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Review Paper

Correlational Study of Depression and Anxiety in Dementia: A Clinical Review

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ABSTRACT

Dementia is a syndrome where there is deterioration in cognitive function due to the usual consequences of biological ageing. This study is designed to assess the level of depression and anxiety in elderly dementia patient and to find out the correlation between Anxiety and depression in elderly dementia patients. The patients who were under the treatment of GNRC hospital, North Guwahati, age group between 50-80 years were selected for the study. A total of 15 elderly people with dementia and 15 elderly people without dementia were included. Purposive sampling technique and a correlational research design were selected. A self-made Socio-demographic data sheet, Hamilton depression rating scale and Hamilton anxiety rating scales were introduced. The results showed that there was a high prevalence of depression and anxiety among dementia patients. This study results suggested that prior anxiety is associated with a diagnosis of Dementia and prior depression is associated with same, after adjustment for other risk factors. Anxiety and depression as risk factors may play different roles in Dementia. Differences between frontotemporal dementia and Alzheimer disease in modifiable risk factors should be considered in future research, which requires a longitudinal design with long follow-up periods to clarify the consistency of earlier findings on modifiable frontotemporal dementia risk factors. Further research should also analyze genetic data to separate genetic and sporadic cases of dementia, providing further enlightenment of the possible relationships between modifiable and nonmodifiable risk factors for dementia.

Keywords: *Dementia, Depression, Anxiety, Correlational Research Design*

Depression, cognitive disorders, and dementia are some of the commonest mental ailments in the older individuals in India (Muhammad and Meher 2021). Though depression in old age is pretty common at about 10–20% of elders depending on the occurrence of other co-morbid physical ailments (Krishnan, et al. 2002). The amount of milder cognitive disturbances is perhaps higher at about 10–15% depending on age (Petersen 2016). The occurrence of comorbid depression or other physical illnesses may reason these prevalence rates to vary depending on whether the cognitive disfunction is reversible or everlasting. It is common for persons with dementia to have anxiety (Maldonado 2018). Everybody senses anxious from time to time and believe that somewhat bad is about to occur (Smail 2018). Anxiety also having physical variations, such as high blood pressure,

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heart rate and sweating etc (McLeod, Hoehn-Saric and Stefan 1986). Though, an individual with anxiety can find it very problematic to halt thinking and feeling that somewhat bad is nearby (Wells 2011). Depression and anxiety are tremendously common in dementia and mild cognitive impairment (MCI) (Monastero, et al. 2009). Numerous persons with dementia experience a decline in quality of life (Katsuno 2005). Depression and anxiety may lead to detachment from regular actions, which may additionally worsen memory problems (Pagnin, et al. 2014). Dementia was called chief neuro cognitive disorder (NCD) according to DSM-5 (Yochim, et al. 2014). Though, the term dementia may still be used as a suitable substitute. The two terms are basically diverse labels for the similar ailment; main NCD is equal to dementia. The DSM-5 also identifies a less severe level of cognitive diminishing, mild NCD, which now delivers a diagnosis for less inactivating indications that may nevertheless be producing concern and could help from treatment (Bosia, et al. 2022). Mild NCD is equal to mild cognitive impairment (MCI) and to prodromal dementia, again diverse labels for the similar disorder (Smith and Bondi 2013). Dementia touches each individual in a diverse means, depending upon the fundamental reasons, other health situations and the person's cognitive functioning before becoming ill (Hughes 2011). The signs and symptoms related to dementia can be understood in three phases-

1.1 Early stage: The early stage of dementia is frequently ignored since the commencement is gradual. Common symptoms may contain:

- Forgetfulness
- Losing track of the time
- Becoming lost in familiar places. (Budson and Solomon 2021)

1.2 Middle stage: As dementia advances to the middle stage, the signs and symptoms convert stronger and may comprise:

- Becoming forgetful of current events and people's names
- Becoming confused while at home
- Having increasing difficulty with communication
- Demanding help with special care
- Experiencing behavior variations, including wandering and recurrent questioning (Steeman, et al. 2006)

1.3 Late stage: The late stage of dementia is one of near total dependence and inactivity. Memory instabilities are solemn and the physical signs and symptoms turn out to be clearer and may include:

- Becoming ignorant of the time and place
- Having trouble recognizing relatives and friends
- Having an increasing necessity for assisted self-care
- Having trouble walking
- Feeling behavior changes that may escalate and contain aggression. (Jewell 2004)

