

Caregiver Chronicles: Evaluation of Stress and Psychiatric Morbidity in Primary Caregivers for Alzheimer's- Type Dementia and Its Relationship to Their Personality Traits and Sociodemographic Characteristics

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Abstract:

Background: The main causes of caregiver stress and psychiatric morbidity were the patient's behavioral and cognitive status, the number of hours spent providing care, stress, social isolation, gender, the caregiver's relationship to the patient and their personality, and the accessibility of support resources. The impact of caregiving on the family must be quantified. Quantification and identification are critical for developing effective ways to alleviate caregiver pain.

Objectives: The goals of this study were to assess stress and psychiatric morbidity in the main caregivers of Alzheimer's dementia patients and to link them with the socio-demographic and personality profiles of primary caregivers.

Methods: A cross-sectional study was done on a sample of 50 primary caregivers of Alzheimer's dementia patients meeting the study's inclusion requirements and attending the outpatient department (OPD) of psychiatry, medicine, and neurology at TMMCRC, Moradabad, using the PSLE, BPRS, HMSE, PF-16 scale, and relevant sociodemographic performance measures.

Results: Seven caregivers (14%) did not report any stress when the Presumptive Life Events Scale was used to screen for stress. Of the participants, 26 (52%) experienced moderate stress, and 17 (34%) experienced severe stress. PSLE was found to be statistically significant ($p > 0.05$) among caregivers who reside in urban areas and have completed high school or more education. It was discovered that eight people (16%) had minor psychiatric illnesses. Self-control with conscientious personality owners scored much higher than those with unrestrained personalities, while caregivers with independent personalities scored significantly higher than accommodating caregivers ($p = 0.014$).

Conclusion: The study concludes by highlighting the significance of a thorough management strategy that involves forming a collaborative relationship between family caregivers and medical experts.

Keywords: Alzheimer's Disease, Caregiver, Presumed Stressful Life, Personality, Psychiatric Morbidity Events Scale.

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Introduction

More than two and a half million people worldwide are affected by dementia, with Alzheimer disease being the most common reason behind [1]. This number is increasing with the addition of nearly 4.6 million new cases every year, which translates into one new case every 7 seconds. At this rate, it is expected that by the year 2040, there will be as many as 81.1 million dementia cases worldwide. [2]

Dementia can be defined as a clinical syndrome characterized by a cluster of symptoms and signs manifested by difficulties in memory, language, and other cognitive functions, along with changes in behaviour and impairments in activities of daily living. [1] The patients of Alzheimer's disease as

such and those having dementia as a result of Alzheimer's disease are generally elderly. In fact, Alzheimer is an age-associated degenerative disorder. It has often been seen that most of the caregivers to the elderly Alzheimer patients with dementia are young women, often daughters-in-law of patients affected by dementia.

The principal sources of caregiver stress were influenced by patient's behavioral and cognitive status, hours involved in care, stress, social isolation, gender, relationship to the patient, availability of support resources, and caregiver characteristics such as their personality and coping strategies [3,4]. Family conflict was commonly

experienced. The majority of Family caregivers experience significant disturbances in their mental health [5]. Regretfully, in cultures like India where caregivers are expected to provide unending assistance, there is no systematic assessment of this impact among caregivers, despite the evidence pointing to significant caregiver stress and susceptibility to psychiatric morbidity. It is imperative to quantify the effects of giving care to the family and identify the numerous features that affect this caregiver stress, even though the family remains an exceptional unit within the social framework.

In order to develop effective solutions to lessen the strain of caregiving, this identification and measurement is essential from the point of view of formulating appropriate strategies to reduce this caregiver suffering. This study was carried out with an aim to assess the stress, psychiatric morbidity in the primary caregivers of diagnosed cases of dementia of Alzheimer's type and to correlate it with their socio-demographic profile and their personality.

This paper is an extension of my M.D. thesis, "Stress, Caregiver Burden, and Psychiatric Morbidity in Primary Care Givers of Diagnosed Cases of Dementia of Alzheimer's Type: Correlation with Severity, Personality, and Socio-Demographic Profile," and it covers different areas of my research from my thesis-related previously published paper.

The thesis was completed under the supervision of Dr. A.Q. Siddiqui, who regrettably died in 2021 due to COVID-19. We would like to thank him for his contributions to this research.

