E-ISSN 2250-0944
ISSN 2250-1150
doi: 10.48047/ijprt/15.02.559

Research Article

ASSESMENT OF PSYCHIATRY COMORBIDITY, SUBSTANCE ABUSE, QUALITY OF LIFE IN PATIENTS WITH EARLY AND LATE ONSET DEMENTIA

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Received date: 20-12-2025, acceptance date: 27-12-2025, Date of publication: 30-12-2025.

Abstract:

Background: Dementia is emerging as an important health problem of elderly people in India. Dementia is typically defined as a clinical syndrome of cognitive decline that is sufficiently severe to interfere with social or occupational functioning. EOD patients differ, on average, from LOD patients on a number of clinical, neuropsychological, neuroimaging, and neuropathological variables. Psychiatric morbidity is more in people with dementia which affect the quality of life in elderly people.
Materials and Methods: The Hospital based cross sectional study was conducted among patients attending the Psychiary Outpatient Department, Government Tiruppur Medical College, Tiruppur for a period of one year from January 2024 to December 2024. After obtaining permission from the Institutional Human Ethical Committee, written and informed consent from the eligible participants were obtained. As per sample size, 60 patients diagnosed with dementia according to ICD – 10 criteria were selected for the study to determine he psychiatric morbidity, substance use, quality of life in persons with early onset and late onset dementia and to compare the differences in above factors using standardised scales. Data was entered into excel and analyzed using SPSS version 21 with appropriate statistical tests.
Results: In our study we evaluated there was statistically significant higher DSRS scores ($p<0.05$) among those in early onset group on comparison with the late onset group., The quality of life as measured by the DEMQOL scale was significantly higher ($p<0.05$) in late onset dementia group on comparison with early onset dementia group. .
Conclusion: To conclude, participants with both early and late onset dementia had no significant differences in psychiatric co-morbidities and substance abuse. However, those with early onset dementia had significantly higher DSRS scores and less QOL scores indicating higher functional disabilities and the need for early intervention in this subgroup for better quality of life

Key words: Dementia, Early onset Dementia, Quality of life, DSRS scale, DEMQOL scale

INTRODUCTION

According to the definition provided by the World Health Organization (WHO, 2017), dementia is "an umbrella term for several diseases affecting memory, other cognitive abilities and behaviour that interfere significantly with the ability to maintain daily living activities. Although age is its strongest known risk factor, dementia is not a normal part of aging". The associated brain diseases can cause a long-term, often gradual decrease in cognitive abilities, "emotional problems, language difficulties and decreased motivation". People with dementia have serious problems with two or more brain functions, such as memory and language. Although dementia is common in very elderly people, it is not part of normal aging.[1]

Many different diseases can cause dementia, including Alzheimer disease (AD), frontotemporal dementia (FTD), Lewy body dementia (LBD), vascular dementia (VD), syphilitic dementia (SD), mixed dementia (MD), senility dementia (SD), or the combined effect of two or more dementia types, and even stroke. About 10% of individuals present with Mixed Dementia, a usual combination of AD and another type of dementia such as FTD or VD. However, not being a specific disease, the above potential contributors do not reach to the primary cause of the disease. Likewise, drugs available for dementia can also only alleviate its symptoms; they cannot cure it or repair brain damage. They may improve symptoms or at best slow down the disease. Indeed, there is no known cure for dementia. This is a sad observation on the state of the situation. It stems from our incomplete understanding of the deep biology of the contributing diseases and associated epigenetic/ Eco genetic influences.[2,3]

Investigators subsequently broadened the diagnosis of Dementia to include the much more common late-onset Dementia (LOD) with the observation of similar neuropathology associated with cognitive decline in all age groups. In recent years, the main focus of interest and research has been on LOD. [4]

Mostcommon early-onset neurodegenerative dementia is EOD. Vastmajority of the cases are non-familial as indicated in few Epidemiological studies, making up about 4–6% of all Dementia, with an annual incidence rate of about 6.3/100,000 and a prevalence rate of about 24.2/100,000 in the 45–64 year age group, or between 220,000 and 640,000 Americans .As patients approach age 65 these incidence and prevalence ratesrise exponentially. Since EOD is often atypical it is unfortunately missed often, leading to a 1.6-year average delay in diagnosis compared to older patients. Yet, EOD accounted for a more number of premature deaths among US adults aged 40–64 with many years of potential life lost as well as losses in productivity based on a mortality report from 1999 to 2010. [5]

EOD patients differ from LOD patients on a number of clinical, neuropsychological, neuropathological, andneuroimaging variables. Several studies indicate that the clinical course tends to be more aggressive in early-onset dementia patients. Comparedto LOD, EOD presents less commonly with memory deficits and more frequently as focal cortical or phenotypic variants (described below). Overall, EOD patientshave better memory recognition scores and semantic memory, but they tend to have worse attention, executive functions, ideomotor praxis, and visuospatial skillscompared to comparably impaired LOD patients. [6,7]Even though studies in various western countries have differentiated the differences between pathological and morphological changes in EOD and LOD, there are a dearth of studies in India profiling the differences in risk factors for these two subtypes. With this background, the current research was done to determine the psychiatric morbidity, substance use, quality of life in persons with early onset and late onset dementia and to compare the differences in above factors between early onset and late onset dementia.