The degree of anxiety disorders and indications in dementia differs intensely from study to study, signifying that there is a lack of consent about how to describe and theorize anxiety in the population (Sheikh 1992). Numerous matters confuse this query, including the difference between signs of anxiety and signs of dementia, the overlay among anxiety, depression, and agitation, and what establishes the finest cause of info (e.g., patient, caregiver) (Cummings, et al. 2015). Therefore, a problematic query for investigators and clinicians is whether anxiety

symptoms that might possibly be reported for by the occurrence of dementia should be used to identify an anxiety disorder. In the instance of anxiety and dementia, numerous issues advise that such a straight association is probable.

- The neural degeneration accountable for the cognitive weakening detected in dementia could also disturb limbic structures related with emotional regulation. (Błaszczyk 2022)
- Anxiety is more common in persons with dementia than in people without dementia, and, the occurrence of anxiety differs by dementia type. (Robert 2002)
- Dementia symptoms overlay considerably with anxiety symptoms. Determining whether a straight connecting association happens for a certain patient, though, is very hard. Persons who have had anxiety in the past are more likely to have it again. Though, persons in the early phases of dementia may have anxiety that is related straight to their worries about them memory and the future. (Moniz-Cook, et al. 2006)
- Persons with vascular dementia often have better understanding and consciousness of their ailment than people with Alzheimer's disease. This may clarify why it's more common for people with vascular dementia to have anxiety. (Ballard, et al. 2000)
- Persons with dementia who have anxiety may have a variety of psychological symptoms. They may have also physical indications – irregular heartbeats, shortness of breath, dizziness, nausea and diarrhea. (Jefferson 2012)

Depressive symptoms are fairly common in elder persons. Though, constant and disabling main depressive occurrences are more common in those with dementia than in age-matched controls without dementia (Cipriani, et al. 2015). The occurrence of depression may be 30% in vascular dementia and in Alzheimer's disease, and over 40% in the dementia related with Parkinson's and Huntington's diseases (Korczyn, Vakhapova and Grinberg 2012). Depression, cognitive disorders, and dementia are some of the commonest mental ailments in the elderly in India (Singh and Upadhyay 2014). Though depression in old age is pretty predominant at about 10–20% of elders depending on the presence of other comorbid physical ailments, the occurrence of dementia is lesser than in developed countries at about 3% (Polyakova, et al. 2014). The occurrence of milder cognitive disturbances is perhaps higher at about 10–15% depending on the meanings of normal agedness to mild cognitive impairment (MCI) (Lee 2023). The occurrence of comorbid depression or other physical disorders may cause these occurrence rates to vary depending on whether the cognitive dysfunction is reversible or permanent.

METHODOLOGY:

Aim

To study the affect of anxiety and depression among the Dementia patients of GNRC hospital which is one of the significant hospitals in North Guwahati, Assam

Objectives

1. To identify and assess the level of anxiety in elderly Dementia patient.
2. To identify and assess the level of depression in elderly Dementia patient.
3. To find out the relationship between Anxiety and Depression in elderly Dementia patients.
4. To find out the relationship between Anxiety and Depression in elderly patients.

Hypothesis

- H01: There will be no significant relationship between anxiety and depression among elderly dementia patients.
- H02: There will be no significant relationship between anxiety and depression among elderly patients.

Sample

The study populations are the patients who came for treatment at GNRC hospital which is one of the significant hospitals in North Guwahati, Assam. The age group of these patients were 50-80 years of age and visited in Neurology and Medicine Department for treatment of common symptoms of dementia i.e. forgetfulness. Patients who visited the Neurologist or Medicine specialist in GNRC, were included in the study. After examination in the Out-Patient Department (OPD), patients with positive results were included in the study. A total of 15 elderly people between age group of 50-80 years with dementia were taken and 15 elderly people age group of 50-80 years of age without dementia were included in the study. Purposive sampling technique was used in this study.

