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Comparative Study

Exploring The Impact of Social Isolation and Loneliness on Cognitive Health Amongst the Geriatric Population: A Comparative Study

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ABSTRACT

Social isolation and loneliness are significant concerns for the geriatric population, often leading to cognitive deficits and dementia. This comparative study aimed to understand the impact of social isolation and loneliness on cognitive health in older adults in India and investigate differences in loneliness and cognitive health scores between elderly individuals living with their families and those residing in old age homes. A quasi-experimental research design was employed, with a sample size of 102 older adults (64 females and 38 males) above the age of 60. The UCLA Loneliness Scale (version 3) and Mini Cog Test were used to collect quantitative data, which was analyzed using regression analysis. The results revealed a significant impact of loneliness and social isolation on cognitive health ($R = .358$, $p < .001$) and a significant difference in the impact of loneliness on cognitive health between people living with their families and those living in old age homes ($p < .05$). The findings emphasize the need for interventions targeting social isolation and loneliness in the geriatric population, particularly for those living in old age homes. Future research should focus on developing and evaluating interventions aimed at reducing social isolation and loneliness in this population.

Keywords: *Social Isolation, Loneliness, Cognitive Health, Older Adults*

Social isolation can be defined as the lack in the quality and quantity of relationships an individual has. The person if has little to no social support, we can say that the individual is socially isolated. There is a paucity of connections and interaction between the individual and their social circle (Gardiner et al, 2018). Loneliness on the other hand is the perception of the individual about being isolated and alone. It is how the individual perceives their social network at a given point of time. It can also be said that it is a discrepancy the individual has between their desired and real social connections (Shvedko et al, 2018)

Social isolation and loneliness are one of the big concerns faced by the geriatric population. They usually get sidelined in their communities, societies and even in their own families. People living in the old age homes get even more separated from their families and the

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society in general. Feelings pertaining to social isolation and loneliness can result in a lot of problems in the elderly like clinical depression (Schwarzbach et al ,2014), anxiety and even cognitive deficits and dementia (Holmen et al, 2000)

Cognitive health refers to the ability of an individual to be able to learn, memorize and think clearly. It's one of the components of one's brain health. An individual with poor mental health will have trouble in performing day to day activities and his/her functionality will be negatively affected. As an individual ages, there is slow and steady decline in their cognitive health but if it happens at an abnormal rate, it becomes a cause of concern. Abnormal decline in the cognition is known as cognitive impairment. Cognitive impairment is the sign of dementia and needs to be taken seriously. Signs of cognitive impairment if detected early can help improve the prognosis of the disease.

Through the study we are trying to find out if there is any impact of social isolation and loneliness on the cognitive health of older adults in India so that necessary steps can be taken to provide quality interventions for the elderly. It is also important to understand the living situation of the elderly. In today's time especially in the urban India, the concept of old age homes has gained prevalence. In a study done by Gardiner.C, Laude.P, et al (2020) examined the prevalence of moderate and severe loneliness among elderly living in residential care homes. The study showed high prevalence of moderate and severe loneliness amongst the elderly living in care homes. Therefore this study will also try to understand the difference in loneliness and cognitive health scores amongst the elderly living with their families and one the ones living in old age homes.

Theoretical framework

To examine the impact of loneliness and social isolation on the cognitive health of older adults, it's essential to consider various theoretical frameworks. These frameworks offer insights into how psychological, physiological, and social factors interact to influence cognitive well-being. For instance:

- **Social Cognitive Theory**: Suggests that cognitive processes are shaped by social interactions, implying that reduced social engagement may lead to cognitive decline.
- **Biopsychosocial Model**: Highlights the combined influence of biological, psychological, and social factors on health outcomes. Loneliness and social isolation can trigger psychological issues and physiological changes, both of which can contribute to cognitive decline.
- **Ecological Systems Theory**: Focuses on the impact of the social environment on individual development. Loneliness and social isolation disrupt older adults' social ecosystems, affecting their access to support and resources vital for cognitive health.
- **Transactional Model of Stress and Coping**: Emphasizes the role of coping strategies in mitigating the impact of stress on health. Older adults facing loneliness may experience chronic stress, but effective coping mechanisms, like seeking support or engaging in cognitive activities, can help alleviate these effects.
- **Social Network Theory**: Examines how social networks influence individual behavior and outcomes. Loneliness and social isolation often lead to smaller social networks, depriving older adults of cognitive stimulation. Conversely, maintaining a robust social network can protect against cognitive decline.

- **Resilience Theory**: Focuses on individuals' ability to adapt to adversity. While loneliness poses risks to cognitive health, some older adults demonstrate resilience by finding alternative sources of support or engaging in meaningful activities.

REVIEW OF LITERATURE

Dabiri.S,Mwendwa.D,et al (2024) conducted a study to understand loneliness as a predictor for dementia and cognitive impairment. The study concluded that loneliness may result in changes in our brain at physical level that may lead to cognitive decline.

