

PREVALENCE OF BEHAVIORAL AND PSYCHOLOGICAL SYMPTOMS IN ALZHEIMER'S DISEASE DEMENTIA & LEWY BODY DEMENTIA AND ITS IMPACT ON THE CAREGIVERS: CROSS-SECTIONAL OBSERVATIONAL STUDY

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ABSTRACT

Background: Dementia is an increasing problem that presents a great challenge for health services worldwide. Lewy body dementia (LBD) is the second most common type of degenerative dementia, taking place after Alzheimer's disease dementia (ADD). The aim and objective are to study the prevalence and pattern of behavioural and psychological symptoms (BPSD) in individuals of age ≥ 60 years diagnosed with ADD and LBD and impact of BPSD on caregivers. **Materials and Methods:** A cross sectional study was carried out in department of psychiatry, tertiary care center involving 56 elderly individuals (≥ 60 years) patients with ADD and LBD. Patients with medications that simulate cognitive disturbance conditions, and other types of dementia were excluded. The tools used were the Hindi mini mental status examination (HMSE), Zarit Burden Interview and the 12- item Neuropsychiatric Inventory (NPI). **Result:** BPSD was found in all cases of ADD and LBD. In ADD aberrant motor behaviour (80.6%) and agitation/aggression (74.2%) were most prevalent BPSD while in LBD hallucination (80%) and Irritability (80%) were most common prevalent BPSD. Prevalence of disinhibition and aberrant motor behaviour was significantly higher in ADD than LBD, while prevalence of delusions, hallucinations and night time behaviour was significantly higher in LBD than ADD. Caregiver distress was significantly higher for depression/dysphoria and apathy/indifference in AD, while in LBD group caregiver distress was significantly higher for delusions, hallucinations and irritability. Care giver burden was significantly higher in care givers of LBD in compare to ADD (0.01). **Conclusion:** Most of the patients had multiple behavioral and psychological symptoms. Hallucinations and delusions were more common and most distressing symptoms in patients with LBD in compare to patients with ADD. Care giver challenges are higher in LBD than ADD.

INTRODUCTION

Dementia is a major health concern around the world and its prevalence is increasing globally due to population aging. Around 8.8 million elderly people living in India are suffering from dementia and expected to increase up to 11.4 million by 2025.^[1] Dementia is more common in female than male. Among the various types of neurodegenerative dementia Alzheimer's disease

dementia (ADD) is most common while Lewy body dementia (LBD) is second most common type.^[2] Behavioral and psychological symptoms of dementia (BPSD) are non-cognitive neuropsychiatric clinical features and frequently encountered in clinical practices while treating patients with dementia. These may appear before onset of cognitive symptoms in dementia. BPSD includes agitation, aggression, anxiety, depression, delusions, hallucination, sleep disturbances etc. and

are commonly associated with poor prognosis of dementia and higher care giver burden. Caregiver burden includes emotional distress, physical strain, social isolation and financial hardship experienced by individual caring for a family members or loved one with chronic illness like dementia. Caregiver burden is strongly associated with BPSD.^[3,4] Chronic stress due to caregiver burden in dementia leads to burnout, which is strongly associated with depression, anxiety, sleep disturbances and poor quality of life among caregivers.^[5] Lewy body dementia is under studied than Alzheimer's disease despite being among the common causes of dementia⁶. Therefore, we planned our study to assess the clinical aspect of behavioral and psychological symptoms in ADD & LBD and its impact on caregivers. We also assessed the comparison of BPSD and caregiver burden among ADD and LBD.

MATERIALS AND METHODS

Between December 2018 and May 2019, A cross sectional observational study was performed at the Psychiatry Centre of SMS Hospital, Jaipur. The study included the outdoor patients of both genders with an age more than 60 years, along with an HMSE score <25 and a diagnosis of Alzheimer's and Lewy body dementia confirmed by using ICD 10. Patients with other types of dementia, conditions, and medications that stimulate cognitive disturbances were excluded. Patients and their caregivers who did not give consent were also excluded. A total of 56 patients who attended the OPD during the study period and satisfied the criteria were included in our study consecutively. The study received approval from the Ethical Committee of the SMS Medical College, Jaipur, and informed consent was obtained from participants along with their caregivers.

Tools

1. Semi-structured Performa for collection of socio-demographic and clinical details: A specifically designed semi-structured Performa was used to record the socio-demographic data, and data on the presenting complaints, history of present illness, past history, family history, personal history, medical history, physical examination, mental status examination, and diagnosis.

