Published in final edited form as:

Int J Ment Health. 2013 ; 15(5): 288–298. doi:10.1080/14623730.2013.856633.

Caregiver's Burden, Coping, and Psycho-Education in Indian Households with Single- and Multiple-Affected Members with Schizophrenia

Satabdi Chakraborty,

Assistant professor at the Department of Psychiatry, PGIMER, Dr RML Hospital, New Delhi, India

Triptish Bhatia,

Principal investigator at the Department of Psychiatry, PGIMER, Dr RML Hospital, New Delhi, India

Carol Anderson,

Department of Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA
Western Psychiatric Institute and Clinic, University of Pittsburgh School of Medicine, Pittsburgh, PA

Vishwajit L. Nimgaonkar, and

Department of Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA
Department of Human Genetics, University of Pittsburgh School of Medicine, Pittsburgh, PA

Smita N. Deshpande

Senior professor and HOD at the Department of Psychiatry, PGIMER-Dr Ram Manohar Lohia Hospital, New Delhi, India

Abstract

There is considerable evidence that family psycho-education combined with pharmacological intervention for patients with schizophrenia increases family understanding of the illness, reduces the familial burden of care, and improves patient outcomes. However, no studies have determined whether the burden of care is greater for those families with more than one ill member (multiplex) than for families with a single-affected individual (simplex), and whether psycho-educational programs should be adapted to meet the specific needs of multiplex families. This study was conducted at a tertiary care postgraduate teaching hospital in New Delhi, India. Caregivers in simplex [$n = 50$] and multiplex families [$n = 30$] were compared with regard to levels of burden, coping, and the impact of psycho-education on family functioning. All the caregiver participants attended eight bimonthly, psycho-educational intervention sessions. They were assessed on the Burden Assessment Schedule (BAS) and the Coping Check List (CCL) before and after psycho-education. Caregivers from the multiplex families reported significantly more burden on two domains of the BAS, but there were no significant differences between the groups with regard to coping on the CCL. Following psycho-education, significant improvement occurred in the majority of domains of the BAS and the CCL; the effect sizes varied by domain and family type.

Permissions: www.copyright.com

Address correspondence to Smita N. Deshpande, Department of Psychiatry, PGIMER-Dr Ram Manohar Lohia Hospital, New Delhi, India; smitadeshp@gmail.com; indusszgenes@gmail.com.

Multiplex families face a greater burden of care compared with simplex families. Currently, available psycho-education programs are moderately effective for such families.

Schizophrenia, a significant chronic disorder, commonly begins in adolescence, causing severe disability for individuals and significant burdens on their families [1]. In recent years, family psycho-educational interventions have emerged as an important and effective tool for the disorder [2]. These programs provide families of those with the disorder with information, coping strategies, and support, thus enhancing therapeutic alliances and broadening family knowledge and understanding of patients [3]. The interventions generally target a wide range of issues, including treatment adherence, symptom reduction, relapse and hospitalization, patient functionality, and family adjustment. It has been shown to reduce the likelihood of relapse, improve treatment outcomes and global adjustment scores for individuals with persistent symptoms [4], and improve the coping skills and decrease the burden of care for families [5]. Psycho-education, along with treatment as usual, was more effective than standard care in reducing relapse rates at one-to two-year follow-ups, thereby reducing the overall burden of the primary care-giver [6]. Combined pharmacological/ psychosocial interventions, such as psycho-education, also decrease the average cost of treatment per disability related life-year by more than 40 percent [7]. Finally, family psycho-educational interventions help reduce the family's burden of care [8, 9, 10, 11]. Psycho-education also helps patients to cope within their family and social lives [12, 13, 14]. Thus, psycho-education is a cost-effective intervention for schizophrenia.

In India, patients with schizophrenia typically receive pharmacological treatment; unlike in many Western countries, additional therapies, such as rehabilitation or social services, are generally unavailable. Kulhara et al. [2] conducted a randomized controlled trial of family intervention on seventy-six patients diagnosed with schizophrenia and their caregivers. Schizophrenia patients ($n = 38$) patients, along with their caregivers, were randomly assigned to structured psycho-education (nine months) along with pharmacological treatment, in comparison with schizophrenia patients ($n = 38$), who did not receive psycho-education. Psychopathology was assessed monthly. Disability, caregiver-burden, caregiver-coping, and caregiver-support were evaluated at baseline and at the end of intervention. Structured psycho-educational intervention was significantly better than routine out-patient care among the Indian out-patients with schizophrenia. Improvement was reported in amelioration of psychopathology, reduction of disability levels, increased perception of social support, and increased satisfaction with treatment among caregivers.

