Effect of Caregiver Group Therapy on Caregiver Burden and Neuropsychiatric Symptoms in Patients with Dementia

Abstract
Background: Dementia is a disease characterized by brain atrophy, leading to cognitive decline. The clinical picture includes the presence of neuropsychiatric symptoms (NPSs), which can increase the caregiver burden. The present research was aimed at studying the effect of group therapy intervention with caregivers of patients with dementia on caregiver burden and NPSs of patients. The study was prospective, interventional, and exploratory. Materials and Methods: The study included 30 primary caregivers of geriatric patients (aged 60 and above) with dementia. The caregivers were divided into two groups of 15, in which one group received routine treatment and the other group received group therapy in addition to routine treatment. The patients in both groups were assessed on Neuropsychiatric Inventory Questionnaire, Everyday Abilities Scale for India, and Hindi Mental State Examination, and the caregivers of both groups were assessed on Zarit Burden Interview before and after the intervention. Statistical Analysis Used: Independent t-test was used to compare the age between two groups and Chi-square test to compare other sociodemographic variables between groups. Paired samples t-test was used for within-group comparison, and Mann–Whitney U-test was used between-group comparison. Results: There was significant improvement in NPSs of the patients and caregiver burden after intervention in the combined group. However, there was greater improvement in NPS of patients and caregiver burden in the group that received group therapy. Conclusions: Group therapy in caregivers of the patients with dementia is effective in improving the NPSs of patients, as well as in reducing caregiver burden.

Keywords: Caregiver burden, caregiver group therapy, neuropsychiatric symptoms

Introduction
Dementia which refers to a collection of symptoms characterized by disruptions in various functions of the brain, such as the ability to remember, think, use language, and perform activities of daily living, and marked decline in cognition, is a bane for not just the patients but also their complete ecological system, including their families that are often responsible to provide care to them. These symptoms are distinct from changes that occur as a part of normal aging process, making the syndrome progressive and chronic.[1] Neuropsychiatric symptoms (NPSs) are defined as the behavioral and psychological symptoms that accompany the cognitive decline in dementia. These include hallucinations, aggression/agitation, depression, anxiety, elation, apathy/indifference, disinhibition, irritability, motor disturbances, night-time behaviors, and disturbance in appetite.[2]

The population of individuals suffering from dementia has been increasing considerably over the past few years. One study reports that this number may increase by twofold in every two decades.[3] Thus, it becomes an increasingly important area to focus on in terms of research studies, as well as interventions to address the issues of the patients and their caregivers. As per the current research literature, there is no cure for dementia or treatment to arrest the progression of the disease.[3] However, combinations of pharmacological and nonpharmacological interventions are used to alleviate symptoms. When it comes to caring for a patient with dementia, the most challenging aspects have been found to be the associated NPSs. These often do not receive the appropriate treatment in most clinical settings.[4] Thus, interventions must be introduced to target these symptoms, which is the aim of the present study. Caring for patients with dementia is a challenging task,
and it leads to excessive burden in caregivers, which needs to be addressed along with patient’s symptoms. Caregiver burden is the term used to denote the distress, which may be experienced by family members or carers of patients who are chronically ill requiring assistance from caregivers on a day-to-day basis, in the form of physical, emotional, and/or financial strain.\(^5,6\) It has been a trend to direct most of the attention to the patients, who are an obvious group to require aid and assistance in dealing with their illness. However, the caregivers of these patients who are often extremely burdened with the stress of caring are often ignored and neglected by the healthcare system. The distress they experience is considered unavoidable and not often addressed. Caregivers have often been referred to as the “hidden patient” in the literature.\(^7\) Psychoeducational approach has been found to be an effective form of intervention for caregivers. These are helpful in reducing caregiver burden by providing information about dementia, management tips, training in stress management, problem-solving, and decision-making.\(^8\) Such interventions have been delivered in both individual and group sessions. The rationale of carrying out the present study was to address the burden of caregiving, as well as the patient factor often responsible for this burden, i.e., the NPSs. Thus, the present study involved caregiver group therapy, following a structured approach, based on the 10/66 “Helping Carers to Care” intervention developed by the Alzheimer’s Disease International (a nongovernmental organization [NGO] in working relations with the World Health Organization, Geneva).\(^9,10\)

**Aims**

1. To study the effect of caregiver group therapy on caregiver burden in dementia
2. To study the effect of caregiver group therapy on the NPSs of patients with dementia.