METHODOLOGY

The study was an analytical cross-sectional study conducted in 60 patients diagnosed with dementia as per ICD-10 criteria. Who attended the Department of Psychiatry, Government Tirupur Medical College and Hopsital, Tirupur, Tamilnadu. The study was carried over a period of one year from January 2024 to Dec 2024 after obtaining ethical clearance from the Institutional Human Ethical Committee (IHEC) of Government Tirippur Medical College. The patients included were selected based on inclusion criteria after getting consent.

60 Patients newly diagnosed with dementia as per ICD -10 were continuously enrolled for the study. The enrolment was continuous till the adequate sample size was achieved. Necessary precautions were made to have a sample of 30 in early onset and 30 in late onset dementia types.Study sample had been grouped into two categories as early onset and late onset dementia (30+30) based on the age of onset ($\leq$ 65)

- **DEMENTIA SEVERITY RATING SCALE** will be administered to grade the severity of dementia. [8]
- Psychiatric comorbidity and substance use were assessed using **MINI PLUS INTERNATIONAL NEUROPSYCHIATRY INTERVIEW** scale.[9]
- Quality of life was measured using **DEMQOL & DEMQOL proxy scale. [10]**

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The data obtained from the proforma were entered into Microsoft excel 2016 software and analysed using Statistical Package for Social Sciences (SPSS) version 16. Mean and standard deviation were calculated to summarize continuous variables such as age, DSRS scores and DEMQOL scores Number and percentage were used to present the categorical data pertaining to the following distribution of the various socio-demographic variables, types of psychiatric co-morbidities and dementia. The association between categorical variables were studied using chi square test. The distribution of continuous variables with normal distribution among the two patient groups were analysed using Independent t test. For those variables with continuous skewed distribution, association between two patient groups was studied using Mann- Whitney U test. Statistical significance was set at p value of less than or equal to 0.05.

RESULTS

- In our study60 patients diagnosed with dementia according to ICD – 10 criteria wereincluded, Study sample had been grouped into two categories as early onset and late onset dementia based on the age of onset.
- The patients in late onset category were significantly older than the other group. However, majority of the patients in early onset were males (63.3%) and hence a little more half of the patients (53.3%) were accompanied by their wife. (Table 1)

Table 1: Distribution of the socio-demographic variables among the two patient groups

Socio-demographic variables		Late onset dementia (n=30)	Early onset Dementia (n=30)	p value
Age of the patients, mean (±SD)		74.53 (5.70)	61.3 (3.92)	<0.001*
Gender, n(%)	Male	14 (46.7%)	19 (63.3%)	0.194#
	Female	16 (53.3%)	11 (36.7%)	

Care taker, n(%)	Daughter	11 (36.7%)	6 (20%)	0.005#
	Wife	7 (23.3%)	16 (53.3%)	
	Daughter in law	3 (10%)	2 (6.6%)	
	Husband	0	5 (16.7%)	
	Son	5 (16.7%)	0	
	Sister	3 (10%)	0	
	Warden	1 (3.3%)	1 (3.3%)	

p value by independent t test ***#p value by chi-square test***

The distribution of the Psychiatric Co-morbidity among the two-patient group based on ICD 10 codes in Mini plus scale. Among those with early onset dementia, the leading psychiatric co-morbidities were F06.2-Psychotic disorder due to general medical condition (10%), F41.1-Generalized Anxiety disorder (10%) and F10.2-Mental and behavioural disorders due to use of alcohol - Dependence syndrome (10%). In late onset dementia patients, the top psychiatric co-morbidities were F41.1-Generalized Anxiety disorder (13.3%) and F32.x-Major depressive episode- current (13.3%). The distribution of these psychiatric co-morbidities wasn't statistically significant. (Table 2)

Table 2: Distribution of Psychiatric Co-morbidity among the two patient groups

Psychiatric Co-morbidities	**Early onset dementia (n=30)**	**Late onset Dementia (n=30)**	**p value**
F06.2 (Psychotic disorder due to general medical condition)	3 (10%)	0	0.274*
F06.2/F19.2 (Mental and behavioural disorders due to multiple drug use and use of other psychoactive substances-Dependence syndrome)	1 (3.3%)	0	
F06.30 (Manic Episode due to general medical condition)	0	1 (3.3%)	
F06.32 (Mood disorder due to medical condition)	2 (6.7%)	0	
F10.2 (Mental and behavioural due to use of alcohol - Dependence syndrome)	3 (10%)	2 (6.7%)	
F29.0 (Unspecified psychosis not due to a substance or known physiological condition)	0	2 (6.7%)	
F32.x (Major depressive episode- current)	1 (3.3%)	4 (13.3%)	
F33.x3 (Major depressive disorder with psychotic features)	1 (3.3%)	0	
F41.1 (Generalized Anxiety disorder)	3 (10%)	4 (13.3%)	