Encountering families with more than one member affected with this disorder is not uncommon. The risk for schizophrenia in siblings of a person diagnosed with schizophrenia is approximately 10 percent, with a somewhat lower risk in second- or third-degree relatives [15]. It is not known if caregivers in such multiplex families shoulder more burden than families with a singly affected (simplex) member. It is also uncertain whether multiplex families have unique needs to which psycho-education programs should be specifically tailored. The present study was conducted in India, where the prevalence was observed 2.7 per 1000 [16, 17]. It addressed the question of differing impacts and needs by comparing families with one or more schizophrenic members, targeting the primary caregivers. We

adapted the psycho-education model developed by Anderson et al. [18], which is effective in reducing perceived burden of caregivers of schizophrenia.

Method

Design

The study was designed to compare levels of burden, coping, and the impact of psycho-education among primary caregivers in families with single- (simplex) versus multiple-affected (multiplex) members. Based on the Pittsburgh model, we developed a structured psycho-education intervention program, supplemented by a manual [19].

Site

The study was conducted from September 2009 to June 2011 at the Department of Psychiatry, PGIMER-Dr. RML Hospital, New Delhi (RMLH), a tertiary care, postgraduate teaching hospital offering free services under the government of India. Ethical permission was obtained from the Institutional Ethics Committee, PGIMER-Dr RMLH and the Institutional Review Board of the University of Pittsburgh.

Sample

Recruitment and Assessment of Patients with Schizophrenia—Persons with a clinical diagnosis of schizophrenia were informed about the study by their treating physicians at RMLH and referred to research workers who obtained written, informed consent after explaining study procedures in detail. Next, a detailed diagnostic interview was conducted using the Hindi version of the Diagnostic Interview for Genetic Studies (DIGS), described below [20]. This information was supplemented with details obtained from the caregivers, usually through the Family Interview for Genetic Studies (FIGS) [21]. All clinical information was synthesized and presented at consensus diagnostic meetings to board certified psychiatrists, psychologists, and psychiatric social workers as described [22]. Only families of patients who fulfilled Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria for schizophrenia following detailed evaluations were eligible for inclusion; those with mental retardation, substance abuse, or organic causes were excluded. The pharmacological management of all the patients was unaltered by participation in the study.

Recruitment and Assessment of Primary Caregivers—The primary caregivers of the schizophrenic patients were assessed for self-reported caregiver burden and coping, following which they participated in psycho-educational treatment. For the multiplex families, the caregiver who was taking care of all the ill members was eligible. Only caregivers who were without any history of physical or psychiatric illness or substance abuse were eligible. All the caregivers were assessed using the General Health Questionnaire-12 item, Hindi version. Individuals were excluded from further evaluations if the GHQ-12 [23] score exceeded two. Eligible individuals were evaluated further using the Burden Assessment Schedule (BAS) [24] and the Coping Check List (CCL) [25] at base line and after the end of intervention. These assessments were completed by research associates who did not participate in the psycho-education programs.

Assessment Instruments for Patients

Hindi Version of the DIGS—The DIGS [20] is a modular, semi-structured interview schedule that has been extensively used in National Institute of Mental Health (NIMH)-funded studies. The following items from the DIGS were used to compare patients from single and multiple affected families: demographic features, global assessment of functioning, duration of illness, and age of onset.

Assessment Instruments for Primary Caregivers

Hindi Version of the FIGS—The FIGS [21] is a semi-structured interview that is used to construct pedigrees and elicit details of psychiatric and medical diagnoses of patients and their relatives. The Hindi version of FIGS was used to obtain a three-generation family history from both paternal and maternal sides.

General Health Questionnaire-12 Items (GHQ-12)—The twelve-item screening GHQ was administered to the caregiver of the patient. Caregivers who scored more than two were excluded from the study as they were likely to suffer from significant psychiatric symptoms and would, therefore, experience more burden. They were offered separate consultation if desired.

Burden Assessment Schedule (BAS)—The BAS is a forty-item structured instrument to assess both the subjective and objective burden on the caregiver. Each item is rated on a three-point scale: “not at all,” “to some extent,” and “very much.” The items of the schedule are categorized under nine domains: spouse-related factors; physical and mental illness; external support; caregiver routine; support of patient; taking responsibility; other relations; patient’s behavior; and caregiver’s strategy (Supplementary Table 1). Each item was scored on a one to three scale: no burden (score = 1); burden present to some extent (score = 2); and excessive burden (score = 3). The scores from each domain were summed.