Tools

- **Socio-demographic data sheet:** Socio-demographic variables include: age, sex, education, migration background and ethnicity, religious affiliation, marital status, household, employment, and income. Different index variables are formed on the basis of socio-demographic variables. They include, for example, socio-economic status, which combines information on education and income. Socio-demographic details are often used to describe realized samples and to determine sampling error. This has consisted all the socio demographic details regarding the patient as name, fathers name, address, age, sex, marital status, religion, education, occupation, family income, habitat, family type, with clinical details as HOPI, history of past illness, treatment history (medical& psychological), family history, personal history, pre-morbid personality, MSE, and Diagnosis (ICD-10).
- Hamilton depression rating scale (HDRS)
- Hamilton Anxiety Rating scale (HAM-A)

Procedure

There were two groups of patients; Subjects included in the study have randomly assigned to each group. To obtain baseline measures of both groups, HAM-D, HAM-A and MMSE scale have administered. Researchers included all randomized controlled trials that included a control group with dementia or comparison group without dementia. Additional criteria were that the study provided adequate information about study design and results, and separate data on participants with dementia or without dementia.

Statistical techniques

Descriptive and inferential statistics is used. The data analyzed using R studio version 2023.09.1 Build 494.

Control group with dementia

Comparison group without dementia

RESULT AND DISCUSSION

The present study has included 15 patients having symptoms of dementia and another group of 15 people without any symptoms of dementia. Majority of the elderly people were in the age group of 50-80 years. The mean age of male was 63.5 years, whereas in female 59.57 years. It shows heterogeneous age range among both genders.

Comparison of Anxiety with dementia patient & without dementia patient:

Table no 1: level of anxiety with dementia

Anxiety frequency			
		Frequency	**Percent**
Valid	below 17 mild severities	1	6.7
	18-24 mild to moderate	2	13.3
	25-30 moderate to severe	12	80.0
	Total	15	100.0

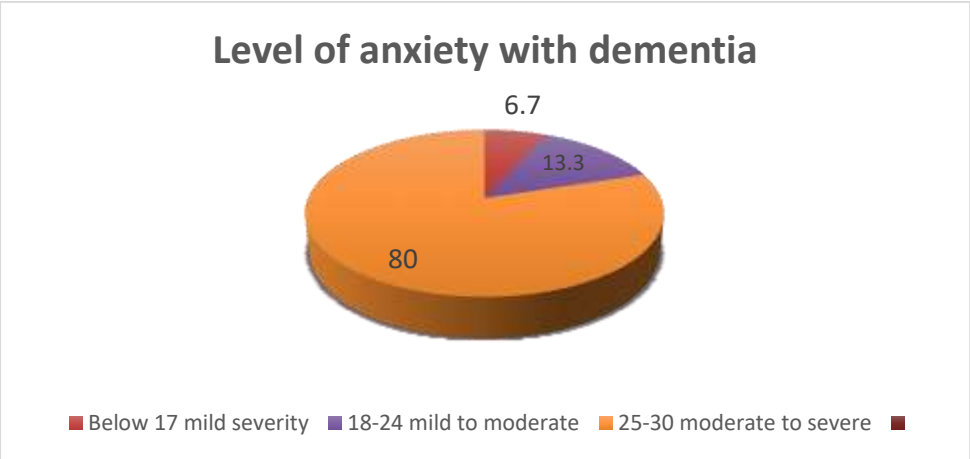

Fig: 1: Level of anxiety with dementia

The table indicates severe level of anxiety in the dementia patient compare to the non-dementia patient, shows 80% dementia patients had severe level of anxiety during the time of treatment. Anxiety has been also considered as a risk factor for AD, especially anxiety occurring at midlife. Anxiety also shares some underlying enteropathogenic mechanisms with AD, such as inflammation and oxidative damage. 13.3 percent of dementia patient showed moderate level of anxiety and only 6.7 percent dementia patient had mild level of anxiety.

Table no 2: Level of depression

Depression frequency with dementia			
		Frequency	**Percent**
Valid	Normal	1	6.7
	Moderate	6	40.0
	Severe	8	53.3
	Total	15	100.0