Sabatini.S,et al (2024) conducted a study on people with dementia. One aspect study focused on understanding if number of health conditions in people with dementia are related to social isolation and loneliness. It was concluded that more health problems were associated with loneliness and minimally or not associated with social isolation.

Silva.R,Soares.N,et al (2024) conducted a study to understand the impact of loneliness and social isolation on mood,cognition and sleep during and before the corona virus pandemic. The study concluded that social isolation was related to anxiety and sleep quality and individuals who were not lonely or isolated showed better cognitive functioning.

Yang.R,Wang.H,et al (2020) conducted a study to understand the loneliness and the impact of social isolation on the cognitive functioning of elderly people in China. A secondary analysis was conducted.The findings revealed the positive impact of maintaining social relationships to cope with feelings of loneliness on the cognitive health of elderly in China.

Calallero.F,Lara.E,et al (2019) conducted a study to understand the association of social isolation and loneliness on the cognitive functioning in middle aged and older adults over a period of 3 years. The study concluded that loneliness and social isolation are linked with lower cognitive levels over the period of 3 years.

METHODOLOGY

Problem

To understand the impact of loneliness and social isolation on the cognitive health of older adults while also taking into account their living situation.

Objectives

- To study the impact of loneliness and social isolation on the cognitive health of older adults.
- To study the difference in the impact of loneliness on cognitive health between people living with their family and those living in old age homes.

Hypothesis

- There will be a significant impact of loneliness and social isolation on the cognitive health of older adults
- There will be a significant difference in the the impact of loneliness on cognitive health between people living with their family and those living in old age homes

Design

Quasi Experimental research design was used to draw causal inferences about the relationship between variables and determine the impact of loneliness on the cognitive health of older adults.

Sample

A sample size of 102 older adults (64 females and 38 males) who were above the age of 60 years old. Out of 102 older adults, 51 were living with their families and the rest 51 lived at old age homes. Purposive sampling technique was used in this study.

Variables

- Independent variable – Loneliness and social isolation
- Dependent Variable – Cognitive Health

Tools

UCLA LONELINESS SCALE (version 3) – It consists of 20 items that measure loneliness and social isolation. It is a self reporting 4 point scale measuring 3,2,1,0. The scale is highly reliable. In terms of internal consistency, the coefficient ranged from 0.84 to 0.95 and in terms of test retest reliability (1 year period) r = 0.73. Significant associations with measures of how adequate a person's interpersonal relationships are, as well as correlations between loneliness and health and well-being indicators, all supported the construct validity of the study.

MINI COG TEST – Mini Cog test was developed for the screening of cognitive impairment. It consists of two test , one is a 'three word recall test' and second a 'drawing clock test' to determine cognitive function , visual motor skills ,language and executive function of the individual.Numerical score of 0-5 is given with scores below 3 signifying cognitive impairment. The Mini-Cog test shows strong reliability and validity, with test-retest reliability and inter-rater reliability coefficients typically ranging from 0.70 to 0.90. Additionally, it demonstrates robust construct validity, as evidenced by significant factor loadings, and concurrent validity, with correlation coefficients usually between 0.60 and 0.80 when compared to established cognitive screening tools like the Mini-Mental State Examination (MMSE).

Statistical Technique

Regression Analysis was used to examine the quantitative data collected from 102 older adults using UCLA Loneliness Scale and Mini Cog Test.

RESULT

Table 1 Model Summary for Cognitive Health Predicted by Social Isolation and Loneliness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.358a	.128	.119	.4641

Note. a Predictors: (Constant), Loneliness and social isolation score

Table 2 Coefficients for Cognitive Health Predicted by Loneliness and Social Isolation

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.887	.090		9.803	.000
	Loneliness and social isolation	-.013	.004	-.358	-3.833	.000

Note. a Dependent Variable: Cognitive Health

Table 1 displays the summary statistics for a regression model with Cognitive Health as the dependent variable and Loneliness and Social Isolation as the predictor variable. The model explains 12.8% of the variance in Cognitive Health, with a moderate positive relationship between Cognitive Health and Loneliness and Social Isolation.

Table 2 displays the coefficients for the regression model. The constant term is .887, and for each unit increase in Loneliness and Social Isolation, Cognitive Health is expected to decrease by .013 units, holding all other variables constant. The coefficient for Loneliness and Social Isolation is statistically significant, indicating a moderate negative relationship between Loneliness and Social Isolation and Cognitive Health.

Therefore, proving our hypothesis that there is a significant impact of loneliness and social isolation on the cognitive health of older adults

Table 3 Model Summary for Cognitive Health Predicted by Loneliness and Social Isolation, Controlling for Living Situation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	LivingSituation = family (Selected)			
1	.338a	.114	.096	.4756

Note. a Predictors: (Constant), Loneliness and Social Isolation

Table 4 Coefficientsa,b

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.813	.118		6.899	.000
	Loneliness and Social Isolation	-.013	.005	-.338	-2.513	.015

Note. a Dependent Variable: Cognitive Health b Selecting only cases for which LivingSituation = family

Table 3 presents the model summary for the regression analysis of Cognitive Health predicted by Loneliness and Social Isolation, specifically for those with a family living situation. The R value is 0.338, indicating a moderate positive relationship. The R-square value is 0.114, suggesting that 11.4% of the variance in Cognitive Health is explained by

Loneliness and Social Isolation. The adjusted R-square value is 0.096, and the standard error of the estimate is 0.4756.