**Materials and Methods**

**Design**

The study design was prospective, interventional, and exploratory.

**Setting**

The study was carried out at the Geriatric Mental Health Clinic in the outpatient department, Department of Psychiatry, GMCH, Chandigarh.

**Sample**

Consecutive sampling was employed to recruit 30 patients diagnosed with dementia and their primary caregivers.

**Inclusion and exclusion criteria for patients**

**Inclusion criteria**

1. Patients aged 60 years and above
2. Diagnosis of dementia (early, middle, or late) in Alzheimer’s disease, vascular dementia, dementia in other diseases classified elsewhere, and unspecified dementia as per the International Classification of Diseases-10 (ICD 10) of the World Health Organization
3. Patients with mental capacity who give consent for the study or patients without mental capacity with consenting primary caregivers.

**Exclusion criteria**

1. Diagnosis of organic amnestic syndrome, delirium, other mental disorders due to brain damage and dysfunction and physical disease, personality and behavioral disorders due to brain disease, damage and dysfunction, and unspecified organic or symptomatic mental disorder as per the ICD 10 of the World Health Organization
2. Comorbid severe or unstable medical or surgical illnesses.

**Inclusion and exclusion criteria for caregivers**

**Inclusion criteria**

1. Primary caregivers who were at least 18 years of age
2. Caregivers residing with the patient for the duration of the study
3. Caregivers who give consent for the study.

**Exclusion criteria**

1. Primary caregivers younger than 18 years of age.

**Procedure**

After approval from the Research and Ethics Committee of GMCH, 30 primary caregivers of patients with dementia were recruited for participation in the study. The mental capacity of patients was assessed using a semi-structured interview assessing four domains of understanding, communicating a choice, appreciation, and reasoning, by an independent mental health professional who was not involved in the study, to determine whether the patient can give informed consent. Informed consent was then taken from both patients with adequate decision-making capacity and caregivers. The sociodemographic details of the patients and caregivers were documented using the semi-structured pro forma used in the outpatient department of psychiatry. The patients were then assessed on the Neuropsychiatric Inventory (NPI), Hindi Mental State Examination (HMSE), and Everyday Abilities Scale for India (EASI) for the baseline of NPSs. The caregivers were assessed on the General Health Questionnaire-12 (GHQ-12) for assessing their general mental health and the Zarit Burden Interview (ZBI) to assess the caregiver burden. The participants were divided into two groups with 15 primary caregivers in each group, in which one group received routine treatment (medication and individual caregiver psychoeducation of single session) and the other group received group therapy in addition to routine treatment. The group therapy sessions were based on the guidelines as per the 10/66 “Helping Carers to Care” intervention developed by the Alzheimer’s Disease
International (an NGO in working relations with the World Health Organization, Geneva), consisting of three modules delivered over five weekly sessions with caregivers, of 30–60 min in duration. The first module “Initial assessment of dementia” (consisting of assessment of symptoms of dementia by interviewing caregivers) was carried out in one session. The second module “Education about dementia” (consisting of psychoeducation of caregivers about the illness, stages, causes, prognosis, myths, and treatment options) and the third module “Training to manage behavior problems” (consisting of behavioral management strategies, tips, and suggestions for specific behavioral problems, such as dressing or aggression) were carried out in two sessions each. The last session included a summary of the materials covered in the program and feedback from the primary caregivers and coping techniques for caregivers. The sessions were delivered in closed groups consisting of 7–9 members. The attendance of participants was recorded in each session, and the participants who missed any session were considered as drop-outs. Although there were no drop-outs during the intervention, primary caregiver of one patient could not be followed up after 1 month of completing the intervention. Thus, the scores of that participant were not included in the analysis.

After the completion of five group therapy sessions, patients in both the experimental and control groups were reassessed on the NPI Questionnaire (NPI-Q), HMSE, and EASI, after a gap of 1 month from the intervention. Similarly, caregivers were assessed on the ZBI, after the same duration [Figure 1].