Aim and Objectives

To study the level of stress, psychiatric morbidity in primary caregivers of diagnosed cases of dementia of Alzheimer's type and to correlate its socio-demographic and personality profile.

Objectives

1. To evaluate the stress and psychiatric morbidity in Primary Care Giver of Diagnosed cases of Dementia of Alzheimer's type.
2. To Correlate Stress with Socio-demographic of Primary Care Giver and severity of cognitive impairment of dementia patients
3. To correlate psychiatric morbidity among Primary caregivers with their personality profile

Material and Method

Study Area: Department of Psychiatry in collaboration with the Department of Medicine & Neurology, Teerthanker Mahaveer Medical College and Research Centre (TMMC&RC), Moradabad, Uttar Pradesh. TMMC&RC is a tertiary care facility catering to patients from and around

Moradabad district. The facility has multi-specialty facilities and caters to a diverse demographic of patients.

Sample Size and Study Population: 50 outdoor co-resident caregivers of patients suffering from dementia of Alzheimer's type. A caregiver for Alzheimer's was defined as an individual living with a person suffering from Alzheimer and involved in the care of the person on a day-to-day basis. In families with more than one caregiver, the persons with the most contact was considered the primary caregiver and included in the assessment.

Inclusion Criteria:

1. Primary Care Giver of patients with diagnosis of Alzheimer's by DSM-5 criteria.
2. A Primary caregiver will be defined as a relative who has been staying with the patient for at least two years with continuous contact, and actively involved in his/her care
3. Care giver of both sexes and aged above 18 years.
4. Willingness to participate in the study.
5. Free of any psychiatric or medical/surgical illness.

Exclusion Criteria:

1. Participants suffering from mental retardation or any other cognitive dysfunction.
2. Care Giver living in family having more than one patient with dementia and other major medical or psychiatric illness will be excluded.

Tools of data collection:

- Socio-Demographic data sheet
- Presumptive Stressful Life Events Scale (PSLES) (Singh et al., 1984) [6]
- BPRS (Brief Psychiatric Rating Scale) [20]
- Personality Factor-16 Questionnaire (Catell and Mead, 2008) [21]
- Hindi Mental State Examination scale (HMSE) (Ganguli et al., 1995) [22]

Description of tools:

Socio-Demographic data

It was used to elicit the background information and the personal profiles of the primary caregiver and the family. The illness details of the patient of dementia were also covered in the data. The information was gathered from the primary caregiver and patient.

Presumptive Stressful Life Events Scale (PSLES) [6]

In view of various limitations like culture differences and non-validation of existing scales, Gurmeet Singh et al 1984 constructed this new scale suitable for Indian population. It consists of 51-life events. Hundred is kept as highest stress

score and zero as no perceived stress. Scale items were further classified in to (a) personal or impersonal (not dependent on the individual action) or ambiguous, (b) desirable or undesirable. The scale was constructed and standardized for 2 time spaces, that is, last 1 year & life time. On the basis of total scores obtained, by adding all the life event score the following criteria for determination of severity was used:

- Score Interpretation
- Up to 40 No stress
- 40-200 Moderate stress
- More than 200 Severe stress

This scale is used in the present study for the measurement of stressful life events

Brief Psychiatric Rating Scale (BPRS) [20]

We used 18-item Brief Psychiatric Rating Scale (BPRS) [21]. BPRS is a widely used instrument for assessing the positive, negative, and affective symptoms of individuals who have psychotic disorders, especially schizophrenia. It has proven particularly valuable for documenting the efficacy of treatment in patients who have moderate to severe disease.

The BPRS consists of 18 symptom constructs and takes 20-30 minutes for the interview and scoring. The rater should enter a number ranging from 1 (not present) to 7 (extremely severe).

- 0 = Not assessed,
- 1 = Not present,
- 2 = Very mild,
- 3 = Mild,
- 4 = Moderate,
- 5 = Moderately severe,
- 6 = Severe,
- 7 = Extremely severe

The Personality Factor-16 Survey (Mead and Campbell, 2008) [21]

A self-reported personality test is the Sixteen Personality Factor Questionnaire (16PF). In addition to serving as a measure of normal personality, the 16PF is a clinical tool that psychologists and other mental health practitioners can use to diagnose psychiatric problems, organize therapy, and make prognostic assessments. A

normal-range assessment of anxiety, adjustment, emotional stability, and behavioral issues is given to physicians by the 16PF test. 16 primary personality measures and 5 global personality scales, all bi-polar (meaning that each scale has a distinct, meaningful definition at both ends), are scored on the 16PF.