F41.2 (Mixed anxiety and depressive disorder)	1 (3.3%)	1 (3.3%)	
Nil	15 (50%)	16 (53.3%)	

p value by chi-square test

Among those with early onset dementia, the leading psychiatric co-morbidities (MINI plus module) were A -Major Depressive Episode (16.7%), P-Generalized Anxiety Disorder (10%) and K- Alcoholic Dependence (10%). In late onset dementia patients, the top MINI plus module psychiatric comorbidities were A -Major Depressive Episode (13.3%) and P-Generalized Anxiety Disorder (13.3%). The distribution of these MINI plus codes wasn't statistically significant. (Table 3)

Table 3: Distribution of the MINI plus modules among the two patient groups

Variable MINI plus module, n(%)	**Early onset dementia (n=30)**	**Late onset Dementia (n=30)**	**p value**
A (Major Depressive Episode)	5 (16.7%)	4 (13.3%)	0.928*
A/K	1 (3.3%)	0	
D (Manic Episode)	0	1 (3.3%)	
K (Alcoholic Dependence)	3 (10%)	2 (6.7%)	
M (Psychotic Disorders)	2 (6.7%)	2 (6.7%)	
P (Generalized Anxiety Disorder)	3 (10%)	4 (13.3%)	
Z (Mixed Anxiety-Depressive Disorder)	1 (3.3%)	1 (3.3%)	
Nil	15 (50%)	16 (53.3%)	

p value by chi-square test

Among those with early onset dementia, the leading dementia types were F00.0 Dementia in Alzheimer's disease with early onset (50%), F01.0-Vascular dementia of acute onset (30%), F02.3- Dementia in Parkinson's disease (6.7%) and F02.8- Dementia in Epilepsy (6.7%). In late onset dementia patients, the top dementia types were F00.1 (Dementia in Alzheimer's disease- late onset (60%) and F02.3- Dementia in Parkinson's disease (13.3%). The distribution of these dementia types with respect to ICD-10 codes was statistically significant ($p<0.001$). (Table 4)

Table 4: Comparison of Dementia types among the two patient groups

	Early onset dementia (n=30)	**Late onset Dementia (n=30)**	**p value**

F00.0 (Dementia in Alzheimer's disease with early onset)	15 (50%)	0	<0.001*
F00.1 (Dementia in Alzheimer's disease- late onset)	0	18 (60%)	
F01.0 (Vascular dementia of acute onset)	9 (30%)	2 (6.7%)	
F01.1 (Multiinfarct Dementia)	0	2 (6.7%)	
F01.2 (Subcortical vascular dementia)	0	2 (6.6%)	
F02.0 (Dementia in picks disease)	1 (3.3%)	2 (6.7%)	
F02.3 (Dementia in Parkinson's disease)	2 (6.7%)	4 (13.3%)	
F02.4 (Dementia in HIV disease)	1 (3.3%)	0	
F02.8 (Dementia in Epilepsy)	2 (6.7%)	0	

p value by chi-square test

Among patients with early onset dementia, an equal proportion (16.7%) of patients consumed alcohol, tobacco and both. In patients with late onset dementia, about 15% consumed alcohol, 11.7% tobacco and 13.3% both alcohol and tobacco. (Table 5)

Table 5: Distribution of the substance abuse among the two patient groups

Variable		Early onset dementia (n=30)	Late onset Dementia (n=30)	p value
Substance abuse, n(%)	Alcohol only	5 (16.7%)	4 (13.3%)	0.367*
	Tobacco Only	5 (16.7%)	2 (6.7%)	
	Alcohol & Tobacco	5 (16.7%)	3 (10%)	
	Alcohol, Tobacco & Cannabis	1 (3.3%)	0	
	Nil	14 (46.7%)	21 (70%)	