**Tools used**

**Sociodemographic pro forma**

The semi-structured sociodemographic pro forma available at the Department of Psychiatry, GMCH, was used to collect sociodemographic information. It included details such as name, age, gender, education, occupation, residence, domicile, income, diagnosis, physical illnesses, history of treatment, and current treatment.

**Neuropsychiatric Inventory Questionnaire**

It is a structured, caregiver-based interview format to assess 10 behavioral domains of delusions, hallucinations, agitation, dysphoria, anxiety, apathy, irritability, euphoria, disinhibition, and aberrant motor behavior. It was given by Kaufer et al. in 1994. There are two additional domains of night-time behavioral disturbance and appetite/weight changes. The frequency and severity of the various behaviors that are marked as present are recorded for each item in each domain. The score for each domain is calculated by multiplying frequency and severity scores. The inventory scale has good validity (content and concurrent), interrater reliability (93.6%–100%), and test–retest reliability (0.79 for frequency and 0.86 for severity ratings).

**General Health Questionnaire-12**

The GHQ-12 was developed by Goldberg and Williams in 1988, consisting of 12 items, each one assessing the severity of a mental problem over the past few weeks using a 4-point Likert-type scale (from 0 to 3). The score was used to generate a total score ranging from 0 to 36. The positive items were corrected from 0 (always) to 3 (never) and the negative ones from 3 (always) to 0 (never). High scores indicate worse health. The scale is a reliable and valid measure, with various studies mentioning the reliability (test–retest and internal consistency) to be 0.93 and validity (Cronbach’s alpha) to be 0.98, in one study carried out in the Indian context.

**Zarit Burden Interview**

It is a caregiver self-report measure consisting of 22 items prepared by Zarit et al. in 1980. Each item on the interview is a statement which the caregiver is asked to endorse using a 5-point scale. Responses can range from 0 (never) to 4 (nearly always). The test–retest reliability of the scale is 0.89, while the validity (Cronbach’s alpha) of the scale is 0.93.

**Hindi Mental State Examination**

It is an instrument for cognitive screening, developed by the Indo-U. S. Cross-National Epidemiology Study carried out by Ganguli et al., as a modified version of the Mini-Mental State Examination for the Indian rural and illiterate elderly. It has 23 items assessing eight domains of cognitive functions, namely orientation, memory (registration and recall), attention and concentration, language (word naming and expressive speech), comprehension (imitating gesture), holding information and execution, and motor functioning and praxis, with a maximum score of 31.

**Everyday Abilities Scale for India**

It is a 12-item scale that was developed by Fillenbaum et al. in 1999. It is used to assess the everyday functioning of the patients in the areas, including mobility, instrumental and personal care activities, as well as social functioning. A higher score is indicative of higher level of dysfunction. The EASI has a Cronbach’s alpha of 0.82 indicating a high internal consistency and inter-rater, intra-rater, and test–retest reliability of 0.92.

**Statistical analysis**

The statistical analysis was done using the IBM SPSS version 20.0 (IBM Corporation, USA). For within-group comparison, parametric statistics were used, namely paired samples/one-sample t-test, and for between-group comparison, nonparametric statistics were used, namely Mann–Whitney U-test. The variables that were assessed within and between groups were NPSs, including symptom severity (NPIS), distress due to symptoms (NPID),
which were measured using the NPI-Q, and the caregiver burden (ZBI), which was measured using the ZBI.

**Results**

The results show that there is no significant difference between experimental and control groups in terms of sociodemographic variables, such as age, gender, locality, background, education, religion, occupation, income, marital status, and family type, as shown in Tables 1-3.

There is significant difference between pretest and posttest scores on NPSs, including both symptom severity (NPIS, $P = 0.001 < 0.01^{**}$, $t = 4.28$), distress due to symptoms (NPID, $P = 0.000 < 0.01^{**}$, $t = 5.612$), and caregiver burden (ZBI, $P = 0.006 < 0.01^{**}$, $t = 3.202$) in the experimental group as depicted in Table 4. However, there is no significant difference between pretest and posttest scores on symptom severity (NPIS), distress due to symptoms (NPID), and caregiver burden (ZBI) in the control group [Table 5]. Table 6 reveals that there is a significant difference between the pretest and posttest scores on both symptom severity (NPIS, $P = 0.010 < 0.01^{**}$, $t = 2.754$), distress due to symptoms (NPID, $v = 0.001 < 0.01^{**}$, $t = 3.603$), and caregiver burden (ZBI, $P = 0.005 < 0.01^{**}$, $t = 3.018$) in the combined group, including both experimental and control groups after either intervention.