Warmth (A), rationality (B), emotional stability (C), dominance (E), liveliness (F), rule-consciousness (G), and social boldness (H), Openness to change (Q1), self-reliance (Q2), perfectionism (Q3), tension (Q4), sensitivity (I), vigilance (L), abstractness (M), privateness (N), and apprehension (O) are the main components of the scale.

The ratings for each item might vary from 1 to 10.

Hindi Mental State Examination scale (HMSE) (Ganguli et al., 1995) [22]

Hindi Mental State Examination scale, adapted from Mini Mental State Examination scale, developed for Indian population (Ganguli et al., 1995)²² was applied to evaluate the cognitive functioning of the patient. This test consists of 22 items, which test different components of intellectual capability. It is relatively simple to administer and provides a quick, brief index of the subject's current level of functioning.

Scores:

1 = Correct answer

0 = Wrong answer

Normal cognitive function = 27-30, Mild cognitive impairment = 21-26, Moderate cognitive impairment = 11-20, and severe cognitive impairment = 0-10.

Data Analysis:

The collected data was subjected to statistical analysis.

The statistical analysis was done using SPSS (Statistical Package for Social Sciences) Version 20.0 statistical analysis software. The values were represented in numbers (%) and mean±SD.

Results

Table 1: General, Demographic and Social Profile of Care Givers

SN	Variable	Statistic
1.	Age	
	20-30 Years	6 (12%)
	31-40 Years	5 (10%)
	41-50 Years	18 (36%)
	51-60 Years	9 (18%)
	61-70 Years	8 (16%)
	>70 Years	4 (8%)
	Mean Age±SD (Range) in years	49.72±13.81 (20-78)

SN	Variable	Statistic
2.	Gender	
	Male	34 (68%)
	Female	16 (32%)
3.	Relationship with Patient	
	Spouse	7 (14%)
	Sibling	6 (12%)
	Son/Daughter	31 (62%)
	Daughter-in-Law	2 (4%)
	Grandchildren	4 (8%)
4.	Place of residence	
	Rural	35 (70%)
	Urban	15 (30%)
5.	Religion	
	Hindu	25 (50%)
	Muslim	19 (38%)
	Sikh	6 (12%)
6.	Occupation	
	Farmer	22 (44%)
	Business/Shopkeeper	11 (22%)
	Teacher/Service*	5 (10%)
	Housewife	12 (24%)
7.	Per capita monthly family income (in Rs)	
	≤Rs 5,000/-	34 (68%)
	Rs 5,001/-10,000/-	12 (24%)
	>Rs 10,000/-	4 (8%)
8.	Family Type	
	Joint	26 (52%)
	Nuclear	24 (48%)
9.	Marital Status	
	Married	41 (82%)
	Unmarried	9 (18%)
10.	Education	
	Primary	11 (22%)
	Junior High School	9 (18%)
	High School	14 (28%)
	Intermediate	9 (18%)
	Graduate or above	7 (14%)

Age of caregivers ranged from 20 to 78 years. Maximum number of caregivers were aged 41-50 years (36%) followed by those aged 51-60 years (18%), 61-70 years (16%), 20-30 years (12%), 31-40 years (10%) and >70 years (8%) respectively. Mean age of caregivers was 49.72±13.81 years.

Majority of them were males (68%). There were 16 (32%) females. Male to female ratio was 2.13. Majority were sons/daughters (62%) followed by spouses (14%), siblings (12%), grandchildren (8%) and daughters-in-law (4%) respectively. More than two third (70%) were from rural areas. A total of 15 (30%) were from urban areas.