p value by chi-square test

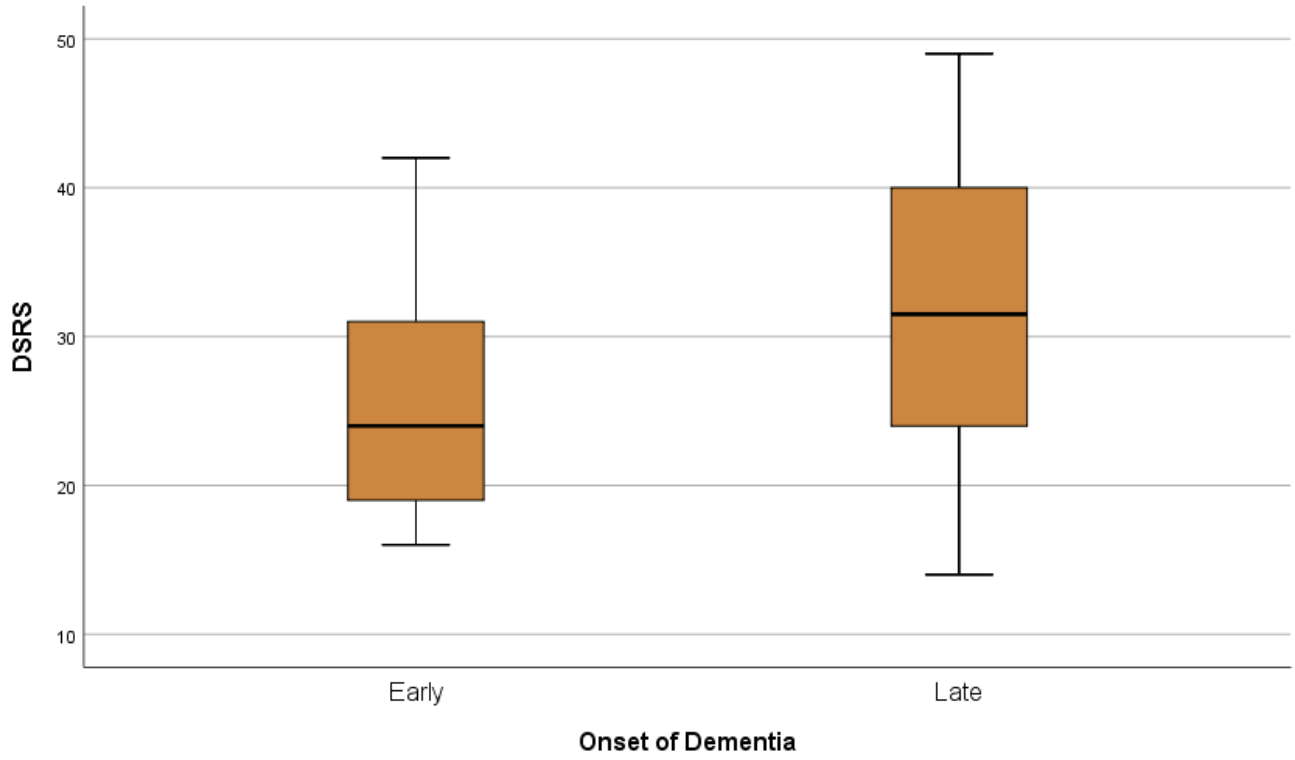
The mean score in early onset group was 31.60 (±10.334) while in late onset group was 25.83 (±8.355). There was statistically significant higher DSRS scores (p=0.021) among those in early onset group on comparison with the late onset group. (Table 6; Figure 1)

Table 6: Comparison of DSRS scores among the two patient groups

DSRS scores, mean (±SD)	Onset of Dementia		p value*
	Early (n=30)	Late (n=30)	
Scores	31.60 (±10.334)	25.83 (±8.355)	0.021

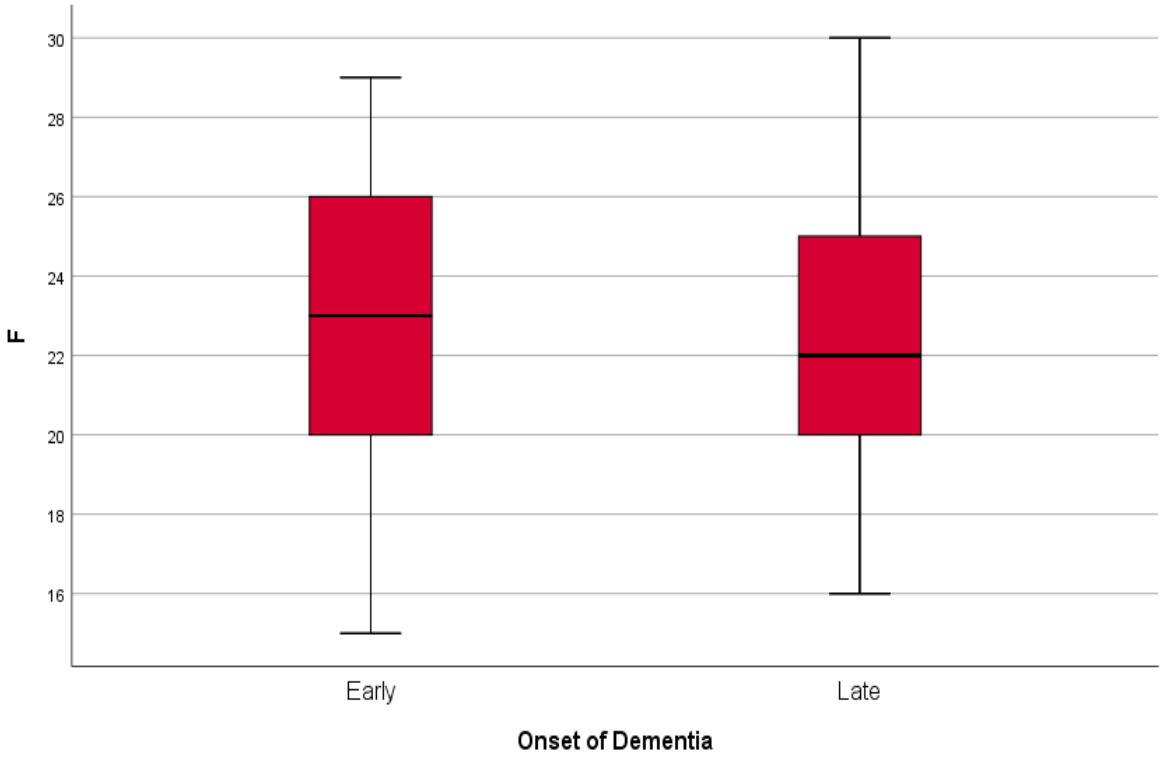
p value by independent t test

Figure 1: Distribution of DSRS scores among the two patient groups (n=60)