2. Hindi Mental State Examination (HMSE): The HMSE is a modified version of the mini mental state examination and has been standardized for use in the hindi speaking persons. It is a 30-point scale, and < 25 is considered as dementia.^[7]

3. Neuropsychiatric Inventory (NPI): Assessment of the behavioral and psychological symptoms was performed with the 12 item Neuropsychiatric Inventory (NPI), which was originally developed by Cummings et al. to provide a means of assessing neuropsychiatric symptoms of patients with Alzheimer's and other neurodegenerative disorders. Ten behavioral (delusions, hallucinations, agitation/aggression, depression/dysphoria, anxiety, elation/euphoria, apathy/indifference, disinhibition, irritability/lability, and aberrant motor behaviour) and two neuro-vegetative areas (sleep and nighttime behavior disorders, and appetite and eating disorders) are included in the NPI.^[8]

4. The Zarit Burden Interview (ZBI): ZBI is a standard, validated tool was used to assess the burden on family caregivers (Cronbach's alpha = 0.92). It is a 5-point (0-4; a higher score denotes higher burden), 22-item Likert scale, which assesses the five main domains of burden namely health, psychological well-being, finances, social life and relationship with the patient.^[9]

Statistical Analysis: A descriptive summary such as means, standard deviation for continuous variable, frequencies percentage for categorical variable were determined. Pearson Chi square/ fisher exact test was done qualitative data along t-test for continuous data for comparison of data among ADD and LBD. a p-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1: Distribution of clinical characteristics of patients with Lewy body dementia.

Sample characteristic	ADD (N=31)	LBD 25 N (%)	P Value
Age(yrs)	72.52±7.8	70.86±4.4	0.28
Sex	Male	20 (64.5%)	0.41
	female	11 (35.5%)	
HMSE score	8.74±4.4	9.86±2.6	0.08
Total Duration of Illness (yrs)	6.03 ±2.1	3 ±1	0.02

No significant difference in age and cognitive severity (HMSE) score of patients with ADD and LBD. But duration of illness was longer in patients with LBD in compare to ADD.

Table 2: Caregiver characteristics

Sample characteristic	ADD (N=31)	LBD (N=25)	P Value
Age of caregivers (years)	40.38±12.07	42.38±13.07	0.20
Types of care giver	Spouse (37%)	Spouse (36%)	0.31
	Son/daughter in law (51%)	Son/daughter in law (53%)	
	Others (10%)	Others (11%)	
Zarit Burden Score	54±11.13	61.7±1.3	0.01

Majority of care giver were adults. Care giver burden severity score was significantly higher in care givers of lewy body dementia in compare to Alzheimer's disease dementia. (p=0.01)

Table 3: Neuropsychiatric Symptoms – Frequency of behavioral and psychological symptoms of dementia in ADD vs LBD

12 item NPI Symptoms	ADD (N=31)	LBD (N=25)	P value
Delusions	5 (16%)	(60%)	0.01
Hallucinations	5 (16%)	(80%)	0.02
Agitation/aggression	23 (74.2%)	15 (50%)	0.06
Dysphoria/ depression	3 (9.7%)	6 (40%)	0.33
Anxiety	15 (48.4%)	12 (40%)	0.21
Euphoria / Elation	14 (45.2%)	12 (40%)	0.30
Apathy/ Indifference	18 (58.1%)	10 (33%)	0.31
Disinhibition	16 (51%)	9 (30%)	0.02
Irritability	17 (54.8%)	24 (80%)	0.22
Aberrant Motor	25 (80.6%)	12 (40%)	0.01
Nighttime Behaviour	21 (67.7%)	18 (70%)	0.02
Appetite/ Eating	20 (64.5%)	3 (10%)	0.30

The prevalence of behavioral and psychological symptoms was 100%. All the patients presented had two or more symptoms. Aberrant motor behaviour and agitation/aggression were most frequent symptoms in ADD while hallucinations and

irritability were most prevalent symptoms in LBD. Prevalence of disinhibition and aberrant motor behaviour was significantly higher in ADD, while prevalence of delusions, hallucinations and night time behaviour were higher in LBD.