Religion wise, half the caregivers (50%) were Hindus followed by Muslims (n=19; 38%) and Sikhs (n=6; 12%) respectively. Agriculture/Farming was the most common occupation (n=22; 44%) followed by

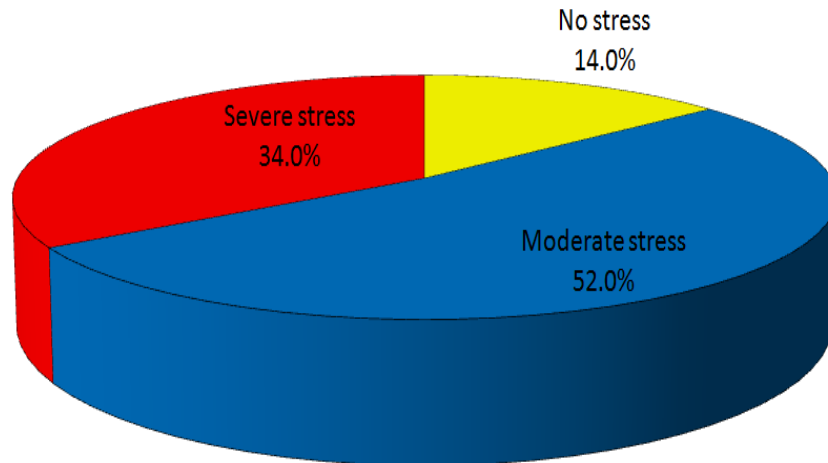
business/shop-keeping (n=11; 22%). There were 5 (10%) teachers/serving caregivers (one of them was a medical practitioner) and 12 (24%) were housewives. Per capita monthly family income was <Rs 5,000 in 34 (68%) cases followed by Rs 5,001-10,000/- per month (24%) and >Rs 10,000/- per month (8%) respectively.

Majority of caregivers used to live in a joint family (52%). However, 24 (48%) were living in a nuclear family. Most of the caregivers were married (82%). There were 9 (18%) unmarried caregivers.

All the caregivers were literate. Maximum (n=14; 28%) were educated up to High School, followed by those educated up to Primary level (22%) and Junior High School or Intermediate (22% each). A total of 7 (14%) caregivers were educated up to graduation or above.

Table 2: Distribution of caregivers according to Outcome of Screening for Stress (PSLE Scale)

SN	PSLE Category	No.	%
1.	No stress	7	14.0
2.	Moderate stress	26	52.0
3.	Severe stress	17	34.0

**Figure 1: Distribution of caregivers according to outcome of stress screening (PSLE)**

On screening of stress using Presumptive Life Events Scale, a total of 7 (14%) caregivers did not have any stress. Moderate stress was observed in 26 (52%) and Severe Stress in 17 (34%) cases.

Table 3: Association of Care Giver PSLE Score with General Profile Characteristics of caregiver

SN	Variable	No. of care givers	Care Giver Stress PSLE		Statistical Significance
			Mean	SD	
1.	Age				F=0.199; p=0.820 (ANOVA)
	<40Years	11	129.73	107.80	
	41-60 Years	27	141.33	124.22	
	>60 Years	12	117.25	79.38	
2.	Gender				't'=0.424; p=0.673
	Male	34	128.44	107.15	
	Female	16	142.69	118.49	
3.	Relationship with Patient				F=0.228; p=0.877 (ANOVA)
	Spouse	7	132.57	81.52	
	Sibling	6	107.67	148.09	
	Son/Daughter/Daughter-in-law	33	140.88	112.61	
	Grandchildren	4	106.75	96.14	
4.	Place of residence				't'=2.309; p=0.025
	Rural	35	155.51	110.33	
	Urban	15	80.47	92.06	
5.	Religion				F=0.203; p=0.817 (ANOVA)
	Hindu	25	137.96	111.98	
	Muslim	19	135.00	116.92	
	Sikh	6	106.00	88.98	
6.	Occupation				F=1.667; p=0.187 (ANOVA)
	Farmer	22	142.59	106.13	
	Business/Shopkeeper	11	102.91	113.94	
	Teacher/Service*	5	60.20	27.93	
	Housewife	12	173.33	122.18	
7.	Per capita monthly family income (in Rs)				F=4.918; p=0.012 (ANOVA)
	≤Rs 5,000/-	34	162.44	115.32	
	Rs 5,001/-,10,000/-	12	85.08	67.42	
	>Rs 10,000/-	4	26.50	11.56	

8.	Family Type				
	Joint	26	160.42	121.99	't'=1.884; p=0.066
	Nuclear	24	103.29	88.20	
9.	Marital Status				
	Married	41	139.17	115.59	't'=0.845; p=0.402
	Unmarried	9	104.89	77.89	
10.	Education				
	Below High school	20	185.10	124.68	't'=2.994; p=0.005
	High School or above	30	98.27	84.25	

On evaluating the association between PSLE scores and general and demographic characteristics of patients, none of the associations except PSLE were found to be significant statistically ($p > 0.05$) among those caregivers who are Urban residents and those educated up to High school and above

had significantly lower PSLE scores as compared to rural residents and those educated below High school. With increasing per capita monthly family income a significant decrease in mean PSLE scores was observed ($p < 0.05$). None of the other associations were significant statistically.