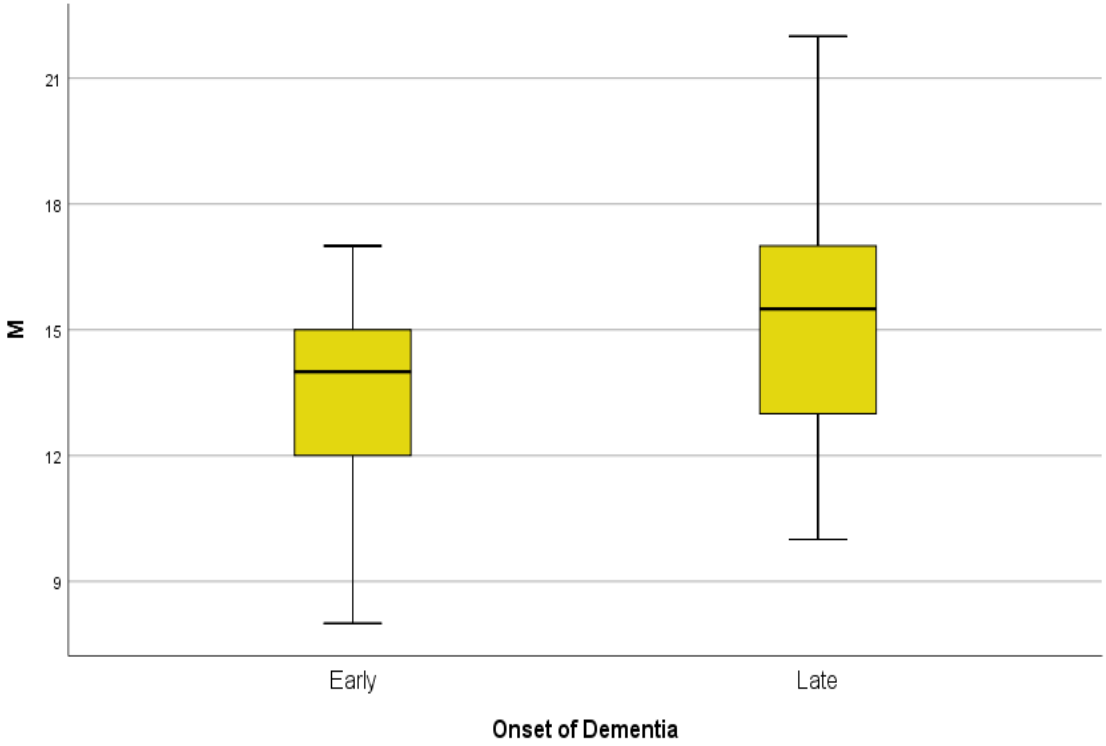


For the feeling subscores, the mean score in early onset group was 22.83 (±3.752) while in late onset group was 25.83 (±3.687). For the memory subscores, the mean score in early onset group was 13.70 (±2.277) while in late onset group was 15.30 (±3.109). Similarly, for Everyday life scoressubscores, the mean score in early onset group was 18.33 (±2.309) while in late onset group was 20.20 (±3.605). For the overall subscores, the mean score in early onset group was 1.93 (±0.740) while in late onset group was 1.93 (±0.785). (Figures 2,3,4,5,6)

Figure 2: Distribution of Feeling scores (DEMQOL) among the two patient groups (n=60)



- **Figure 3: Distribution of Memory scores (DEMQOL) among the two patient groups (n=60)**



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- **Figure 4: Distribution of Everyday life scores (DEMQOL) among the two patient groups (n=60)**

