

The Relationship of Activity of Daily Living, Cognition and Anxiety Among the Community Dwelling Elders: A Cross Sectional Study

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ABSTRACT

Introduction: Aging affects physiological systems, leading to reduced functional capacity, social isolation, depression, and disability. Musculoskeletal and neurological changes impair daily activities, increasing fall risk and frailty. Cognitive decline impacts thinking, learning, language, and attention, burdening families and society. Anxiety disorders are common, causing mood disturbances and clinical concerns among older adults.

Aims: This study aimed to investigate the relationship between activities of daily living, cognitive functions, and anxiety levels among elderly individuals living in the community, providing valuable insights into their overall well-being and mental health.

Settings and design: Study was carried out among 95 subject's inclusion criteria was required in this study. Elderly of different age groups (above 65 years of age) of Vadodara city.

Methods and Materials: On the bases of inclusion criteria, a study was carried out among 95 community dwelling elderly of above 65 years age. A cross sectional study is performed for 6 months in Vadodara city of Gujarat.

Statistical analysis used: Data was analyzed by SPSS version 28.0 and Microsoft excel 2019. Data was screened for normal distribution by Shapiro-Wilk test. Demographic data and subjective assessment details was analyzed with the frequency table and pie chart. Outcome measures like KATZ Index, MMSE and GAS-10 by frequency distribution table and charts, and person correlation that was applied to check relationship between KATZ Index, MMSE Scale and GAS-10.

Result: In this study the activity of daily living was evaluated by the KATZ index and cognitive function was assessed by the Mini Mental State Examination (MMSE) and level of anxiety was checked by the Geriatric Anxiety scale-10. Data was analyzed at 5% level of significance with confidence interval (CI) at 95%.

Conclusion: The elderly population with ADL dependency have altered cognitive function and negative relationship between ADLs and anxiety. With impaired ADL function can have low anxiety level. Whereas relationship between cognition and anxiety shows higher cognitive function and low anxiety.

Keywords: ADLs, Cognitions, Anxiety, Elderly

INTRODUCTION

Elderly is term used to define a population falling between age group of 65 years and

above. However, the onset of health problems for elderly may occur in the early 50s or may be in the 40s.¹ as individual

ages, there is a gradual but definite reduction in physiological capacity of various systems like musculoskeletal, cardiovascular, immune and neuropsychiatry systems. As an outcome, there is a decrease in functional capacity of elderly causing social isolation, depression, chronic disability and ultimately death.²

These musculoskeletal changes lead to affection in the activity of daily living. The activities of daily living are used to collectively describe fundamental skills require independently care for oneself, such as eating, bathing, and mobility. Elderly people are at risk of falls, disability and death due to reduced functional reserve, decline in multiple systems functions, which affects their activities of daily living and eventually develop into frailty.

Apart from that, neurological function also declines with aging. A decrease in neurotransmitter availability has been associated with declines in cognition, motor function, synaptic plasticity and neurogenesis.³

As a result, the changes in the neurological system leads to increased rates of gait instability, subsequent falls, alteration in cognition, vision, reflexes, muscular strength. Advancing age is associated with a decrease in cognitive function that ultimately affects quality of life.^{4,5}

Cognitive functioning usually refers to different mental abilities, including thinking, learning, language, reasoning, attention, concentration and visuospatial functioning. Moreover, cognitive disabilities not only affect the individual but also pose a major physical, emotional and economic burden on the family, health care providers and society.⁶

Anxiety is a widespread problem among older adults and is cause for major clinical concern. Anxiety disorders are the most common mental disorders. It is manifested by disturbances of mood, as well as of thinking, behaviour, and physiological activity.⁷

One of the most relevant aspects of cognitive impairment is the loss of personal

autonomy and independence in everyday life. Cognitive impairment leads to greater difficulty in performing activities of daily living (ADLs) such as that seen in people with dementia, and affects the health – related quality of life of both the patient and primary caregiver.⁸

Cognitive loss and conditions such Dementia have an important impact on the capacity to conduct activities of daily living (ADLs) in older people, resulting in dependency, distress, and reduced quality of life.⁹

Depression is a disorder that is associated with feeling of sadness and hopelessness, and can be considered the most common and important cause of damage to the psychosocial functioning of the elderly.

One of the important risk factors for depression in the elderly is their physical disability to perform their normal activities, and on the other hand, depression is associated with consequences such as interest in daily activities, increased attachment, and lack of independence.¹⁰

Anxiety can also impact an individual's motivation and confidence in performing ADLs. For example, someone with high anxiety levels may avoid certain activities out of fear or worry.