It was seen in the results that there is a significant difference between the experimental and control groups in the pretest scores on symptom severity (NPIS, $P = 0.012 < 0.05^{*}$, $U = 172$) and distress due to symptoms (NPID, $P = 0.033 < 0.05^{*}$, $U = 181$), and no significant difference was present in the posttest scores on any variable between the experimental and control groups [Tables 7 and 8].

Finally, Table 9 shows that there is a significant difference between the experimental and control groups in the magnitude of difference produced in the scores on NPSs, including both symptom severity (NPIS, $P = 0.004 < 0.01^{**}$, $U = 43$), distress due to symptoms (NPID, $P = 0.002 < 0.01^{**}$, $U = 38.50$), and caregiver burden ($P = 0.043 < 0.05^{*}$, $U = 65$). This means that there is more improvement in both NPSs and caregiver burden in the experimental group as compared to control group. There is no significant difference in the pretest and posttest scores on HMSE and EASI in the experimental or control group [Tables 10 and 11].

**Discussion**

The present study was undertaken to examine the effect of caregiver group therapy on caregiver burden and NPSs in patients with dementia (including both symptom severity and distress due to symptoms), as measured by ZBI and NPI-Q scales, respectively.

### Table 1: Comparison of age between experimental and control groups using independent samples t-test

| Group    | Experimental Mean | Experimental SD | Control Mean | Control SD | $t$ | $P$ |
|----------|-------------------|-----------------|--------------|------------|-----|-----|
| Age      | 71.73             | 9.617           | 70.60        | 9.14       | 0.331 | 0.743 (NS) |

NS=Not significant, SD=Standard deviation

### Table 2: Sociodemographic details of experimental and control groups in terms of gender, locality, background, and education

| Group        | Experimental, $n$ (%) | Control, $n$ (%) | Total, $n$ (%) | $\chi^2$ | $P$ |
|--------------|----------------------|------------------|----------------|---------|-----|
| Gender       |                      |                  |                |         |     |
| Male         | 7 (46.67)            | 7 (46.67)        | 14 (46.67)     | 0.000   | 1.000 (NS) |
| Female       | 8 (53.33)            | 8 (53.33)        | 16 (53.33)     |         |     |
| Locality     |                      |                  |                |         |     |
| Punjab       | 7 (46.67)            | 6 (40)           | 13 (43.33)     | 0.696   | 0.706 (NS) |
| Haryana      | 6 (40)               | 8 (53.33)        | 14 (46.67)     |         |     |
| Chandigarh   | 2 (13.33)            | 1 (6.67)         | 3 (10)         |         |     |
| Background   |                      |                  |                |         |     |
| Rural        | 5 (33.33)            | 10 (66.67)       | 15 (50)        | 3.33    | 0.068 (NS) |
| Urban        | 10 (66.67)           | 5 (33.33)        | 15 (50)        |         |     |
| Education    |                      |                  |                |         |     |
| Illiterate   | 3 (20)               | 4 (26.67)        | 7 (23.33)      | 5.086   | 0.406 (NS) |
| Primary      | 4 (26.67)            | 1 (6.67)         | 5 (16.67)      |         |     |
| Middle       | 4 (26.67)            | 3 (20)           | 7 (23.33)      |         |     |
| Matric       | 3 (20)               | 3 (20)           | 6 (20)         |         |     |
| Diploma      | 0                    | 3 (20)           | 3 (10)         |         |     |
| Illiterate   | 3 (20)               | 4 (26.67)        | 7 (23.33)      |         |     |
| Total        | 15                   | 15               | 30             |         |     |

NS=Not significant
locality, background, income, religion, and family type, were compared between the experimental and control groups, and no significant difference was found in these characteristics of the patients between the two groups. This means that any impact of sociodemographic variables on the symptomatology or outcome of interventions between the two groups was well controlled in the study.