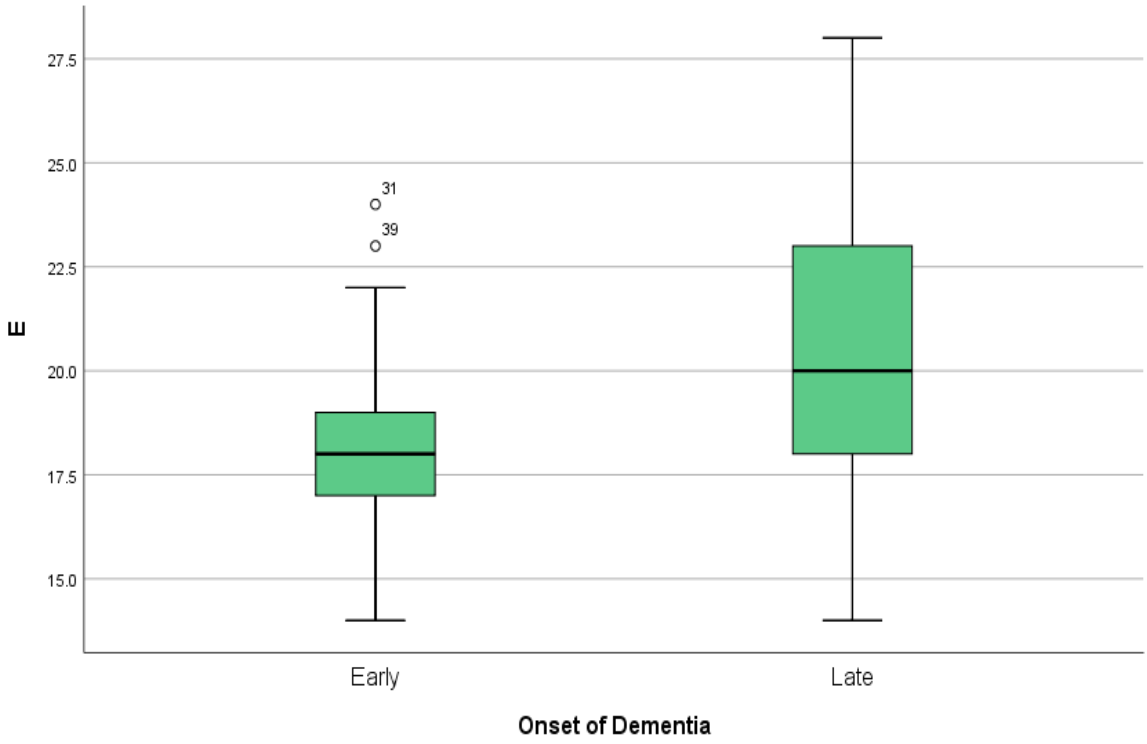


Figure 5: Distribution of Overall quality of life scores (DEMQOL) among the two patient groups (n=60)

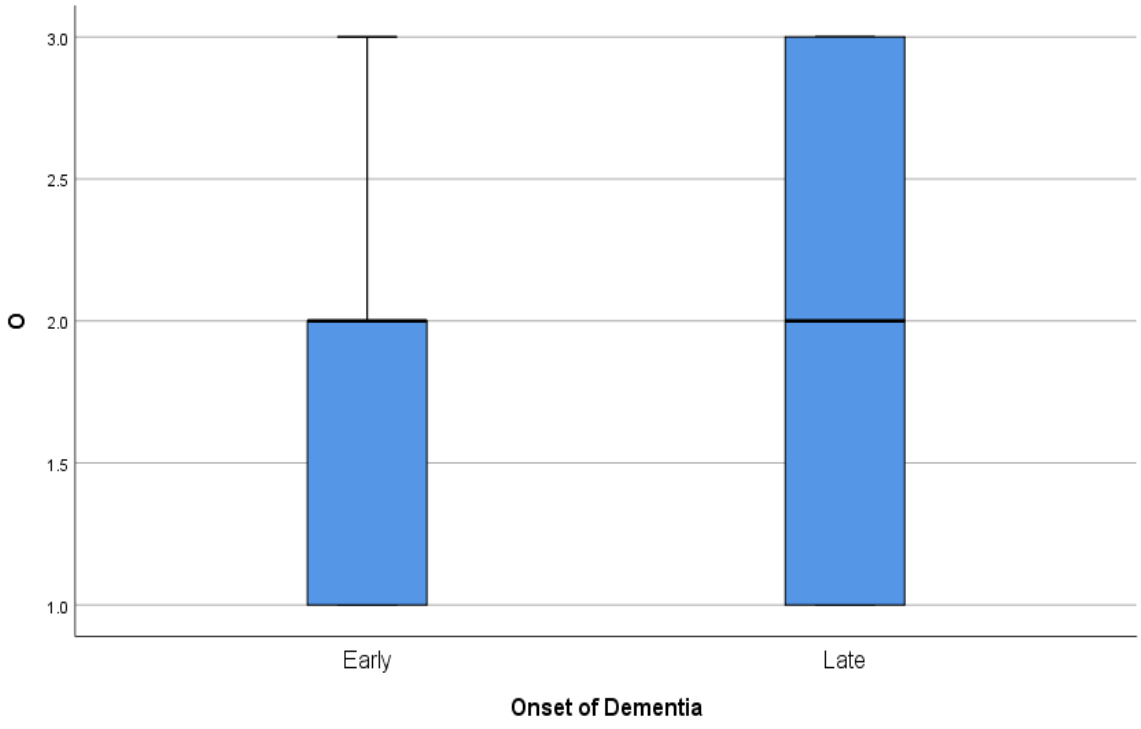
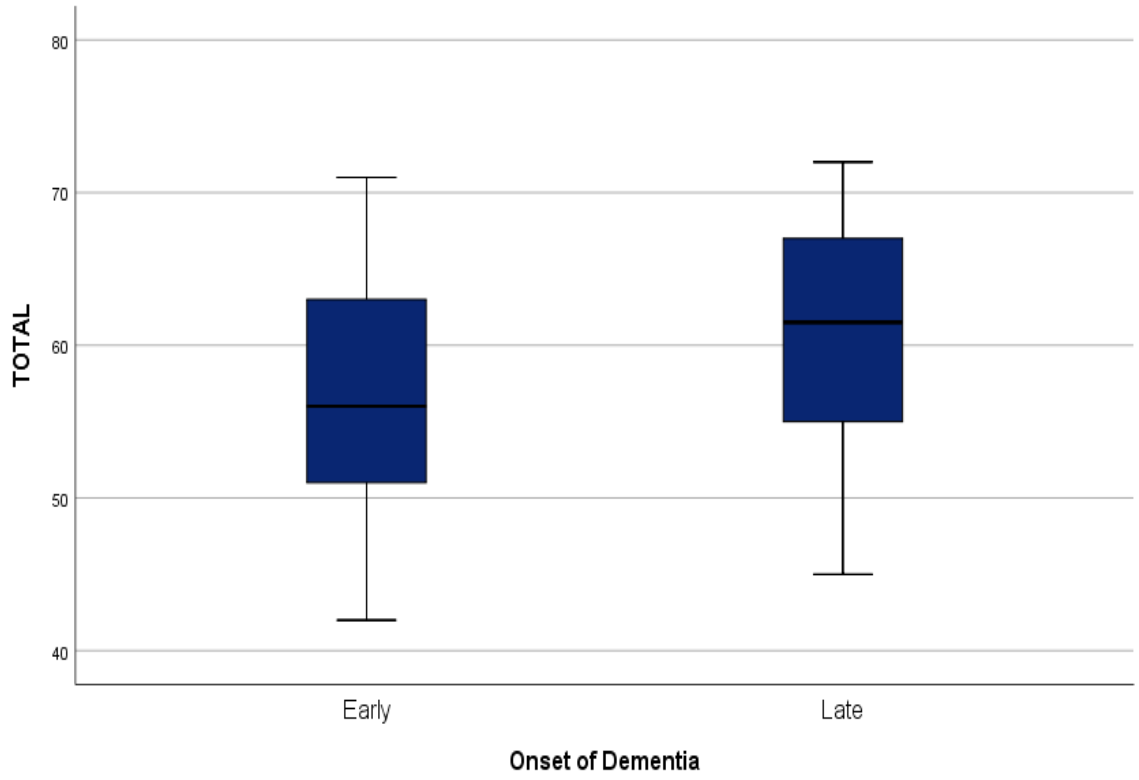