In a community –dwelling elderly population, anxiety has an impact on attention and thus on cognitive functions. Anxiety is negatively related such an executive function like switching, inhibitory control, cognitive flexibility and processing speed.¹¹

Cognitive impairment and anxiety often coexist in the elderly. Anxiety disorder, such as generalised anxiety disorder or social anxiety disorder, can occur independently or in conjunction with cognitive decline.

In summary, the correlation between ADLs, Cognition and Anxiety among the elderly is complex and bidirectional, Cognitive decline can impact ADL independence and increase susceptibility to anxiety, while anxiety can exacerbate cognitive difficulties and hinder ADL performance. A holistic approach that addresses all three aspects is

essential for providing effective care and improving the overall well-being of elderly individuals.

MATERIALS & METHODS

Ethical approved way obtained from institutional review board. Study was carried out among the community dwelling elderly above 60 years of age from Vadodara city, who have no previous psychiatric and memory disorder history or other neurological illness that may affect their cognition and daily activity performance.

Age >80 years elderly with any psychological, neurological condition and who were admitted in old age home or in hospitals were excluded.

The purpose and procedure of the study were explained to each subject. Written consent from was obtained prior to the study from each subject.

Detailed subjective assessment was taken including demographic data (name, age, Gender, occupation), BMI, dominant hand, medical/surgical history, marital status, history of fall, etc.

Katz ADL was evaluated by the interview method to check the activity of daily living. After that, MMSE and GAS-10 were also taken to evaluate the cognitive function and anxiety level, respectively.

Katz ADL, is the most appropriate instrument to assess functional status as a measurement of the client's ability to perform activities of daily living independently. The Index ranks adequacy of performance in the six functions of bathing, dressing, toileting, transferring, continence, and feeding. Clients are scored yes/no for independence in each of the six functions.¹²

Validity of KATZ index is 0.74 to 0.88. The prevalence of ADLs is around 3 percent of the elderly reported severe ADL disability, and 6 percent elderly reported severe IADL disability.¹³

Mini-Mental State Examination (MMSE) is a tool that can quickly diagnose if a person suffers from mild cognitive impairment through answering questions in different

cognitive domains. It is a 11-question measure that tests five areas of cognitive function: Orientation, registration, attention, and calculation, recall, and language. The scale ranges from 0 to 30. To identify cognitive impairment using cut points of 23 or less or 24 or less. The MMSE has a sensitivity of 85 to 92% and a specificity of 85 to 93%.¹⁴

Geriatric Anxiety Scale is tool to assess the level of anxiety. The GAS 30 item self-report measure used to screen for anxiety symptoms among older adults. The GAS includes three subscales: somatic symptoms, cognitive symptoms, and affective symptoms. GAS-30 is updated to GAS-10. GAS-10 is a 10-item report to assess the level of anxiety of an individual. The GAS has adequate psychometric properties among community-dwelling older adults. Higher score indicates more severity.¹⁵

RESULT

Demographic data and subjective assessment details were analysed by the frequency table and pie charts.

Outcome measures like KATZ index, MMSE and GAS-10 were analysed by the frequency distribution tables and charts.

Personal correlation test was applied to check the relationship between KATZ index, MMSE and GAS -10.

| Variables | Dimensions | Numbers (%) |
|----------------|------------|-------------|
| Age (yr) | 60-64 | 10(11.00) |
| | 65-69 | 41(43.15) |
| | 70-74 | 23(24.21) |
| | 75-79 | 16(17.00) |
| | 80-84 | 3(3.15) |
| Gender | 85-90 | 2(2.10) |
| | Female | 56(59.00) |
| | Male | 39(41.00) |
| Marital status | Married | 76(80.00) |
| | Widow | 19(20.00) |

Table 1: Distribution of different variables

Activity of daily living

- Activity of daily living was evaluated by the KATZ index among 95 elders.

| Activities | Independence(%) | Dependence(%) |
|--------------|-----------------|---------------|
| Bathing | 90(94.73) | 5(5.26) |
| Dressing | 92(96.84) | 3(3.15) |
| Toileting | 94(98.94) | 1(1.05) |
| Transferring | 90(94.73) | 5(5.26) |
| Continenence | 89(93.68) | 6(6.31) |
| Feeding | 95(100) | 0(0) |

Table 2: frequency distribution of various activities as per KATZ index

The frequency distribution from KATZ index data shows 6.3% elders were dependent on the continence activity whereas 5.2% elders were dependent on bathing and transferring activities.

