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A Cross-Sectional Study To Examine Stress Among Elderly Individual With Mild Cognitive Impairment Living In Old Age Homes

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ABSTRACT
Background: As the world's population is aging, mild cognitive impairment (MCI) and other cognitive impairments are becoming more prevalent. Stress and coping mechanisms may be impacted by aging and there are chances of risk of behavioural problems in old age.
Study design: A Cross-sectional study
Aim: To examine stress among elderly individual with mild cognitive impairment living in old age homes.
Objective: To evaluate stress among elderly individual with mild cognitive impairment by using Perceived Stress Scale (PSS).
Participants: The participants were recruited based on exclusion and inclusion criteria. A total of 75 participants were included in the study.
Methods: - A cross sectional study design was conducted on 75 participants at Santosh college of Occupational therapy college, Ghaziabad. The Montréal cognitive assessment and perceived stress scale was use to assess the cognition and stress respectively.
Result: The average score of 17.25 acts as the primary indicator, reflecting the typical cognitive performance of the participants. This value is crucial for establishing a foundational understanding of the cognitive health of the group. The standard deviation of 3.68 demonstrates the extent of variability in cognitive scores among the participants, implying that individual scores generally differ from the mean by about 3.68 points. The sample variance of 13.52 further describes this variability, showing how scores are distributed around the mean and providing insight into the cognitive abilities within the sample.
Conclusion: The comparative analysis of cognitive performance and perceived stress among elderly individuals with mild cognitive impairment reveals distinct patterns in variability between the two assessments. The Montreal Cognitive Assessment (MoCA) scores display a relatively homogeneous distribution, suggesting that cognitive decline is a more uniformly experienced phenomenon across the population. In contrast, the Perceived Stress Scale (PSS) demonstrates a broader spread of scores, indicating that perceived stress is more individually variable and influenced by a complex interplay of psychological, social, and environmental factors.

Keywords: MCI, STRESS, MOCA, PSS, AD

INTRODUCTION:

Mild cognitive impairment (MCI) is a neurocognitive disorder that represents a transitional phase between normal aging and more severe neurodegenerative diseases such as Alzheimer's disease (AD). It is characterized by significant cogniti ve changes beyond what would be expected for a person's age or education, especially in memory or other cognitive skil ls. However, these changes are notsignificant enough to interfere with daily life. Approximately 50 percent of people dia gnosed with MCI will develop Alzheimer'sdiseasae within five years, while others may have stable or even progressive symptoms. Furthermore, MCI is not specific to Alzheimer's diease and may be associated with other types of dementia. Mild NCD), Global Classification of Diseases, effective January 1, 2022.[1] The Change reflects a Broader understanding of the disease and its role in neurocognitive
disorders. As awareness of cognitive decline increases, this often leads to depression, confusion, and anxiety.[2] Fear of de veloping dementia can exacerbate these feelings. Social isolation and lack of knowledge about participation in certain w orkplaces can also contribute to the psychological effects of MCI. Interventions can include skills training, opportunities for socialization, and creating a caring and supportive environment in the nursing home or home. Early diagnosis and management can reduce the impact of the condition, improve quality of life, and reduce stress.[3]
Thishighlights the need for greater awareness and effective measures to address health literacy issues in older adults. Ce rtain risk factorsuch as advanced age, family history of dementia, heart disease, and diabetes, may increase the risk of M

CI.[4] Early diagnosis is important because it provides an opportunity for intervention that can reduce cognitive impairme nt and support MCI patients and their caregivers.[5]

In the elderly population, chronic stress can exacerbate existing health conditions, weaken the immune system, and aid in the creation of new health issues[6]. For individuals with MCI, stress can further impair cognitive functions, potentially accelerating the progression to more severe cognitive impairments[7]. Chronic stress has been linked to adverse outcomes, including cardiovascular disease, depression, and anxiety, which can further complicate the health status of elderly individuals[8]

Understanding the sources and impacts of stress in elderly individuals with MCI living in old age homes is essential for developing effective interventions and support systems. Stressors in this context can be multifaceted, ranging from interpersonal conflicts with other residents or staff, to feelings of loneliness and isolation, to concerns about health and mortality. Research has shown that societal support able to play a critical part in mitigating stress and enhancing psychological well-being outcomes for elderly individuals. Effective social support can come from family, friends, healthcare providers, and the community at large[9].