Figure 6: Distribution of total DEMQOL scores among the two patient groups (n=60)



Finally, the mean total DEMQOL score in early onset group was 57.10 (±7.308) while in late onset group was 61.57 (±8.128).There was statistically significant higher DEMQOL scale and subscale scores ($p<0.05$) among those in late onset group on comparison with the early onset group. (Table 7)

Table 7: Comparison of DEMQOL scores among the two patient groups

DEMQOL, mean (±SD)	Onset of Dementia		p value*
	Early (n=30)	Late (n=30)	
Feelings scores	22.83 (±3.752)	25.83 (±3.687)	0.002
Memory scores	13.70 (±2.277)	15.30 (±3.109)	0.027
Everyday life scores	18.33 (±2.309)	20.20 (±3.605)	0.021
Overall scores	1.93 (±0.740)	1.93 (±0.785)	0.016#
Total	57.10 (±7.308)	61.57 (±8.128)	0.029

***p value by independent t test** **[#]- p value by Mann Whitney U test**

DISCUSSION

This study was done among 60 dementia patients out of which 55% were males and 45% were females, 30 patients with early onset of Dementia and 30 patients with late onset of dementia were included in the study. McMurtray et al in their study demonstrated that Early Onset of Dementia (EOD) is a significantly under recognized subgroup of patients with dementia. This 4-year investigation of all patients presenting to a memory disorders program found that nearly 30% of patients with dementia had an age of onset of less than 65 years. When compared with similar patients with late-onset disease, these EOD patients had more treatable or preventable conditions and less AD.[11]

The mean age of presentation of dementia in the present study is 68; the mean age for late onset dementia being 75 and for early onset dementia mean age is 62. The patients in late onset category were significantly older than the other group. However, majority of the patients in early onset were males (63.3%) and hence a little more half of the patients (53.3%) were accompanied by their wife. These values are supported by Shiming Z et al where the mean age of presentation for dementia is 69.6, Where as a study done by Sumana et al shows advanced age of presentation (81years).[12]

In the present study, 55% patients were male and rest being female (45%). Among cases of late onset dementia female preponderance (53.3%) and among cases of early onset dementia male dominance (63.3%) was seen. There was no statistically significant variations in gender prevalence of early and late onset dementia. Sumana M. et al in their study of prevalence of dementia and other psychiatric comorbidities in geriatric population showed similar prevalence rates (65% among females and 35% males). In contrary to these findings, a study by McMurtray et al shows a significantly high male preponderance (98%). [12,11]

In the recent study the prevalence of major depressive attacks among dementia patients were 8% and depression with psychotic behavior was 2%. Our finding is supported by a study done by Chauhan P et al among geriatric population of South India where the prevalence of depression is 9.3 %. [13]This is significantly different from the findings of Sumana et al, where the prevalence of depression among dementia patients were 60 %. [12] Nandi et al. (1997) in a rural community of Gambhirgachi and Paharpur villages, West Bengal found prevalence of depression as 52.2 %.[14]

There are intriguing possibilities of a gender difference in HRQL treatment response with women benefiting most from treatment and men doing worse than women without treatment.[15] The suggestion from one study that Latinos may have worse HRQL for a given level of dementia than the white majority is of concern even if this may be mediated by education and depression. [16]

The distribution of the Psychiatric Co-morbidity among the patients is shown in table 2. The top three psychiatric co-morbidities among the patients were F41.1-Generalized Anxiety disorder (11.7%), F10.2-Mental and behavioural disorders due to use of alcohol - Dependence

syndrome (8.3%) and F32.x-Major depressive episode- current (8.3%). More than half (51.7%) didn't have any psychiatric co-morbidities.