Coping Checklist—This instrument has seventy items, in a yes/no format (scores 1 and 0, respectively). It has seven subscales: one is problem focused (problem solving); five, emotion focused (acceptance, religion/faith, distraction-positive, distraction-negative, denial); and one, social support (which has both problem and emotion focused components) (Supplementary Table 2). The scores for all the items on each subscale were added.

Procedure

A psycho-education intervention program modeled after the interventions used by Anderson et al. [18] and Dixon et al. [5] was designed for the caregivers. Caregivers were requested to participate in eight sessions once every two weeks, thus receiving psycho-education over a four month period. The first two sessions were used to provide information about the illness, its course, prognosis, outcome, and its effect on the patient’s emotions and behaviors. Caregivers were also informed about treatment issues in detail, including the need for compliance, importance of follow-up, and possible side effects of medication. The next four sessions focused on stressors and family factors, the role of the family in the subject’s treatment, and rehabilitation. The emotional impact on caregivers was discussed, and they

were assisted to normalize their negative responses. Caregivers were provided with suggestions to improve their coping strategies and to learn stress management skills to deal with their problems more effectively. They were also encouraged to expand their social support network. The last two sessions of the program were designed to improve interpersonal communication, reduce family conflict, and improve problem-solving techniques. Individual psycho-education sessions were provided at RMLH in which both caregivers and patients were invited to discuss any problems they experienced between sessions. Counseling was provided as appropriate. The average time for the initial session was approximately 1–1.5 hours and subsequent sessions were thirty to forty minutes in duration. All the caregivers were assessed on the BAS and CCL at baseline and at the end of the intervention procedure.

Statistical Analysis

Demographic and clinical variables for the patients and caregivers from simplex and multiplex families were compared using parametric tests. The effect size for psycho-education among caregivers was assessed by dividing the change in mean scores for the CCL and BAS scores by the baseline standard deviation for that variable. The Wilcoxon sign rank test was used to compare the effect size between pre- and post-CCL and BAS scores and a Mann Whitney *U* test was carried out to compare the simplex and the multiplex families on mean difference. Power analyses were conducted using Gpower software [26].

Results

Demographic and Clinical Features of Patients

There were fifty patients from fifty simplex and sixty patients from thirty multiplex families. Approximately two-thirds of the patients in both groups were male (simplex: 62 percent; multiplex: 67.4 percent Table 1). The patients from the simplex families were significantly younger than those from multiplex (simplex: 34.94 years, *SD* 8.26; multiplex 41.9, years, *SD* 5.21, $p < 0005$). In both groups, approximately half the patients reported that they had been or were currently married (simplex: 46 percent; multiplex: 50 percent). The Global Assessment of Functioning (GAF) scale score [27] for the past month was used to measure current functional status. GAF scores did not differ significantly between the simplex and the multiplex families (simplex: mean 27.82, *SD* 5.14; multiplex: mean 28.4, *SD* 6.36).

Caregivers

Demographic Features of Caregivers—There were fifty caregivers from simplex families and thirty from multiplex families (Table 1). In the simplex group, 64 percent of the caregivers were parents, 28 percent were spouses, and 8 percent were siblings of the patients. There were similar proportions in the multiplex group: 63.4 percent of caregivers were parents, 23.4 percent were spouses, and 13.2 percent were siblings. The mean age of the primary caregivers in both groups was similar (Table 1). In the multiplex families, the first person recruited to the study was considered as the proband. In this group, the second affected members included siblings (48.2 percent), parents (36.9 percent), or offspring (14.9 percent) of the patients.

Indices of Burden and Coping Among Caregivers Before and After Psycho-Education—At baseline, caregivers from multiplex families reported more burden than the simplex families with regard to two domains of the BAS: support of patients [B5] and patient's behavior [B8], but there were no significant differences with regard to the other domains ($p < 0.005$). There were no significant differences between the groups for any domains of the CCL (Supplementary Table 3).

Significant beneficial effects of psycho-education were observed on all nine domains of the BAS among the simplex families. Among the multiplex families, significant improvement was observed in all but two of the domains (see Table 2, Figure 1). The effect sizes of the changes differed between the simplex and the multiplex families, with numerically larger effect sizes for three domains among the multiplex families. With psycho-education, significant improvement was also noted for both groups in five of the seven domains of the CCL. No significant improvement was observed for domains C5 (religious faith) and C6 (social supports) in either group (Table 2, Figure 2). The effect sizes for improved domains differed between the family groups, with numerically larger improvement in the simplex families.

