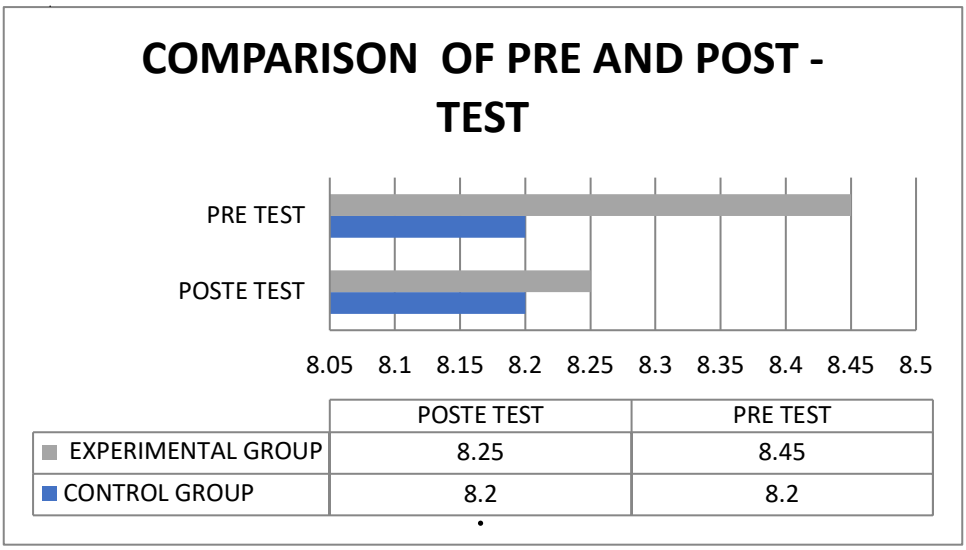


Fig. 6 Comparison of pre- and post-test level of dementia with depression among elderly people

Fig. 6 compares pre-test and post-test scores for both experimental and control groups. The experimental group started with a higher average pre-test score (8.45) than the control group (8.2) and experienced a slight decrease in the post-test average to 8.25. In contrast, the control group maintained nearly the same performance across both tests, with a minor dip from 8.2 (pre-test) to 8.2 (post-test). This suggests that the intervention or variable applied to the experimental group may have had little to no positive effect, as shown by the decrease in their mean score, whereas

the control group's performance remained stable. The overall differences between groups and test phases are minimal, indicating limited impact from the experimental condition.

3.5. Association of demographic variables with the level of Dementia with Depression in the post-test among elderly people with Dementia and Depression in Study group.

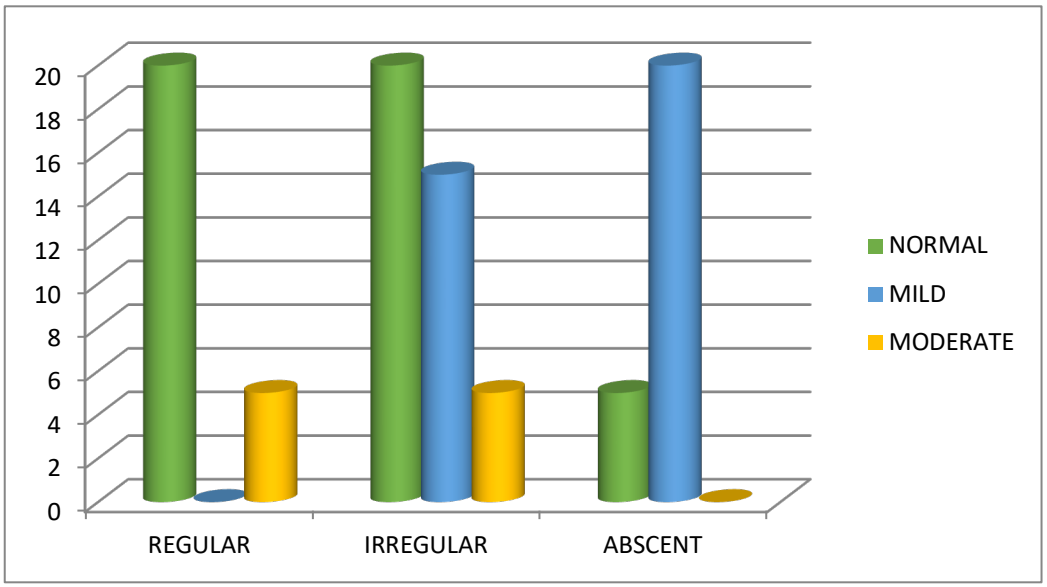


Fig. 7 Percentage distribution of recreational activities regarding post-test level of dementia with depression