. Among those with early onset dementia, the leading psychiatric co-morbidities (MINI plus codes) were A -Major Depressive Episode (16.7%), P-Generalized Anxiety Disorder (10%) and K- Alcoholic Dependence (10%). In late onset dementia patients, the top MINI plus codes were A -Major Depressive Episode (13.3%) and P-Generalized Anxiety Disorder (13.3%). The distribution of these MINI plus codes wasn't statistically significant. The findings of this study is similar to the one done by Barca et al which states that Depression was the major comorbid condition. [17]

In the present study, more than half (58.3%) of the patients didn't have any substance abuse. About 15% consumed alcohol, 11.7% tobacco and 13.3% both alcohol and tobacco. Among the two group patients with early onset dementia, an equal proportion (16.7%) of patients consumed alcohol, tobacco and both. In patients with late onset dementia, about 15% consumed alcohol, 11.7% tobacco and 13.3% both alcohol and tobacco. There is no significant association between alcohol, smoking and Dementia but Some studies revealed the association of smoking and alcohol drinking status with incidence of dementia.[18,19]

Park *et al.*evaluated cognitive function impairment, smoking and drinking status in 3,174 inhabitants aged 60–64 years in Korea, with a follow-up assessment of cognitive function 7 years later. Present smokers showed a higher risk for developing cognitive function impairment than did never smokers. [20]García*et al.* performed a case-control study. Risk of AD was unaffected by tobacco smoking, alcohol drinkers also showed a lower risk of AD than never consumers. [21]

Panza*et al.* reported that light to moderate alcohol drinking might be associated with a reduced risk of unspecified incident dementia and AD. It has been argued that joint effects of tobacco use and alcohol on ADs. There is substantial evidence from observational studies that conventional risk factors such as smoking, hypertension, diabetes and dyslipidemia play a role in the development of vascular cognitive impairment. [22]`

The interactions between tobacco and alcohol in large prospective studies, and found the joint effects of alcohol and tobacco use on AD. However in the present study, about 36.7% consumed alcohol in early onset dementia group while 23.3% consumed alcohol in late onset dementia group. The distribution of the alcohol use wasn't statistically significant. [23] For the feeling subscores, the mean score in early onset group was 22.83 (±3.752) while in late onset group was 25.83 (±3.687). For the memory subscores, the mean score in early onset group was 13.70 (±2.277) while in late onset group was 15.30 (±3.109). Similarly, for Everyday life scoressubscores, the mean score in early onset group was 18.33 (±2.309) while in late onset group was 20.20 (±3.605). For the overall subscores, the mean score in early onset group was 1.93 (±0.740) while in late onset group was 1.93 (±0.785). Finally, the mean total DEMQOL score in early onset group was 57.10 (±7.308) while in late onset group was 61.57 (±8.128). The Quality of life is higher in the late onset group in comparison to the early onset group which is found to be significant. Similar results were found in the study done by Banerjee et al, where data suggest that behavioural and psychological disturbance and patient age are more strongly associated with quality of life than cognition or functional limitation.

This is an important finding, as it suggests that cognitive improvement may be a poor proxy for quality of life improvement in dementia. [24]

The observed association of quality of life with behavioural and psychological symptoms in dementia is intuitively understandable, and the negative effects of such symptoms on people with dementia and their carers are well understood. The association with patient age is of interest. Older patients and their care givers may find it easier to adapt to dementia because they have had more experience of dementia in their peers, because they are free of the expectations of the early retirement period, or perhaps because their peers are more accepting of dementia. The difference in the quality of life with on set age may be due to, accommodation to dementia over the length of the illness is less likely, given that dementia severity is controlled for in these tests. This has similarities with findings that caregiver burden in dementia is higher in younger caregivers. Patient age in this study may be a proxy for a complex web of social determinates of quality of life in dementia.[25]

CONCLUSION

In the current study, Generalized Anxiety disorder, Mental and behavioural disorders due to use of alcohol - dependence syndrome and Major depressive episodes were the common psychiatric co-morbidities among both early and late onset dementia. Similarly, as per the MINI plus scale, Major Depressive Episode, Generalized Anxiety Disorder and Alcoholic Dependence were the were the common psychiatric co-morbidities among both dementia groups. There was no statistical significant difference in the distribution of psychiatric co-morbidities in both early and late onset dementia.

More than half of the patients didn't have any substance abuse and 15% consumed alcohol, 11.7% tobacco and 13.3% both alcohol and tobacco respectively. Similar to psychiatric co-morbidities, there was no statistical significant difference in the distribution of substance abuse (alcohol, tobacco and cannabis) in both early and late onset dementia.

In the present study, there was statistically significant higher DSRS scores among those in early onset group on comparison with the late onset group indicating higher functional disabilities among those with early onset dementia. In line with the DSRS scores, the quality of life as measured by the DEMQOL scale was significantly higher in late onset dementia group on comparison with early onset dementia group. All the subscales of DEMQOL construct had significant higher scores in patients with late onset dementia.

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