The results have found a significant difference within the experimental group and the combined group before and after the intervention in the NPSs, including both symptom severity and distress due to symptom and caregiver burden. No significant difference was observed in the scores before and after intervention in these variables in the control group. This indicates that the caregivers could manage the NPSs of the patients in a better manner after the intervention, as compared to the caregivers in the control group. There is evidence that psychosocial interventions are beneficial in providing caregivers with strategies to manage their reactions to behavior problems more effectively.[17] Further, the caregivers experienced reduced burden of caregiving after learning better management strategies to deal with the behavioral problems of the patients. It is also possible that the group therapy sessions were helpful in allowing the caregivers to better manage their own stress, by feeling supported in the group therapy sessions. Interventions that focus on caregiving issues are more effective than the ones that focus on problematic behaviors alone in reducing caregiver burden.[18]

As per the standard practice, the control group received routine treatment (medication and single session of psychoeducation), and the experimental group received caregiver group therapy in addition to routine treatment. The two groups were compared on three variables after the intervention, namely symptom severity, distress due to symptoms, and caregiver burden.

The sociodemographic details of patients, such as their age, gender, education, occupation, marital status,
This suggests that caregiver group therapy which involves psychoeducation of caregivers about dementia, behavioral management of symptom, and tips on caring for oneself, based on the “Helping Carers to Care” intervention developed by the Alzheimer’s Disease International (an NGO in working relations with the World Health Organization, Geneva), has a positive impact on both the patients and caregivers. Our results are in line with another randomized study which has reported that psychological intervention with caregivers of patients with dementia can lead to reduction in symptoms of the patients.[4,19]

This finding can be explained by various reasons. First, it was observed that many caregivers were not aware of dementia, in terms of the nature of illness, the causes, the reversibility or irreversibility, and the prognosis, and many held misconceptions about the expected outcome after treatment. There seemed to be a great need for awareness among the family members regarding dementia. Educating the caregivers regarding the illness, its outcome, the forms of treatments available, and how to manage the illness may have helped the caregivers moderate their expectations from the patient and modify their own behavior in dealing with the patient. This is supported by a randomized study which found that an intervention involving psychoeducation was effective in reducing caregiver burden and improving quality of life, and these effects lasted for about 6 months.[20]

Second, it was also observed that while some caregivers were involved in caring for the patients with dementia, the other family members were not associated in the caring process as closely. In most cases, there was one primary caregiver, usually a single member of the family, such as the spouse of patient or another close relative, who was involved in caring for the patient most of the time. Such single caregivers were deeply burdened with the stress of caring for the patients. This intervention may have helped burdened caregivers manage their distress and use better-coping strategies. This may also be due to the finding that listening to the needs of an individual and showing concern and respect may have therapeutic effects.[21,22]

Third, the intervention in the present study focused most on various management strategies to deal with problematic behaviors in patients with dementia, such as aggression, personal hygiene, repeated questioning, and wandering. It is possible that this was helpful in reducing the behavioral

### Table 5: Comparison of pre- and post-test scores on symptom severity, distress due to symptoms, and caregiver burden (Zarit Burden Interview) in the control group using paired sample t-test

| Variables | Mean | n  | SD  | t     | Df  | P      |
|-----------|------|----|-----|-------|-----|--------|
| NPIQ      |      |    |     |       |     |        |
| Pre       | 11.06 | 15 | 6.04| 0.047 | 14  | 0.963 (NS) |
| Post      | 11.00 | 15 | 6.25|       |     |        |
| NPID      |      |    |     |       |     |        |
| Pre       | 12.40 | 15 | 9.61| 0.553 | 14  | 0.589 (NS) |
| Post      | 11.20 | 15 | 10.14|      |     |        |
| ZBI       |      |    |     |       |     |        |
| Pre       | 26.53 | 15 | 14.95| 1.014| 14  | 0.328 (NS) |
| Post      | 23.33 | 15 | 17.12|      |     |        |