There is a dearth of studies explicitly examining stress among senior people with MCI living in assisted living facilities, despite the increased awareness of the significance of mental health in the aged population. There is a knowledge vacuum about the particular difficulties faced by people with MCI since the majority of research focuses on the senior population as a whole or those with more severe cognitive impairments. By performing a cross-sectional investigation of stress levels among senior citizens with MCI living in assisted living facilities, this study seeks to close this gap[9.]

Because of their cognitive impairments, elderly people with MCI are especially susceptible to stress and may find it challenging to adjust to new situations and regular adjustments. Research has indicated that having MCI can raise the risk of stress and associated mental health conditions like anxiety and depression. Furthermore, MCI symptoms like memory loss and trouble making decisions can make people feel even more frustrated and powerless, which adds to stress.[10]

This study's focus on stress levels and sources among elderly individuals with Mild cognitive impairment in old age homes is both timely and essential. Elderly individuals have height fear not only to cognitive decline but also for emotional distress, as cognitive impairments can contribute to frustration, confusion, and anxiety. Understanding the specific stressors, they face whether related to their cognitive symptoms, the institutional environment, or social isolation will be key to developing targeted interventions

METHODOLOGY:

The total 75 participants included in the study by using the convenient sampling as per inclusion criteria ,Elderly people aged 60-75 years, Individual who are with mild cognitive impairment, score below than 26 through MoCA ,willing to participate in the study English/Hindi and exclusion criteria are Individual who have MoCA score above than 26,Individual with any chronic physical disability and Individual with any mental disability, Montreal cognitive assessment and perceived stress scale are the outcome measures was used for the analysis of outcome measures.

Outcome measures:

MOCA

The comparative analysis of cognitive performance (MoCA) and perceived stress (PSS) reveals critical insights into the challenges faced by elderly individuals with MCI, the reliability of MoCA has high test-retest reliability (ICC = 0.92, $p < 0.001$).

PSS

PSS is a classic stress assessment instrument. The Internal consistency reliability of the PSS-10 total and subscale scores was good in both language groups and the validity total score of PSS-10 ranges from 0 to 40, with higher scores indicating greater perceived stress and scores of 10 or more indicating moderate to high perceived stress.

DATA ANALYSIS

- The Microsoft excel data sheet will be used to make master chart.
- All statistical tests will be performed through the SPSS Software Version 29.0.0.
- After the data collection, result was analysed through Pearson's Correlation test.

RESULT

Table 1.0 Descriptive statistics of MOCA

Stats	**MoCA scoring outcome**
Mean	17.2533
Standard error	0.4245
Standard deviation	3.6764
Sample variance	13.5160

The table 1.0 provided summarizes key statistical measures related to the MoCA scores, The mean score of 17. 2533.The standard deviation of 3.6764 indicates the degree of variation in cognitive scores among the participants; in this context, it suggests that while the average score is 17.25, individual scores typically deviate from this mean by about 3.68 points. The sample variance of 13.5160 further quantifies this variability, illustrating how much the scores spread out from the mean. Lastly, the standard error of 0.4245 reflects the precision of the mean as an estimate of the true population mean, indicating that if we were to take multiple samples, the average MoCA score would likely fall within a small range of the observed mean.

Table 2.0 Descriptive statistics of PSS

Stats	**PSS scoring outcome**
Mean	37.6133
Standard error	0.9224
Standard deviation	7.9880
Sample variance	63.8079

The table summarizes key statistical measures related to the Perceived Stress Scale scoring outcomes. The mean score is 37.61, which indicates the average level of perceived stress among the individuals in the sample. The standard error is 0.92, reflecting how much the sample mean is expected to vary from the true population mean; a smaller value suggests a more accurate estimate. The standard deviation is 7.99, showing the degree of variation in the PSS scores; this means that most scores tend to vary by about 8 points from the average. Finally, the sample variance is 63.81, a measure of how spread out the scores are around the mean.

Table 3.0 ANOVA of MoCA

ANOVA-MoCA					
Source of variation	SS	MS	F	P-value	F crit
Between groups	80689.6	80689.6	5984.6	1.3646E-121	3.90506
Within groups	1995.47	13.4829			

The ANOVA table 3.0 presents an analysis of variance conducted on MoCA scores to assess the "Between Groups" variation, which captures the differences among the group means, has a Sum of Squares value of 80,689.6. The "Within Groups" variation, reflecting differences within the individual groups, has an SS value of 1,995.47, showing relatively minor variability within the groups. The Mean Square for "Between Groups" is the SS divided by the degrees of freedom, resulting in 80,689.6. The MS for "Within Groups" is 13.4829, calculated similarly. The F-value, which compares the MS of "Between Groups" to "Within Groups," is extraordinarily high at 5,984.6, suggesting that the differences between the group means are highly significant.