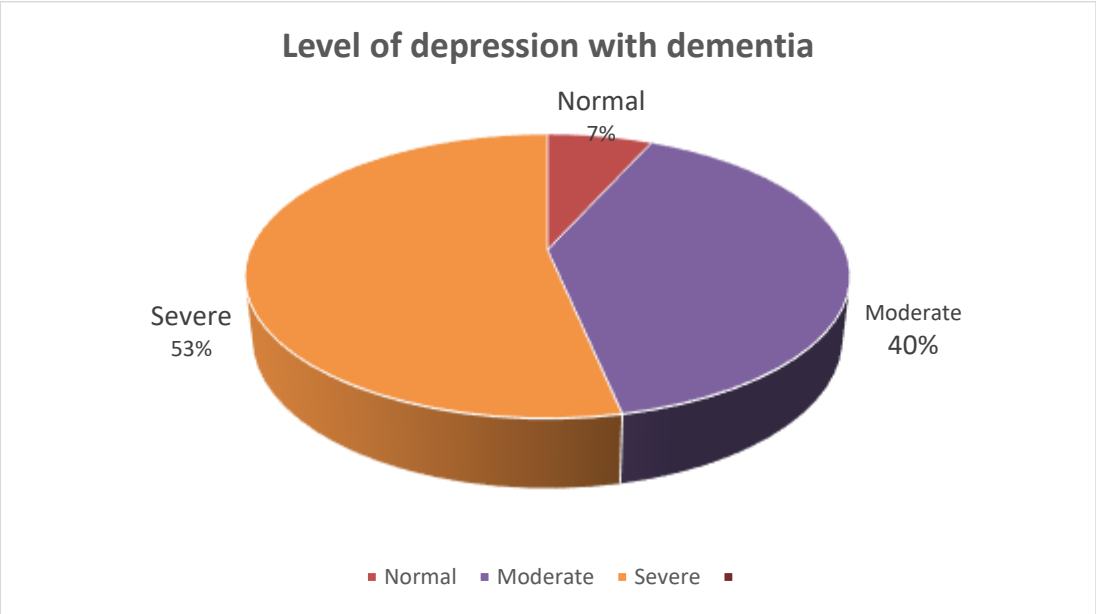

Fig:2: Level of depression with dementia

Out of 15 total dementia patients 8 patients showed severe level of depression. The prevalence of severe dementia among dementia patients was 53.3 percent compared with that non-dementia patient (10.3 %). It was evident that prevalence of depression increased with age and sufferings with the highest percentage being among the 80 years and was more among female subjects.

Table 3: Profile of Anxiety of elderly patient without dementia:

		Percent
Valid	below 17 mild severities	72.3
	18-24 mild to moderate	21.7
	25-30 moderate to severe	6.0
	Total	100.0

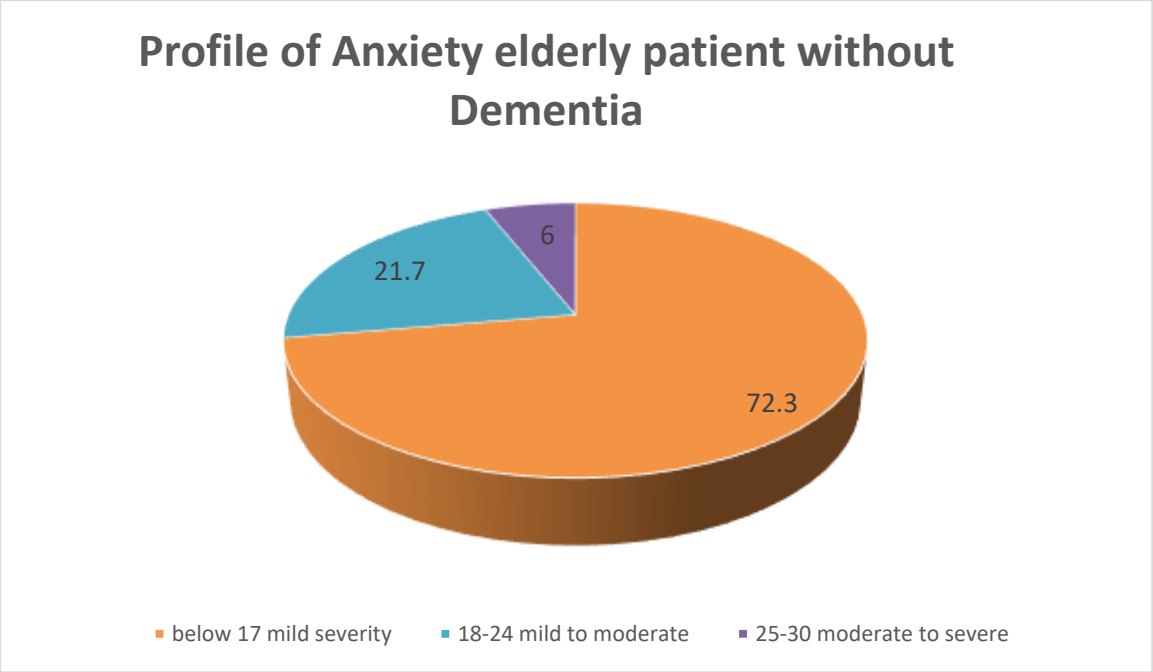

Fig 3: Profile of Anxiety elderly patient without dementia

Table 4: Profile Depression of elderly patient without dementia:

		Percent
Valid	Normal	62.7
	Moderate	27.0
	Severe	10.3
	Total	100.0

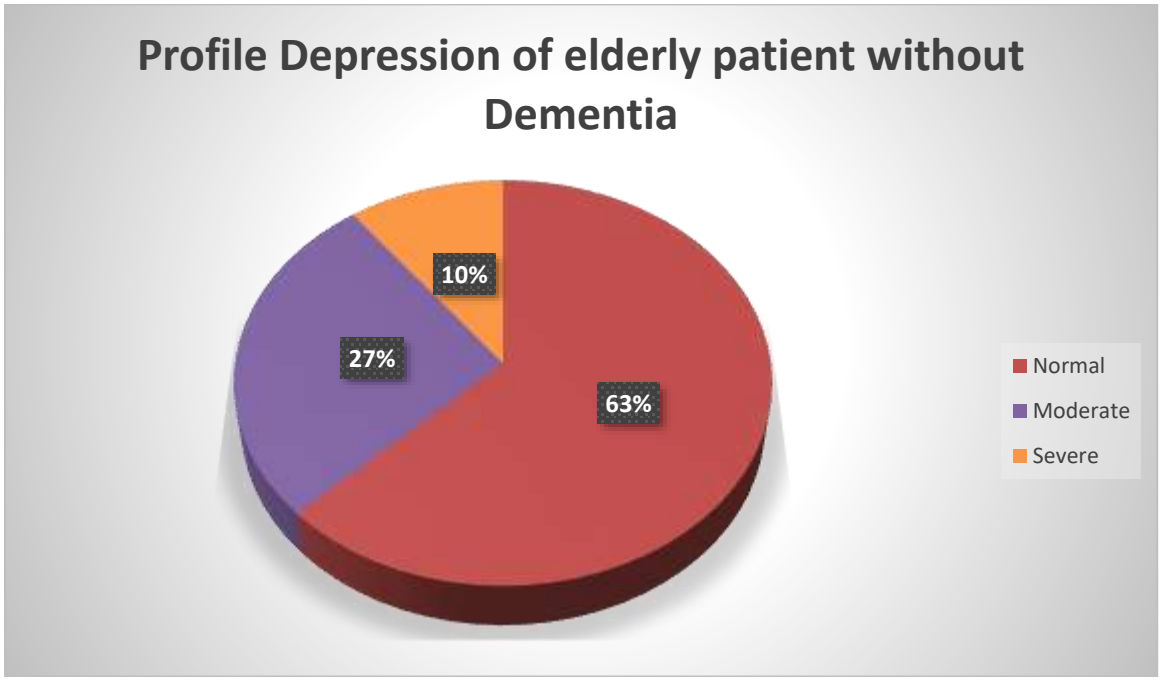

Fig 4: Profile Depression of elderly patient without dementia

Table no 5: Relationship between anxiety and depression in dementia patients

Correlations			
		Anxiety	**Depression**
Anxiety	Spearman Correlation	1	.670**
	Sig. (2-tailed)		.006
	N	15	15
Depression	Spearman Correlation	.670**	1
	Sig. (2-tailed)	.006	
	N	15	15

***. Correlation is significant at the 0.01 level (2-tailed).*

From table 4, a positive high correlation exists between anxiety and depression is found at 0.01 level of significance.

Table no 6: Relationship between anxiety and depression in elderly people

Correlations			
		Anxiety	**depression**
Anxiety	Spearman Correlation	1	.20
	Sig. (2-tailed)		.29
	N	15	15
Depression	Spearman Correlation	.20	1
	Sig. (2-tailed)	.29	
	N	15	15

***. Correlation is not significant at the 0.01 level (2-tailed).*

From table 6, no significant correlation exists between anxiety and depression in elderly people.