Anxiety

| Questions | Not at all (0) N(%) | Sometimes(1) N (%) | Most of the times (2) N (%) | All of the times (3)N (%) | Mean |
|--|---------------------|--------------------|-----------------------------|---------------------------|------|
| I was irritable | 8(8.42) | 42(44.21) | 33(34.75) | 12(12.61) | 2.51 |
| I feel detached or isolated from others | 24(25.26) | 39(41.05) | 26(27.36) | 6(6.31) | 1.15 |
| I felt like I was in a daze | 47(49.47) | 34(35.78) | 9(9.47) | 4(4.2) | 0.68 |
| I had a hard time sitting still | 34(35.78) | 43(45.26) | 13(13.68) | 4(4.27) | 0.85 |
| I could not control my worry | 21(22.10) | 35(36.84) | 26(27.36) | 12(12.63) | 1.31 |
| I felt rest less keyed up, or on edge | 50(52.63) | 33(34.73) | 7(7.36) | 4(4.21) | 1.25 |
| I felt tired | 13(13.68) | 35(36.84) | 40(42.10) | 6(6.31) | 1.42 |
| My muscles were tensed | 13(13.68) | 51(53.68) | 23(24.21) | 7(7.36) | 1.25 |
| I felt like I had no control over my life | 41(43.15) | 30(31.57) | 15(15.78) | 8(8.42) | 1.9 |
| I felt like something terrible was going to happen to me | 21(22.10) | 20(21.05) | 27(28.42) | 26(27.36) | 1.62 |

Table 4: level of anxiety among elderly using GAS -10

Total 44% of elders felt irritable sometimes and 13% were all of the time. 27% elders feel detached or isolated from others most of the time, whereas 36% elders felt like they were in a daze sometimes. 54% of elders' muscles were tensed sometimes. 16% of elders felt like they had no control over their life whereas 31% felt the same sometimes.

Cognition

- Cognition among elders was assessed by the MMSE scale.

| MMSE Scale | Number (%) |
|------------------------------------|------------|
| No cognitive impairment (24-30) | 86(90.5) |
| Mild cognitive impairment (18-23) | 9(9.47) |
| Severe cognitive impairment (0-17) | 0(0) |

Table 3: frequency distribution of cognition by MMSE scale

In the present study only 10% of populations are falling under mild cognitive impairment whereas the majority (86%) of elder care having no cognitive impairments.

Correlation between activity of daily living, cognition and anxiety among community dwelling elderly:

- Correlation between Activity of Daily Living, Cognition and Anxiety among Community Dwelling Elderly was analyzed by Pearson correlation test.

Correlations between ADLs, Cognition and anxiety

| | MMSE Scale | | |
|------------|------------|---------|---|
| KATZ Index | R - value | P-value | Correlation |
| | 0.248 | 0.015 | Significant low positive correlation |
| | KATZ Index | | |
| GAS- 10 | R -value | P-value | Correlation |
| | -0.255 | 0.013 | Significant low negative correlation |
| | GAS-10 | | |
| MMSE Scale | R-value | P-value | Correlation |
| | -0.303 | 0.003 | Significant moderate negative correlation |

*Statistically significant (p<0.05)

Table 5: shows correlation between KATZ index, cognition and anxiety

DISCUSSION

In this study there was a significant low positive correlation found between ADLs

and cognition means there is a significant relationship between ADLs and Cognition. Similarly, the study conducted by Cheryl

Toth et al (2020) has concluded that instrumental daily living activities are significantly correlated with cognition. Similarly other study by Change at (2017) confirmed that ADL correlated significantly with mild cognitive impairment in older people. The activity of daily living requires multiple levels of cognitive functioning, including memory, executive functions, attention, language, visuospatial skills, arithmetic and calculation functions. The results identified numerous statistically significant relationship between cognitive domains and important IADL.

In our study anxiety and activity of daily living had significant negative correlation. Means that the elders with high anxiety were having more dependency on ADLs.

Similar study done by Ricaedf. Era 1 (2022) concluded that there was a significant relationship between ADL and anxiety level in the elderly. Whereas Ozgesaracli (2015) also found negative correlation between cognitive functions and anxiety level in hospitalized elderly patients.

Present study showed significant moderate negative correlation between cognition and anxiety among community dwelling elderly. Similarly inverse relationship was found by Ashley N (2012) between anxious symptoms and cognitive function in non-demented elderly adults.

According to the theory of cognitive reserve the anxiety could have a negative influence on cognitive reserve and thus may expose patients to a greater risk of cognitive impairments.

CONCLUSION

This study identified that elderly with ADL dependency have positive relationship with altered cognitive function. And a negative relationship between ADLs and anxiety suggest person with impaired ADL functions can have low anxiety level. Whereas relationship between cognition and anxiety shows that the subjects with higher the cognitive functions had low anxiety.

Declaration by Authors

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