Table 4.0 ANOVA of PSS

ANOVA –PSS					
Source of variation	SS	MS	F	P-value	F crit
Between groups	25402	25402	657.592	2.54879E-56	3.90506
Within groups	5717.07	38.6288			

The table 4.0summarizes the results of an ANOVA, the “Between Groups” variation has a sum of squares of 25,402, indicating a substantial difference between group means. The mean square for this variation is also 25,402. The F-statistic, which is a ratio of the variance estimates, is 657.592, suggesting a strong effect of the independent variable on the dependent variable. The associated P-value is extremely low (approximately 2.55 × 10^-56), indicating that the differences observed are statistically significant, far below the common alpha level of 0.05. In contrast, the “Within Groups” variation has an SS of 5,717.07 and an MS of 38.63, reflecting the variability within each group. The critical F-value is 3.90506, which serves as a threshold to compare against the calculated F-statistic.

Table 5.0 Comparison of MoCA and PSS

Stats	MoCA scoring outcome	PSS scoring outcome
Mean	17.2533	37.6133
Standard error	0.4245	0.9224
Standard deviation	3.6764	7.9880
Sample variance	13.5160	63.8079

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The table 5.0 presents statistical outcomes for two assessments: the Montreal Cognitive Assessment, the mean score is approximately 17.25, with a standard error of 0.42. The standard deviation is 3.68, suggesting that scores vary moderately around the mean, while the sample variance is 13.52, which quantifies this variability. In contrast, the PSS scoring shows a mean score of around 37.61, with a larger standard error of 0.92. The standard deviation for the PSS is notably higher at 7.99, indicating greater variability in perceived stress among participants, as reflected in the sample variance of 63.81.

DISCUSSION:

The objective of this study was to assess the stress among mild cognitive impairment in living old age homes with outcome measured using the Montréal cognitive assessment scale and perceived stress scale respectively. The seventy-five participants were chosen based on the predetermined inclusion and exclusion criteria they all were above 60 to 75 years of age and have not participate any specific assessment. The Montreal assessment scale was used to assess the cognition, orientation, visuospatial, naming, memory, attention, abstraction and delayed recall and the perceived stress scale was used to assess the stress.

The present study's findings indicate that a significant proportion of elders residing in old age homes experience moderate stress (13.5), followed by high stress (37.6) and low stress (<7.9). These results are partially consistent with Panigrahi et al. (2015)**,** which reported that a higher percentage (86.66%) of elderly individuals experienced moderate stress. However, the findings from the current study suggest a more varied distribution of stress levels within this population.[1]

"This study also suggests an association between the levels of stress and the presence of mild cognitive impairment among elderly residents in old age homes. The findings indicate that a significant proportion of elders experience moderate stress (13.5%), followed by high stress (37.6%) and low stress (<7.9%). These results are partially consistent with those of Varghese et al. (2020), who found that 46.7% of elderly individuals in selected old age homes reported moderate stress, with a similar percentage (30%) experiencing mild and severe stress, respectively.

The significant findings from the ANOVA emphasize the importance of assessing both cognitive performance and perceived stress in elderly individuals with mild cognitive impairment. The elevated stress levels in this population warrant further research into the interactions between cognitive decline and stress, with the goal of identifying effective interventions that address both aspects of well-being. Given the complex interplay between cognitive function and emotional health, targeted approaches that consider both stress management and cognitive support may help improve the quality of life and slow the progression of MCI in elderly individuals.

CONCLUSION:

The comparative analysis of cognitive performance and perceived stress among elderly individuals with mild cognitive impairment reveals distinct patterns in variability between the two assessments. The Montreal Cognitive Assessment (MoCA) scores display a relatively homogeneous distribution, suggesting that cognitive decline is a more uniformly experienced phenomenon across the population. In contrast, the Perceived Stress Scale (PSS) demonstrates a broader spread of scores, indicating that perceived stress is more individually variable and influenced by a complex interplay of psychological, social, and environmental factors.

LIMITATION OF THE STUDY:

- Socioeconomic status of participants was not directly observed, which could lead to social desirability bias, potentially influencing the accuracy of the reported data.

FUTURE RECOMMENDATION:

- The heightened levels of stress within this group underscores the urgency for intervention that address both mental health and cognitive issues as managing stress may be crucial for enhancing overall well being
- Future research could be done with a larger sample size and could be conducted from various places for data collection.