Table 4: Distribution of caregivers according to Outcome of Psychiatric Impact screening (Using Brief Psychiatric Rating Scale)

SN	BPRS Category	No.	%
1.	No psychiatric burden (Score <54)	42	84.0
2.	Mild Psychiatric morbidity (Score 54-71)	8	16.0

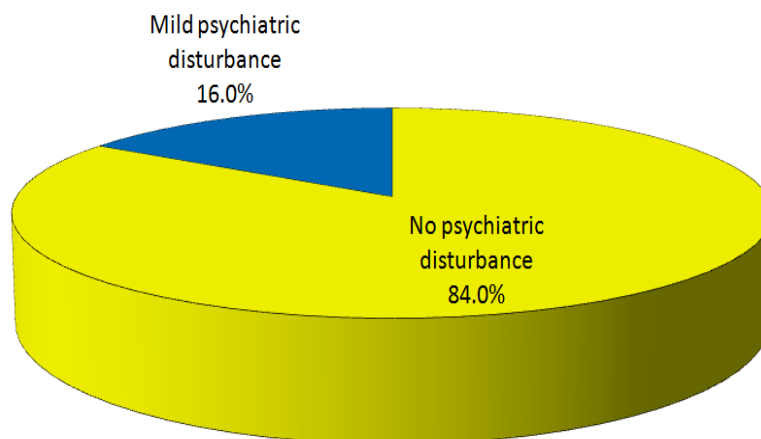


Figure 2: Distribution of caregivers according to their psychiatric morbidity

Majority (n=42; 84%) caregivers were found to have no psychiatric impact. However, a total of 8 (16%) were found to have mild psychiatric morbidity.

Table 5: General Profile and Disease Characteristics of patients (n=50)

SN	Variable	Statistic
1.	Age	
	<70 Years	16 (32%)
	71-80 Years	26 (52%)
	>80 Years	8 (16%)
	Mean Age±SD (Range) in years	74.34±5.10 (67-87)
2.	Gender	
	Male	19 (38%)
	Female	31 (62%)
3.	Duration of illness	
	<1 Year	19 (38%)

	1-2 Years	27 (54%)
	>2 Years	4 (8%)
	Mean duration±SD (range) in years	1.61±0.83 (1-6)
4.	Level of Cognitive Impairment (HMSE)	
	Mild (Score 21-26)	21 (42%)
	Moderate (Score 11-20)	28 (56%)
	Severe (Score <10)	1 (2%)

Age of patients ranged from 67 to 87 years. Majority of patients were aged 71-80 years.

There were 16 (32%) patients aged <70 years and 8 (16%) aged >80 years. Mean age of patients was 74.34±5.10 years. Majority of patients were females (62%). There were 19 (38%) males. Male to female ratio was 0.61. Duration of illness ranged

from 1 to 6 years. Majority (54%) had disease for 1-2 years. There were 19 (38%) having disease for 1 year and 4 (8%) having disease for >2 years. Mean duration of illness was 1.61±0.83 years.

Level of cognitive impairment was mild in 21 (42%), moderate in 28 (56%) and severe in only 1 (2%) cases.

Table 6: Association of Care Giver PSLE Scores with Psychiatric Comorbidity Status

SN	Variable	No. of care givers	Care Giver PSLE Scores		Statistical Significance
			Mean	SD	
1.	Psychiatric Comorbidity				
	No	41	119.93	97.88	t=1.839; p=0.072
	Yes	9	192.56	145.56	

Mean PSLE levels were higher among those having psychiatric comorbidity as compared to those not having psychiatric comorbidity but difference was not significant statistically (p=0.072).

Table 7: Association of Care Giver Psychiatric Morbidity Scores with Stress Levels

SN	Variable	No. of care givers	Care Giver BPRS		Statistical Significance
			Mean	SD	
1.	Stress				
	No stress	7	27.86	11.81	F=4.531; p=0.016 (ANOVA)
	Moderate stress	26	34.77	11.95	
	Severe stress	17	43.06	12.50	

With increasing stress levels, mean BPRS scores showed a significant incremental trend (p=0.016).

