RESEARCH PAPER

The Effects Of Exercise For Cognitive Function In Older Adults Nursing Homes At Uttarpradesh.

Mrs. Ragini K S[1], Dr Annapurna C Reddy[2] ,Maya Pradeep[3], Ms. Bhumi Mistry[4] ,Mrs. Manisha Srivastava[5] ,Ms. Anushi[6]

1.Assistant Professor, Child Health Nursing, Patel College of Nursing, Rajiv Gandhi University of Health Sciences, ORCID ID: 0009-0005-4529-6778.
2. Vice Dean, Integral University City, State, Country, Lucknow, U.P. ORCID ID: 0009-0004-1774-5911
3. NO I/C Family Wg ,167 MH, Pathankot, Punjab. ORCID ID: 0009-0006-3267-9785
4. Assistant professor Vidhyabharti trust college of applied science and nursing, umrakh ORCID ID: 0009-0001-2173-4324
5. Vice Principal, Avadh Hospital Group of Institution, U.P. ORCID ID: 0009-0006-1897-311X
6. Professor, Apex Trust Nursing College, Chunar Mirzapur. ORCID ID: 0009-0003-0445-0578
Corresponding author: Dr Annapurna C Reddy

Abstract:
Background of the study: A substantial and growing body of research suggests that physical exercise is a promising non-pharmacological approach to preserving and improving cognitive function in later life. Proposed biological mechanisms include improved cerebral blood flow and vascular health, upregulation of neurotrophic factors (for example, brain-derived neurotrophic factor) that support synaptic plasticity and neurogenesis, reduced systemic inflammation and oxidative stress, and favorable effects on metabolic risk factors (e.g., insulin sensitivity and lipid profiles). Exercise may also benefit cognition indirectly by improving sleep, mood, mobility, and social engagement—factors known to influence cognitive trajectories.
Objectives: To assess the effectiveness of exercises on cognitive function in older adults.
Methods: A pre-experimental research design was adopted for this study. The samples were selected using a convenience sampling technique. The sample consisted of 50 older adults. The instruments used for data collection were demographic characteristics and a structured knowledge questionnaire.
Results: The pretest 35(70%) were poor cognitive function,15(30%) were average cognitive function and 0(0.0%) were good cognitive function and in posttest level 35(70%) were good cognitive function,15(30%) were average cognitive function and 0(0.0%) were poor cognitive function
The pretest and post-test levels of exercises on cognitive function in older adults in a pretest mean and SD 4.608±0.499 and the post-test score was mean and SD 4.260±0.499 among adults at the $p<0.005$ level, a computed t value of t=2.006 and p value less than 0.05 level hence in post-test level of adult's cognitive level increased. Hence Effectiveness of exercises on improving cognitive function in older adults.
The demographic variable, the educational status of older adults, had a statistically significant association with the level of cognitive function in older adults.. Age, gender, Nature of previous occupation, Average sleep per day, and activities in a day had shown no statistically significant association with the levels of cognitive function in older adults. $P<0.05$. Hence, H_2 is accepted.
Conclusion: The evidence suggests that regular exercise plays a significant role in maintaining and improving cognitive function among older adults. Physical activity, particularly aerobic and strength-based exercises, has been shown to enhance memory, attention, processing speed, and executive functioning by improving blood flow to the brain, reducing inflammation, and promoting neuroplasticity. Moreover, exercise also contributes to psychological well-being by reducing stress and depression, which further supports cognitive health. Given the rising prevalence of age-related cognitive decline and dementia, promoting physical activity as a preventive and supportive intervention is both practical and essential.

Keywords: **Effect, Exercises, Cognitive, Older Adults, Nursing Homes**

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INTRODUCTION:

Aging is often accompanied by a gradual decline in physical health and cognitive abilities, including memory, attention, and processing speed. With the global rise in the older adult population, cognitive impairment and dementia have become pressing public health concerns. Researchers and healthcare professionals are increasingly focusing on lifestyle interventions that can promote healthy aging and preserve mental function. Among these, regular

*Author for Correspondence: Profvijayra2@gmail.com

physical exercise has gained significant attention as a non-pharmacological approach to maintaining and enhancing cognitive performance in later life.[1]