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RERERENCES:

1)A.P. Rajkumar et al. Nature, prevalence and factors associated with depression among the elderly in a rural south Indian community. International psychogeriatric. 2009 Apr 21
2)May Zhou. Aging population a global challenge World Chinadaily.com.cn - [Internet]. 19th March 2020.
3) Vikaspedia. Senior Citizens - status in India. 18th March 2020.
4)Zia Pour A, Kiani Pour N. Factors Affecting Chronic Diseases among Elderly Residents in Nursing Homes (Eram and Mother) In Kermanshah. International Journal of Management and Humanity Sciences. 2014; 3:3962-66.
5) Juliana Nery de Souza-Talarico et al, Stress symptoms and coping strategies in healthy elderly subjects Revistada Escola de Enfermagem
6)WHO. Geneva. Aging and Life course, Family and Community Health. daUSP.Journal of Sao Paulo university school of nursing USP vol.43 no.4 Dec. 2009
7)Ghaderi, Shadi, et al. estimated the prevalence of depression and its associated factors in the elderly home residents in 2010. Journal of Aging. 2011 Spring; 7:24.
8) Albert, M. S., DeKosky, S. T., Dickson, D., et al. (2011). The diagnosis of mild cognitive impairment due to Alzheimer's disease: Recommendations from the National Institute on Aging and the Alzheimer's Association workgroup. *Alzheimer's & Dementia, 7*(3), 270-279.
9) Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385-396.
10) Nasreddine, Z. S., Phillips, N. A., Bédirian, V., et al. (2005). The Montreal Cognitive Assessment, MoCA: A brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society, 53*(4), 695-699.
11) Gulpers, B., Ramakers, I., Hamel, R., et al. (2016). Anxiety as a predictor for cognitive decline and dementia: A systematic review and meta-analysis. *American Journal of Geriatric Psychiatry, 24*(10), 823-842.
12) Johansson, L., Guo, X., Hällström, T., et al. (2010). Common psychosocial stressors in middle-aged women related to longstanding distress and increased risk of Alzheimer's disease: A 37-year prospective study. *Brain, 133*(4), 1256-1264.
13) Gatz, M., Pedersen, N. L., Berg, S., et al. (1997). Heritability for depressive symptoms in older adults: Results from the Swedish Adoption/Twin Study of Aging. *Psychology and Aging, 12*(2), 246-254.
14) Ownby, R. L., Crocco, E., Acevedo, A., et al. (2006). Depression and risk for Alzheimer disease: Systematic review, meta-analysis, and metaregression analysis. *Archives of General Psychiatry, 63*(5), 530-538.
15) Beaudreau, S. A., & O'Hara, R. (2008). Late-life anxiety and cognitive impairment: A review. *The American Journal of Geriatric Psychiatry, 16*(10), 790-803.
16) Pruessner, M., Pruessner, J. C., Hellhammer, D. H., et al. (1999). The associations among the acute and chronic stress response with brain morphology and function: Implications for aging and neurodegenerative diseases. *Neurobiology of Aging, 20*(2), 131-145.
17) Arvanitakis, Z., Wilson, R. S., Bienias, J. L., et al. (2004). Diabetes mellitus and risk of Alzheimer disease and decline in cognitive function. *Archives of Neurology, 61*(5), 661-666.
18) Yaffe, K., Fiocco, A. J., Lindquist, K., et al. (2009). Predictors of maintaining cognitive function in older adults: The Health ABC study. *Neurology, 72*(23), 2029-2035.
19) McEwen, B. S., & Gianaros, P. J. (2010). Central role of the brain in stress and adaptation: Links to socioeconomic status, health, and disease. *Annals of the New York Academy of Sciences, 1186*(1), 190-222.
20) Singh-Manoux, A., Richards, M., & Marmot, M. (2003). Leisure activities and cognitive function in middle age: Evidence from the Whitehall II study. *Journal of Epidemiology & Community Health, 57*(11), 907-913.
21) Sapolsky, R. M. (2004). Why Zebras Don't Get Ulcers: An Updated Guide to Stress, Stress-Related Diseases, and Coping. *Henry Holt and Co.*
22) Baumgart, M., Snyder, H. M., Carrillo, M. C., et al. (2015). Summary of the evidence on modifiable risk factors for cognitive decline and dementia: A population-based perspective. *Alzheimer's & Dementia, 11*(6),