Table 8: Association between Caregiver BPRS Scores and Personality Traits

SN	Basic Traits	No. of cases	Care Giver Burden Scores (Pai and Kapoor)		Statistical significance
			Mean	SD	
1.	Warmth				
	Introvert	17	37.53	14.11	‘t’=0.353; p=0.726
	Extrovert	33	36.15	12.54	
2.	Anxiety				
	High	19	39.95	12.72	‘t’=1.436; p=0.157
	Low	31	34.58	12.89	
3.	Receptivity				
	Toughminded	19	37.47	13.76	‘t’=0.361; p=0.719
	Receptive	31	36.10	12.66	
4.	Adjustment				
	Independent	17	42.82	11.84	‘t’=2.563; p=0.014
	Accommodating	33	33.42	12.50	
5.	Self-Control				
	Conscientious	18	41.50	14.31	‘t’=2.061; p=0.045
	Unrestrained	32	33.88	11.48	

Except for adjustment for which caregivers with independent personality had significantly higher scores as compared to that of accommodating caregivers (p=0.014) and self-control for which conscientious personality

owners had significantly higher scores as compared to those having unrestrained personality, none of the other associations were found to be significant statistically ($p>0.05$).

Table 9: Association of Care Giver PSLE Score with General Profile and Disease Characteristics of patients

SN	Variable	No. of cases	PSLE		Statistical significance
			Mean	SD	
1.	Age				F=0.333; p=0.718 (ANOVA)
	<70 Years	16	126.81	107.66	
	71-80 Years	26	144.08	122.02	
	>80 Years	8	109.38	73.00	
2.	Gender				't'=3.754; p=0.059
	Male	19	95.58	72.93	
	Female	31	155.94	122.89	
3.	Duration of illness				F=0.375; p=0.689 (ANOVA)
	<1 Year	19	115.74	103.70	
	1-2 Years	27	144.44	110.67	
	>2 Years	4	137.75	153.15	
4.	Level of Cognitive Impairment (HMSE)*				't'=3.487; p=0.001
	Mild (Score 21-26)	21	75.52	80.86	
	Moderate (Score 11-20) & severe (Score <10)	29	174.62	110.41	

*There was one patient with Score <10. On evaluating the association between PSLE scores and general and demographic characteristics of patients, none of the associations except that between cognitive impairment status of patient and PSLE were found to be significant statistically ($p>0.05$). It was seen that PSLE scores were significantly higher among those caregivers who provided care to patients having moderate/severe cognitive impairment as compared to those providing care to patients with mild impairment ($p=0.001$).

Discussion

In Western countries, mental health issues are given the same importance as physical health issues, and there has been significant research on caregiver stress among those caring for Alzheimer's patients. However, in India, mental health issues are often given less attention, resulting in limited or no research on caregiver stress and its various aspects. This study aims to address this gap in knowledge by exploring caregiver stress among individuals caring for individuals with mental health conditions in India. The mean age of the participants in the current study was comparable to the reported mean age of 73.7 years in the study by Allegri et al. [7] despite the fact that patient ages vary from study to study, most of them set the patient age at or over 70. In a different study from India, Pattanayak et al. [8] found that the mean patient age was 71.75 years old, whereas Mohamed et al. [9] claimed that it was 77.9 years old.

The average age of patients in western research has generally been higher (>75 years) [9,10,11,12]; however, this disparity may be due to variations in average life expectancy between locales. In the

current study, 62% of the patients were female. According to epidemiological studies [13,14], women are twice as likely as men to get Alzheimer's disease. There are more female patients with Alzheimer's disease than male patients, according to a number of studies examining caregiver burden and stress. However, there are fewer studies that show a higher frequency of male patients [9,11,12,15].

However, despite gender differences in occurrence as depicted in epidemiological studies, the gender differences in clinical studies may be due to differences in trends in the utilization of health care services. Given the higher risk of Alzheimer disease among females, the higher proportion of patients who are female can be well explained. In the current investigation, the sickness lasted somewhere between one and six years.