NS=Not significant, SD=Standard deviation, NPI-Q=Neuropsychiatric Inventory Questionnaire, NPI-S=Symptom severity, NPID=Distress due to symptoms, ZBI=Zarit Burden Interview

### Table 6: Comparison of pre- and post-test scores on symptom severity, distress due to symptoms, and caregiver burden (Zarit Burden Interview) in the combined group using paired samples t-test

| Variables | Mean | n  | SD  | t     | Df  | P      |
|-----------|------|----|-----|-------|-----|--------|
| NPIQ      |      |    |     |       |     |        |
| Pre       | 14.13 | 30 | 6.78| 2.754 | 29  | 0.010** |
| Post      | 10.90 | 30 | 5.73|       |     |        |
| NPID      |      |    |     |       |     |        |
| Pre       | 16.57 | 30 | 10.79| 3.603| 29  | 0.001** |
| Post      | 10.37 | 30 | 9.16|       |     |        |
| ZBI       |      |    |     |       |     |        |
| Pre       | 32.20 | 30 | 16.33| 3.018| 29  | 0.005** |
| Post      | 24.07 | 30 | 15.59|      |     |        |

**Significant at 0.01. SD=Standard deviation, NPI-Q=Neuropsychiatric Inventory Questionnaire, NPI-S=Symptom severity, NPID=Distress due to symptoms, ZBI=Zarit Burden Interview

### Table 7: Comparison between experimental and control groups for pretest scores on symptom severity, distress due to symptoms, and caregiver burden (Zarit Burden Interview) using Mann-Whitney U-test

| Variables | Group        | n  | Mean rank | Sum of ranks | Mann-Whitney U | P      |
|-----------|--------------|----|-----------|--------------|---------------|--------|
| NPIQ      | Experimental | 15 | 19.53     | 293          | 172.00        | 0.012* |
|           | Control      | 15 | 11.47     | 172          |               |        |
| NPID      | Experimental | 15 | 18.93     | 284          | 181.00        | 0.033* |
|           | Control      | 15 | 12.07     | 181          |               |        |
| ZBI       | Experimental | 15 | 18.43     | 276.50       | 188.50        | 0.068 (NS) |
|           | Control      | 15 | 12.57     | 188.50       |               |        |

*Significant at 0.05. NS=Not Significant, NPI-Q=Neuropsychiatric Inventory Questionnaire, NPI-S=Symptom severity, NPID=Distress due to symptoms, ZBI=Zarit Burden Interview
Finally, the intervention used group therapy instead of individual therapy. It is possible that there has been a positive impact of delivering the intervention in groups. For instance, groups provide a sense of not being alone in a situation. Caring for patients with dementia can often make caregivers feel alone and burdened. They feel that their situation is completely unique and that no one can understand or relate to their situation. Becoming a part of group therapy opens the opportunity for caregivers to meet others in a similar situation, which makes them feel better, and they feel supported in the difficult and challenging process of caring. Further, groups encourage members to tend to the needs of each other for guidance, support, and connection, rather than deriving it all from a clinician. This instils a sense of confidence in caregivers as they provide support and guidance to others from their own experiences.

manifestations in patients with dementia, as the caregiver may have learned better behavioral management strategies, as well as modified their own reactions and responses to the patient’s behaviors.

**Table 7: Comparison between experimental and control groups for pretest scores on symptom severity, distress due to symptoms, and caregiver burden (Zarit Burden Interview) using Mann-Whitney U-test**

| Variables | Group   | n  | Mean rank | Sum of ranks | Mann-Whitney U | P     |
|-----------|---------|----|-----------|--------------|----------------|-------|
| NPIQ      |         |    |           |              |                |       |
| NPIS      | Experimental | 15 | 19.53     | 293          | 172.00         | 0.012*|
|           | Control  | 15 | 11.47     | 172          |                |       |
| NPID      | Experimental | 15 | 18.93     | 284          | 181.00         | 0.033*|
|           | Control  | 15 | 12.07     | 181          |                |       |
| ZBI       | Experimental | 15 | 18.43     | 276.50       | 188.50         | 0.068 (NS) |
|           | Control  | 15 | 12.57     | 188.50       |                |       |