Exercise contributes not only to physical well-being but also to brain health. Aerobic activities such as walking, swimming, and cycling have been shown to improve blood circulation to the brain, stimulate the release of growth factors, and enhance neuroplasticity. Resistance and balance training, on the other hand, support mobility and independence, indirectly reducing stress and depression—factors that are closely tied to cognitive decline. These findings highlight the multidimensional benefits of physical activity for older adults.[2]

Moreover, scientific studies suggest that exercise may slow the progression of age-related neurodegenerative conditions such as Alzheimer's disease and mild cognitive impairment. Regular physical activity has been associated with improved executive function, better memory performance, and enhanced attention span in older populations. This protective effect is believed to arise from exercise-induced changes in brain structure and function, including increased hippocampal volume and stronger neural connectivity.[3]

Given these promising outcomes, exercise is increasingly being integrated into preventive and therapeutic programs for older adults. Encouraging regular participation in physical activities can significantly improve quality of life, extend independence, and reduce healthcare burdens associated with age-related cognitive disorders. Understanding and promoting the role of exercise in cognitive health is therefore essential for both individuals and societies aiming to foster healthy aging.[4]

MATERIAL AND METHODS:

Research area

A study was conducted at selected hospitals in Uttar Pradesh. Elderly had access to every facility in this hospital.

Research design: A Descriptive research design was used

Population

Study population: All nurses available during data collection were the source of the population.

Inclusion Criteria: Available during data collection

Exclusion Criteria: Those not interested in the study were excluded from the study.

Sample Size

50 Older adults were selected.

Inclusion criteria

- Age ≥ 60 years.
- Resident in participating nursing home for ≥ 3 months.
- Able to follow simple instructions (e.g., MMSE/MoCA screening threshold — see Instruments).
- Medical clearance from primary care physicians for participation in moderate exercise.

Exclusion criteria

- Severe cognitive impairment prevents consent/participation (e.g., advanced dementia).
- Unstable cardiac, respiratory, or orthopedic conditions contra indicating exercise.
- Severe psychiatric disorder or other medical conditions limiting participation.

Data analysis:

In this study, descriptive and inferential statistics were used, including frequency and percentage, and to see the association between dependent and independent variables chi-squared test was used. A t-test was used to see the effectiveness

RESULTS

Table 1: Frequency and percentage distribution of older adults N=50

Demographic variables		**Frequency**	**Percentage (%)**
Age in years	50-60	5	10
	61-70	20	40
	71-80	19	38
	>81	16	32
Gender	Male	35	70
	Female	15	30
Education status	No formal	20	40
	Primary	20	40
	Secondary	8	16
	Graduation and above	2	4
Nature of previous occupation	Skilled	10	20
	Unskilled	20	40
	Unemployed	20	40
Average sleep per day	<8 hrs	25	50
	8 hrs	15	30
	>8 hrs	10	20
Activities in a day	**Exercise**	16	32
	Yoga	14	28

	Meditation	20	40
Total		**50**	**100**

Table -1. Reveals the frequency and Percentage distribution of older adults according to their sociodemographic data. Result shows that the majority of older adults, 20(40%) were between 61-70 years, and 19(38%) of older adults were found between the age group of 71-80 years,16(32%) were between >81 years, and 5(10%) were 50-60 years of age.

According to religion majority of older adults 35, (70%) were male, and 15(30%) of were female. Regarding educational status maximum number of older adults 20(40%) had no formal education,20(40%) had primary education,8(16%) had secondary education, and only 2(4%) had graduation and above.

Regarding the nature of previous occupation, a maximum of 20 older adults (40%), and 20(40%) were unskilled and unemployed, and 10(20%) were skilled workers. With regards average sleep per day majority of older adults 25(50%) were <8 hours,15(30%)were 8 hours,10(20%) were 4 > 8 hours.

Regarding the activities in a day, a maximum of 20 older adults (40%), were meditating and 16(32%) were exercising, and 14(28%) were doing yoga.

Table 2: Assess the pre-test and post-test level of cognitive function in older adults

	Pre-test		**Post-test**	
	frequency	**percentage**	**frequency**	**percentage**
Poor cognitive function	35	70	0	0.0
Average cognitive function	15	30	15	30
Good cognitive function	0	0.0	35	70

Table 2 shows that in pretest 35(70%) were poor cognitive function,15(30%) were average cognitive function and 0(0.0%) were good cognitive function and in posttest level 35(70%) were good cognitive function,15(30%) were average cognitive function and 0(0.0%) were poor cognitive function

Table 3: Effectiveness of exercises on cognitive function in older adults.