The graph illustrates the percentage distribution of recreational activities among individuals, categorized by post-test levels of dementia accompanied by depression: specifically, levels marked as normal, mild, and moderate. For each activity type—regular, irregular, and absent—most individuals with a regular or irregular pattern of recreational activities fall within the "normal" category. Notably, the "normal" group represents the highest percentage in both regular and irregular activity patterns, pointing to a strong association between consistent recreational engagement and better cognitive and emotional outcomes. The "mild" level is almost negligible in the regular group but rises sharply in the irregular group and becomes the dominant category in the absent activities group, suggesting a potential risk of higher dementia and depression symptoms when such activities decline. The "moderate" level remains modest across all patterns but is slightly higher for regular and irregular activity groups compared to the absent group. Overall, the analysis highlights that maintaining regular or at least some degree of irregular recreational activities correlates with lower post-test levels of dementia and depression, underlining the importance of recreational engagement in cognitive and mental health maintenance.

4. DISCUSSION

The findings from this study provide significant insights into the prevalence and impact of senile dementia with depression among elderly individuals in selected geriatric homes in Chennai District. The results indicate a concerning prevalence of dementia and depression within this population, particularly among those aged 65 to 75 years, which aligns with existing literature that

highlights the vulnerability of this age group to cognitive decline and associated mental health issues.

The age distribution of participants reveals that the majority fall within the 65-67 years range, with a notable absence of individuals in the 76-80 years category. This may suggest that early intervention strategies are crucial for this demographic, as the onset of dementia and depression often begins in the earlier stages of aging. Understanding the age-specific prevalence allows healthcare providers to tailor interventions effectively to this at-risk group.

The assessment of pre- and post-treatment levels of senile dementia with depression highlights the effectiveness of the intervention implemented in the experimental group. The significant improvement observed in the experimental group, with 45% classified as Normal post-intervention, contrasts sharply with the control group, where no participants achieved Normal status. The paired t-test results, demonstrating a high level of significance ($p = 0.000$), reinforce the necessity of incorporating such interventions into routine care for elderly individuals facing these challenges. Additionally, the correlation of recreational activities with dementia and depression levels indicates a strong relationship between engagement in regular activities and improved cognitive and emotional outcomes. The findings suggest that individuals who maintain a consistent pattern of recreational engagement are less likely to experience severe symptoms of dementia and depression. Furthermore, the demographic analysis in relation to post-test levels of dementia with depression emphasizes the importance of recognizing individual differences in response to interventions. The findings suggest that demographic variables may play a role in how effectively individuals respond to treatment, highlighting the necessity for personalized approaches in care strategies.

5. CONCLUSION

The study reveals a significant prevalence of senile dementia with depression among elderly individuals in selected geriatric homes in Chennai District, particularly within the 65-75 age range, showing the need for early intervention strategies. The results indicate that cognitive strategies implemented in the experimental group led to marked improvements in mental health outcomes, with 45% achieving normal levels post-intervention, in stark contrast to the control group, which showed no participants reaching normal status. Furthermore, the analysis highlights a strong correlation between regular recreational activities and lower levels of dementia and depression, suggesting that consistent engagement in such activities is crucial for cognitive and emotional well-being. Overall, these findings emphasize the importance of tailored interventions and the promotion of recreational engagement as essential components in addressing the mental health needs of the elderly population.

Author contributions

VS and FM were involved in the conceptualization of the study. VS, FM, and AJ contributed to data management and analysis for the study. VS drafted the manuscript. SC, ER, and RM reviewed the manuscript and provided suggestions. All authors have read and approved the final manuscript.

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Data Availability

Data will be made available upon request made to the corresponding author.

Patient Consent for Publication

Not applicable.

Conflict of interest: *All authors confirm that they do not have any conflicts of interest to disclose.*

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