*Significant at 0.05. NS=Not Significant, NPI-Q=Neuropsychiatric Inventory Questionnaire, NPIS=Symptom severity, NPID=Distress due to symptoms, ZBI=Zarit Burden Interview

**Table 8: Comparison between experimental and control groups for posttest scores on symptom severity, distress due to symptoms, and caregiver burden (Zarit Burden Interview) using Mann-Whitney U-test**

| Variables | Group   | n  | Mean rank | Sum of ranks | Mann-Whitney U | P     |
|-----------|---------|----|-----------|--------------|----------------|-------|
| NPIQ      |         |    |           |              |                |       |
| NPIS      | Experimental | 15 | 15.17     | 227.50       | 107.50         | 0.835 (NS) |
|           | Control  | 15 | 15.83     | 237.50       |                |       |
| NPID      | Experimental | 15 | 15.07     | 226.00       | 106.00         | 0.787 (NS) |
|           | Control  | 15 | 15.93     | 239.00       |                |       |
| ZBI       | Experimental | 15 | 15.97     | 239.50       | 105.50         | 0.771 (NS) |
|           | Control  | 15 | 15.03     | 225.50       |                |       |

NS=Not significant, NPI-Q=Neuropsychiatric Inventory Questionnaire, NPIS=Symptom severity, NPID=Distress due to symptoms, ZBI=Zarit Burden Interview

**Table 9: Comparison between the pre- and post-test scores using paired samples t-test for the experimental group**

| Variables | n  | Mean | SD  | t   | Df  | P     |
|-----------|----|------|-----|-----|-----|-------|
| HMSE      | Pre| 15   | 11.93| 6.89| 0.381| 0.709 (NS) |
|           | Post| 15  | 12.07| 6.85|     |       |
| EASI      | Pre| 15   | 8.40 | 2.26| 0.269| 0.792 (NS) |
|           | Post| 15  | 8.33 | 2.49|     |       |

NS=Not significant, HMSE=Hindi Mental State Examination, EASI=Everyday Abilities Scale for India, SD=Standard deviation

Finally, the intervention used group therapy instead of individual therapy. It is possible that there has been a positive impact of delivering the intervention in groups. For instance, groups provide a sense of not being alone in a situation. Caring for patients with dementia can often make caregivers feel alone and burdened. They feel that their situation is completely unique and that no one can understand or relate to their situation. Becoming a part of group therapy opens the opportunity for caregivers to meet others in a similar situation, which makes them feel better, and they feel supported in the difficult and challenging process of caring. Further, groups encourage members to tend to the needs of each other for guidance, support, and connection, rather than deriving it all from a clinician. This instils a sense of confidence in caregivers as they provide support and guidance to others from their own experiences.

manifestations in patients with dementia, as the caregiver may have learned better behavioral management strategies, as well as modified their own reactions and responses to the patient’s behaviors.
Groups may also allow caregivers to get more in touch with their feelings and needs and increase their ability to express themselves.[23] Group members relate with one another in a healthy manner and find a safe environment where they can gain more understanding about the illness and can express themselves and tend toward others in similar situations.[24] These reasons may have played a role in reducing the levels of caregiver burden in caregivers of patients with dementia, as well as the distress experienced due to NPS of patients. Studies have reported that caregiver support groups lead to benefits in various areas, such as caregivers’ quality of life overall and depressive symptoms, caregiver burden/level of stress, caring for oneself, social support, and problem behaviors exhibited by patients with dementia.[25]

The finding that the combined group experienced improvement in terms of both NPSs of patients and caregiver burden, while the control group did not improve, indicates that it is more effective to use medication and psychotherapy together.[8] Further, a research study stated that prescribing medications to patients with dementia reduces caregiver burden only when it is combined with counseling of caregivers.[26]

Table 11: Comparison between the pre- and post-test scores using paired samples t-test for the control group

| Variables | n | Mean  | SD   | t   | Df  | P         |
|-----------|---|-------|------|-----|-----|-----------|
| HMSE      |   |       |      |     |     |           |
| Pre       | 15| 13.73 | 4.58 | 1.319| 14  | 0.208 (NS)|
| Post      | 15| 14.46 | 4.85 |     |     |           |
| EASI      |   |       |      |     |     |           |
| Pre       | 15| 7.40  | 2.52 | 0.840| 14  | 0.415 (NS)|
| Post      | 15| 7.00  | 2.59 |     |     |           |