Table 4: Caregiver distress among caregivers of ADD and LBD

NPI Symptoms	All cases	ADD	LBD	P value
Delusions	0.97±1.5	0.45±1.01	1.57±0.53	0.002
Hallucinations	0.60±1.2	0.39±0.9	2.14±0.37	0.001
Agitation/Aggression	3.07±1.6	2.65±1.8	2.71±0.76	0.46
Depression/Dysphoria	0.80±1.26	1.26±1.4	00±00	0.017
Anxiety	1.05±1.3	1.19±1.3	1.14±0.9	0.271
Elation/Euphoria	1.27±1.7	1.55±1.8	0.86±1.6	0.610
Apathy/indifference	1.53±1.7	1.71±1.7	0.29±0.8	0.001
Disinhibition	2.03±1.9	2.29±1.8	1.71±1.3.	0.059
Irritability/labidity	2.00±1.6	1.68±1.6	2.42±1.1	0.001
Aberrant motor Behaviour	2.93±1.7	3.32±1.7	2.29±0.5	0.279
Sleep and Night time behaviour	3.95±1.3	1.19±1.2	3.29±0.4	0.067
Appetite and Eating Disorder	1.45±1.2	1.42±1.2	2.00±1.6	0.559

Caregiver distress was significantly higher for depression/dysphoria and apathy/indifference in AD group higher while in LBD group caregiver distress was significantly higher for delusions, hallucinations and irritability.

DISCUSSION

In this study, we found that behavioral and psychological symptoms were present in all cases of dementia. This may be due to study was conducted at psychiatric center and behavioral and psychological symptoms are major concern in dementia for psychiatric consultation. Shreekantiah et al,^[10] in a multicentric study found that BPSD were present in 96.6% cases of dementia. In present study total duration of illness at the time of assessment was significantly higher in ADD than

LBD. which is due to Alzheimer's disease follow more slow progressive course than dementia with lewy body.^[11] In our study aberrant motor behaviour (80.6%), agitation/ aggression (74.2%) and night time behaviour (67.7%) were most common symptoms in ADD, In acute hospital setting study agitation/aggression was most common symptoms in ADD,^[12] while in community dwelling dementia patients studies apathy and depression were most common BPSD symptoms in dementia.^[13] In present study hallucinations (80%), irritability (80%), night time behaviour (70%) and delusions (60%) were most common symptoms in LBD. While Borroni et al,^[14] found that anxiety (67.4%), depression (61.9%), apathy (57.6%), agitation and sleep disorder (55.4%) were most common BPSD in LBD. In our study psychotics symptoms delusions and hallucinations were more common in LBD than

ADD, which may be due to hallucination is among one of core feature of dementia with lewy body. Caregiver burden was also significantly higher in caregivers of patients with LBD than ADD. In LBD caregiver distress was significantly higher for delusions, hallucinations and irritability than ADD. Similarly, in a study Yuuki et al,^[15] also found that caregiver burden was significantly higher in dementia with Lewy bodies (DLB) compared to Alzheimer's disease (AD). Caregiver distress and burden adversely impact quality of life of dementia caregivers.^[16,17] In retrospective cohort study Mueller et al,^[18] found that higher and earlier mortality in LBD than ADD. Presence of BPSD in LBD has been linked to poor survival and increased risk of mortality.^[19] So, identification of BPSD symptoms is crucial for management of caregiver burden in LBD as BPSD are more challenging for caregivers of LBD as found in our study.

Limitations of the Study: This is a clinic-based study conducted in a tertiary care psychiatry center, which may have led to Referral bias. This, along with the small sample size, limits the generalizability of the results. This being a cross-sectional study, longitudinal relationships among the total duration of study, numbers of symptoms and Zarit score cannot be definitively established. We diagnosed the types of dementia based on clinical criteria supported by radiological parameters, but did not use pathological (autopsy) confirmation. However, as the criteria (ICD-10) used were well established, we feel that they should be sufficient for all practical purposes of this clinical study.

CONCLUSION

Most of the patients with LBD and ADD had multiple behavioral symptoms. Psychotics symptoms (hallucinations and delusions) were predominant symptoms in LBD than ADD and these symptoms were important reason of caregiver distress in LBD than ADD. Caregiver burden is more common in LBD than ADD. While approaching for management of dementia caregiver burden should be assessed, as care giver burden is prominent in LBD. Delusions and hallucinations should be addressed properly to reduce care giver distress and burden. Further studies with larger sample size should be conducted to confirm these findings.

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