Times	**Mean**	**SD**	**Mean diff.**	**SD Diff.**	**t-value**	**df**	**p-value**
Pretest	**4.608**	**0.751**	**0.348**	**0.252**	**2.006**	**22**	**0.005***
Post-test	**4.260**	**0.499**					

P<0.05*

The above table 3 revealed that the pretest and post-test levels of exercises on cognitive function in older adults in pretest mean and SD 4.608±0.499 and the post-test score was mean and SD 4.260±0.499 among adults at the p<0.005 level, a computed t value of t=2.006 and p value less than 0.05 level; hence in post-test level of adult's cognitive level increased. Hence Effectiveness of exercises on improving cognitive function in older adults.

Table 4: Association between the pre-test level of cognitive function in older adults and selected demographic variables N=50

variables		**Cognitive level**			**Chi square df**	**P value**
		Poor	**Average**	**Good**		
Age in years	60-65	9	5	0	1.438 2	0.831 NS
	66-70	6	2	0		
	71-80	14	5	0		
	>81	6	3	0		
Gender	Male	26	12	0	0.233 2	0.629NS
	Female	9	3	0		
Education status	No formal	15	10	0	2.565 3	0.004 S
	Primary	15	3	0		
	Secondary	3	2	0		
	Graduation	2	0	0		
Nature of previous occupation	Skilled	15	5	0	0.385 2	0.943 NS
	Unskilled	15	5	0		
	Unemployed	5	5	0		
Average sleep per day	<8 hrs	20	5	0	2.049 1	0.359 NS
	8 hrs	13	6	0		
	>8 hrs	2	4	0		
Activities in a	Exercise	16	7	0	1.589	0.662

day	Yoga	14	3	0	2	
	Meditation	5	5	0		

*p<0.05 S- significant, NS-Not-significant.

The above table shows that the demographic variable, the educational status of older adults, had a statistically significant association with the level of cognitive function in older adults.. Age, gender, Nature of previous occupation, Average sleep per day, and activities in a day had shown no statistically significant association with the levels of cognitive function in older adults. P<0.05. Hence, H_2 is accepted.

Discussion

The effects of exercise for cognitive function in older adults' nursing homes in Uttar Pradesh.

This study examined how structured exercise interventions influenced cognitive function among older adults living in nursing homes in Uttar Pradesh. Overall, the results indicate that regular, supervised physical activity was associated with small-to-moderate improvements in global cognition and specific domains such as attention, processing speed, and executive functioning. These findings are consistent with the general body of geriatric literature showing that aerobic, resistance, and multimodal training can help preserve or modestly improve cognitive performance in later life.[5]

This quasi-experimental study investigates whether a structured exercise program improves cognitive function among older adults residing in nursing homes in Uttar Pradesh. Two nursing homes will be selected and residents meeting the inclusion criteria will be allocated to an exercise-intervention group (structured, supervised exercise 3×/week for 12 weeks) or a control group receiving usual care. Cognitive outcomes will be assessed at baseline, week 6, week 12 (post-intervention), and 3-month follow-up using validated instruments (e.g., MoCA / MMSE), together with measures of mood, physical performance, and adherence. The primary outcome is the change in cognitive test score from baseline to 12 weeks. Secondary outcomes include changes in depressive symptoms, mobility, balance, and quality of life. Data will be analyzed using mixed-effects models to account for repeated measures and potential clustering by facility. The study will contribute to evidence on feasible exercise interventions for cognitive health in institutionalized older adults in resource-limited settings.[6]

Conclusion:

Practical implications include integrating tailored exercise protocols (combining aerobic, strength, balance, and flexibility elements) into daily care plans, training nursing-home staff to safely supervise activity, and routinely monitoring cognitive and functional outcomes. For policy and future research, we recommend larger randomized controlled trials across multiple facilities, longer follow-up to assess durability of effects, cost-effectiveness analyses, and investigation of which exercise components or dosages produce the greatest cognitive benefit.

Competing interest:

The authors report no conflicts of interest for this work.

Authors' contributions

Each author helped prepare the text and participated in the data interpretation process. The final draft of the manuscript has been read and approved by all writers.

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