The average length of the sickness was 1.61 ± 0.83 years. In the current study, the disease's duration was considerably shorter than that which was described in a number of earlier studies. The average length of the disease was 4.01 years in the Iavarone et al study's and 4.5 years in McCurry et al's, which is over 2.5–3 times longer than in the current study. The age of caregivers ranged from 20 to 78 years old in the current study, according to the caregiver profile. 54 percent of them were aged between 41 and 60. The average age of the caretakers was $49.72 + 13.81$. In this study, caregivers' ages are somewhat younger than those in previous studies. Allegri et al. [7] stated that it was 59.6 years.

The mean age of caregivers, however, was reported to be 53.94 years in another study from India [8], which is lower than that reported in other studies

but higher than that observed in the present study. As a result, the caregiver population in our study was relatively younger than that of earlier studies. It is important to remember that caregiver qualities, including stress and behavioral health, and age also play a significant factor [16]. In the current study, men made up 68% of the caregiver population. [16] People, or 32%, were women. The ratio of men to women was 2.13. In contrast to the current study, the majority of earlier investigations have indicated that women predominate among caregivers. [9,16,17] Sons and daughters of patients made up the majority of caregivers in the current study (62%), followed by spouses (14%), siblings (12%), grandchildren (8%), and daughters-in-law (4%), in that order. Children have been demonstrated to be the second most common category of caregivers (9, 16), despite the fact that spouses of patients are typically the caregivers. Yet, numerous studies have revealed that the patient-caregiver connection varies and that patients' spouses and children tend to serve as the patients' primary caregivers [9,16,18,19].

Similar to our study's findings, Truzzi et al.'s [24] study indicated that children were the majority of AD patients' caregivers (52%). In the current study, the average monthly family income was Rs 5,000 in 34 (68%) cases; the majority (52%) of participants lived in joint families; 82% of participants were married; and 60% had completed at least a high school education. In contrast to this study, Pattanayak et al. using the Presumptive Life Events Scale (PSLES), 52% and 34% of caregivers in the current study, respectively, reported experiencing moderate and severe stress. One of the unique aspects of PSLE is that it includes life events including a spouse's death, job loss, marriage, theft, financial loss, loss in agriculture, and family issues related to substance abuse.

In the present study, the level of cognitive impairment among patients was mild in 21 (42%), moderate in 28 (56%), and severe in only 1 (2%) cases. Mean cognitive scores (HMSE) were 18.56 ± 3.16 . Compared to this, Truzzi et al. reported a relatively poor cognitive profile in their patients, with a mean MMSE score of 14.9 ± 6.8 . In another study, Truzzi et al. [24] reported the mean MMSE of patients as 15.5, which is relatively less than that observed in the present study. However, Ferrera et al. [23] in their study reported the mean MMSE of their patients as 18.6, which is close to that observed in the present study.

The present study also had a lesser psychiatric morbidity. In the present study, using the Brief Psychiatric Rating Scale, a total of 8 (16%) caregivers were found to have mild psychiatric morbidity. Compared to the present study, Truzzi et al. [24] have reported a high burden of psychiatric morbidity among caregivers, with around one-third

of caregivers having a history of availing of psychiatric treatment. Use of the 16-PF scale among caregivers of Alzheimer's patients has been done in only one study previously [25]. In the present study, we truncated the personality traits into five major factors and found that the majority of caregivers in the present study had a dominance of positive traits. The presence of these positive personality traits in the majority of caregivers in the present study is another finding that can be attributed to lesser psychiatric morbidity in our set of caregivers.

The current study found no evidence of a significant relationship between patient age, gender, or illness duration and PSLE scores. However, after further investigation, we discovered that higher PSLE scores were significantly correlated with living in a rural area, having a lower per capita family income, and only having completed high school. All of these data imply that the social and economic circumstances that caregivers experienced during the trial and the short illness duration actually influenced the stress levels measured by PSLE.

Limitation of the Study:

The absence of patients with prolonged disease durations limited the scope of the current investigation. More research is necessary using a larger sample size and individuals who have had their illness for at least 3–4 years due to the sample size restriction and inadequate variability in the sociodemographic characteristics of patients.

Conclusion

The study's findings showed that caregivers for people with Alzheimer's disease go through a lot of stress. Higher levels of education, urban residency, and family income per capita all seemed to have a reducing effect on caregiver stress. Additionally, personality variables affect stress and psychiatric illness, most likely as a result of variations in coping mechanisms. One study limitation was the absence of long-term caregiving experience (>5 years). Further research, including a larger sample size and carers with a long history of caring for people with Alzheimer's disease, is recommended.

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