DISCUSSION

In this correlational study where 15 dementia patients and 15 normal people were studied. There was a high prevalence of depression and anxiety among dementia patients but there is no significant correlation among elderly people. The higher levels of depression and anxiety as reported by our patients, may reflect the drastic changes in their daily life due to the dementia and its symptoms. Anxiety was independently associated with a dementia diagnosis and was more prevalent within the cohort compared to depression. Half of those with depression also had anxiety diagnoses. This is suggestive that anxiety represents a more important risk factor for dementia than had been previously thought, and along with depression represents an affective risk component that could be screened for within primary care (Burton, et al. 2013). One potential explanatory factor is that anxiety was being diagnosed by primary care physicians in patients experiencing mild cognitive impairment (MCI), preceding a later diagnosis of dementia (Cooper, et al. 2015). This supported with previous work, which suggested that anxiety in patients with MCI does strongly predispose to progression to a dementia diagnosis. (Gallacher, et al. 2012)also showed that high trait anxiety was an independent risk factor for developing cognitive impairment and non-vascular dementia. During interaction with patients researchers had come to know that individuals displaying both anxious and depressive symptoms are at higher risk of Alzheimer's disease. This is plausible according to the cumulative stress hypothesis. Bearing that in mind, one would expect anxiety disorders to be at least as damaging as trait anxiety

and depression because of their intensity and recurrence in many patients. Emotions and behaviors could have a different effect on cognition. For example, anhedonia and withdrawal as core symptoms of depression could lead to adverse effects on brain health by inactivity and reduced stimulation (Moreau 2002). Comparing major depressive features between patients with Dementia and cognitively normal older adults, several significant differences were noted in the study. Patients with AD had significantly diminished ability to concentrate or indecisiveness, less disturbances in sleep, and less report of feelings of worthlessness or excessive guilt. However, patients with AD were noted to have higher rates of delusions and hallucinations (Paulsen, et al. 2000). There was also a trend towards higher rates of psycho-motor agitation/retardation and fatigue/loss of energy in more advanced AD patients.

CONCLUSION

Several studies have found depression to be a risk factor for AD and for dementia in general (Cantón-Habas, et al. 2020). Numerous mechanisms for the association between depression and the development of dementia have been proposed, such as vascular disease, alterations in glucocorticoid steroids, hippocampal atrophy, increased depositions of β-amyloid plaques, inflammatory changes, and deficits of nerve growth factors or neurotrophins (Byers and Yaffe 2011). Depression has also been linked to habits like smoking, obesity, and reduced regular physical activity, which are also cardiovascular risk factors (Bonnet, et al. 2005). Another suggested shared mechanism is that of inflammation and immune activation, which can be characteristic of depression and is also associated with an increased risk for all types of dementia (Hayley, Hakim and Albert 2021). Depression as a risk factor for dementia has been better investigated in late-life depression (age over 60 years and older). The few studies investigating the association between early-life depression and dementia have consistently found depression as a risk factor for dementia and unlikely to be solely a prodrome of dementia (Byers and Yaffe 2011).

This study results suggested that prior anxiety is associated with a diagnosis of Dementia and prior depression is associated with AD, after adjustment for other risk factors. Anxiety and depression as risk factors may play different roles in Dementia. To conclude, prevalence of depression and anxiety was high among the elderly dementia patients; which needs to be addressed in many perspectives. Results from this study highlight the need for proper assessment and confirmation of depression and anxiety, especially among the elderly dementia patients. Early intervention is required to prevent the morbidity and limit the disability.

Suggestion for future research

- Differences between frontotemporal dementia and Alzheimer disease in modifiable risk factors should be considered in future research, which requires a longitudinal design with long follow-up periods to clarify the consistency of earlier findings on modifiable frontotemporal dementia risk factors.
- Further research should also analyze genetic data to separate genetic and sporadic cases of dementia, providing further enlightenment of the possible relationships between modifiable and nonmodifiable risk factors for dementia.
- A multi-dimensional approach to manage these problems, with an ultimate goal of improving the quality of life of the elderly persons should be the need of the hour.
- Trait anxiety should be taken seriously at an early age because it might be a modifiable risk factor of future dementia.

- The temporal or functional relation between anxiety and dementia needs more careful investigation in larger cohort studies with better biomarkers and psychometric measurement.

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Conflict of Interest
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