NS=Not significant, HMSE=Hindi Mental State Examination, EASI=Everyday Abilities Scale for India, SD=Standard deviation

Figure 1: Flowchart of procedure
Moreover, in cases when group therapy may not be possible or a viable option, individual psychotherapy can be beneficial as well. Studies have reported benefits in reducing burden of caregiving, depression, satisfaction, and subjective well-being.\[27\]

Although there is no improvement in the control group after the intervention during a 1-month period in the present study, it does not imply that medications are no longer useful in managing NPSs with respect to patient care. During follow-up sessions, caregivers of the patients had reported some benefits in symptom reduction in patients with following the use of medication.

In addition, it was observed that the caregivers were initially reluctant to come for group sessions weekly due to various reasons, such as commuting from far and work commitments, and were more willing to take medications instead of counseling alone; however, they became engaged in sessions over time. Therefore, medication follow-ups were indirectly helpful in increasing compliance for group therapy sessions.

Next, it was found that there is no significant difference in the posttest scores on NPSs between the experimental and control groups, while the two groups were significantly different in their pretest scores, and it was observed that in the experimental group, the severity of NPSs and distress due to symptoms was significantly more in comparison to control group before intervention. This further provides support toward the efficacy of group therapy in the present study, since the experimental group which had higher scores became comparable to the control group after the intervention.

It was also found in the study that there was no significant difference in the caregiver burden before the intervention in both groups, even though the severity of symptoms and distress due to symptoms were different. This means that caregiver burden may have an associated subjective component, and despite minimal symptoms, excessive burden may be experienced in some caregivers. This subjectivity can be due to patient factors as well as caregiver characteristics, such as feeling of restrictions on personal time or feeling of failure in one’s hopes and expectations.\[28\]

Finally, the results also indicate that there is a significant difference between the experimental and control groups in the magnitude of difference produced in the NPSs and the caregiver burden after intervention. This difference in scores is due to reduction in the scores after intervention, and greater reductions are observed in the experimental group, i.e., those who received caregiver group therapy in addition to routine treatment.

Apart from comparison of groups on the NPSs and caregiver burden, scores on HMSE and EASI were also compared before and after intervention between the experimental and control groups. There was no significant difference observed in the experimental or control groups after the intervention. This could be because the follow-up was done after a small period of 1 month only when hardly much changes was expected. Thus, it is difficult to comment upon the change in the HMSE and EASI scores after the intervention in the present study.

**Strengths**

1. The often-neglected population of caregivers has been focused upon in the present study as it attempts to address the issues of caregiver, including caregiver burden
2. The caregivers have been involved in the intervention aimed at patients with dementia as co-therapists as they involved in delivering the management strategies for behavioral problems learned at the home environment, which they have learned during the group sessions
3. The various sociodemographic characteristics of the patients, such as age, gender, education, occupation, locality, background, marital status, and religion, were well controlled in the study as they were not significantly different between the experimental and control groups
4. The group therapy was based on a manual with structured modules, with details regarding the number of sessions and session duration. Guidelines for training of the individual delivering the intervention were used in the study, as mentioned in the manual. Therefore, the treatment was standardized for each group, rather than being unstructured.

**Limitations**

1. The sample size was small
2. The comparisons were not made in accordance with the stage of dementia. For instance, late-stage dementia patient may not improve as much as an early-stage patient, due to severity of symptoms and extent of cognitive decline
3. The caregiver characteristics which may have had an influence on the outcome of the study were not included in the analysis
4. The research involved studying the impact of group therapy as a whole, but specific aspects of group therapy that were most effective in bringing about the change were not explored.

Overall, the study indicates that intervention involving psychotherapy along with medications has a positive impact on the management of dementia and is effective in reducing caregiver burden. Specifically, group therapy for caregivers involving psychoeducation, management of behavioral symptoms, and taking care of oneself has a positive impact on both NPS in patients, reducing both severity of symptoms and distress due to symptoms as well as caregiver burden.
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Conflicts of interest

There are no conflicts of interest.

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