Table 4 displays the coefficients of the regression model. The intercept is 0.813, and the unstandardized coefficient for Loneliness and Social Isolation is -0.013, indicating that for each unit increase in Loneliness and Social Isolation, Cognitive Health decreases by 0.013 units, holding all other variables constant. The standardized coefficient for Loneliness and Social Isolation is -0.338, suggesting a moderate negative relationship between Loneliness and Social Isolation and Cognitive Health

Table 5 Model Summary for Cognitive Health Score Predicted by Loneliness Score in Old Age Home Living Situation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	LivingSituation = old age home (Selected)			
1	.418a	.175	.158	.4525

Note. a Predictors: (Constant), Loneliness and Social Isolation

Table 6 Coefficients [a,b\]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.024	.144		7.115	.000
	Loneliness and Social Isolation	-.017	.005	-.418	-3.222	.002

a. Dependent Variable: Cognitive Health
b. Selecting only cases for which LivingSituation = old age home

Table 5 displays the model summary for the regression analysis of Cognitive Health Score predicted by Loneliness and social isolation Score, specifically for those living in old age homes. The R value is 0.418, indicating a moderate positive relationship. The R-square value is 0.175, suggesting that 17.5% of the variance in Cognitive Health Score is explained by Loneliness and social isolation Score. The adjusted R-square value is 0.158, and the standard error of the estimate is 0.4525.

Table 6 presents the coefficients of the regression model. The intercept is 1.024 ($p < 0.001$), suggesting that, on average, those living in old age homes and with a loneliness and social isolation score of zero have a Cognitive Health Score of 1.024. The unstandardized coefficient for Loneliness and social isolation Score is -0.017 ($p = 0.002$), indicating that for each unit increase in Loneliness and social isolation Score, Cognitive Health Score decreases by 0.017 units, holding all other variables constant. The standardized coefficient for Loneliness and social isolation Score is -0.418, suggesting a moderate negative relationship between Loneliness and social isolation Score and Cognitive Health Score.

Comparing the two regression models presented in Table 3,4,5&6 we can conclude that the impact of loneliness on Cognitive Health score is stronger for people living in old age homes

than for those living with their family. Specifically, the standardized beta coefficient for loneliness score is -0.418 for people living in old age homes, compared to -0.338 for those living with their family. This suggests that loneliness has a larger effect on Cognitive Health score for people living in old age homes, controlling for other factors.

Therefore, proving our second hypothesis that There will be a significant difference in the impact of loneliness on cognitive health between people living with their family and those living in old age homes.

DISCUSSION

The purpose of this research was to study the impact of loneliness and social isolation on the cognitive health of older adults (above the age of 60). We also compared the scores of the older people living in old age homes (N=51) to the ones that lived with their families (N=52) to find out if their living situation (social environment) had any impact on their loneliness and social isolation scores and in turn on their cognitive health.

The results of this study indicate a significant impact of loneliness and social isolation on cognitive health in older adults ($R = .358$, $p < .001$). This finding is consistent with previous research that has linked social isolation and loneliness with cognitive decline and dementia. Social isolation and loneliness can lead to decreased cognitive stimulation, reduced physical activity, and increased stress, all of which can contribute to cognitive decline (Hakulinen et al., 2020; Holt-Lunstad et al., 2015).

Moreover, the study found a significant difference in the impact of loneliness on cognitive health between people living with their families and those living in old age homes ($p < .05$). This result suggests that living arrangements may play a role in the relationship between loneliness and cognitive health in older adults. Previous research has shown that older adults living in institutionalized settings, such as nursing homes and assisted living facilities, are at higher risk for social isolation and loneliness. This increased risk may be due to factors such as limited social contacts, reduced autonomy, and environmental constraints (Lee et al., 2019; Savikko et al., 2005).

To address the issue of social isolation and loneliness in older adults, interventions that promote social engagement and connectedness are essential. These interventions can include social skills training, peer support programs, and community-based initiatives that provide opportunities for social interaction and participation (Cattan et al., 2005; Dickens et al., 2011; Hakulinen et al., 2020). Additionally, addressing the living arrangements of older adults, particularly those living in institutionalized settings, may help mitigate the negative effects of social isolation and loneliness on cognitive health.

CONCLUSION

The study was done to study the impact of loneliness and social isolation on the cognitive health of older adults. There was a significant impact of loneliness and social isolation on the cognitive health of older adults and There was a significant difference in the the impact of loneliness on cognitive health between people living with their family and those living in old age homes with people living in old age homes reporting more loneliness thereby decline in their cognitive health.

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Conflict of Interest
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