We also compared the level of improvement (mean difference between pre- and post-test) on all the domains of the CCL and BAS between these two groups. The differences in mean scores of pre- and post-CCL and BAS were calculated and mean differences of both types of families were compared using the Mann Whitney *U* test. In all seven domains of the CCL, both groups did not differ significantly. We conducted Multiple Analysis of Variance (MANOVA) with group status as an independent variable and differences in different domains of coping skills as dependent variables. There were no significant differences between the two groups on any domain. (The results are tabulated in Supplementary Table 4.) The level of improvement in these domains was equal for all caregivers irrespective of the group. In BAS, caregivers of both groups did not significantly differ in the first eight domains. The improvement reported by the caregivers in both the groups was not significantly different. Only in the caregiver's strategy [B9] domain was the level of improvement significantly different. The simplex group showed more improvement than the multiplex group ($p < 0.001$). MANOVA with group status as an independent variable and differences in different domains of BAS as dependent variables resulted in no significant difference on all domains except on caregiver strategy [B9] ($F 9.164, p = 0.003$). The comparison results are given in Supplementary Table 5.

Power Analysis—The power of the available sample to detect statistically significant differences in the effect size of psycho-education was analyzed. Using the two-tailed Wilcoxon sign rank test, with alpha set a 0.05, the available samples could detect effect sizes of 0.67 or better (medium effect size) with 80 percent power [26].

Discussion

This study was the first comparison of the impact of psycho-education on burden of care, coping styles, and treatment benefits for families experiencing single versus multiple family members with schizophrenia. Caregivers in multiplex families face additional and more

complex burdens compared with simplex families, but their needs have not been evaluated extensively. The findings generally support those reported in the literature. Both groups benefited from the intervention on a number of measures, with families with a single mentally ill individual benefiting somewhat more.

Predictably, we found that the burden of care among the multiplex families was greater in two domains of the BAS, but their coping styles appeared to be similar. On the other hand, the groups showed similar degrees of improvement following psycho-education for the majority of domains evaluated using the BAS and CCL, suggesting that both groups could benefit from psycho-education as it was currently delivered. Our results are consistent with an extensive literature showing the efficacy of psycho-education. This finding supports the work of Birchwood [28] who found that relatives of patients with schizophrenia were able to employ a broad range of coping styles in response to behavioral changes in patients. Reviews [29, 30] showed that in comparison with routine care, psycho-education interventions helped to reduce relapse rates and rehospitalization. It also helps in improving patient functioning levels, which reduce the burden of the caregivers. In a Pakistani sample, Nasr et al. [11] reported significant improvement in the caregiver's routine activities after a psycho-education intervention, but there was insignificant improvement in the physical and psychological health of the caregivers at the post-intervention evaluation. To the contrary, our caregivers reported significant improvement in their physical and mental health after completing the psycho-education program.

Multiplex families reported increased burden in relation to domains in the BAS related to support of patients [B5] and patient's behavior [B8]. We observed that if patients supported the caregivers in any way (financially or with routine household matters) the burden was less, especially in multiplex families. Similarly, patient behaviors that disturbed families generated more burden for multiplex families, understandably, since they had to take care of more than one member. This burden was reported in relation to the participating subject only.

Caregivers from simplex families reported significant improvement in all nine domains of the BAS. Similarly, the caregivers from multiplex families reported significant improvement in all but two domains of the BAS: external support [B3] and other relation [B7]. The external support domain of the BAS measures the support that the family receives from outside, for example, from peers or relatives outside the family. The other relation domain estimates the effectiveness of the caregiver's relationship with other members of the family, apart from patient/s. The differences may reflect the difficulties encountered by caregivers in multiplex families in finding the time or energy required to engage other forms of support in view of the manifold difficulties in looking after more than one ill relative.

Five out of seven domains of the CCL (problem solving; distraction positive; distraction negative; acceptance; denial) improved significantly in both groups after psycho-education. Smith and colleagues [31] have shown that "psycho-education interventions increased the relatives' understanding of the illness, which increases the level of acceptance about the illness and reduces denial." Our intervention strategies also helped the caregivers to learn effective techniques of problem solving and to deal with situation in a positive rather than in

a negative way. More significantly, the reduction in household tension enables the patient to cope better with the situation. Caregivers who used more problem-solving approaches could positively influence the patient's level of functioning [32].

Religion/faith and social support were the two domains of the CCL that did not change significantly for caregivers from either family group. The lack of change in religion/faith is not surprising, since it is a more enduring quality and one that was not addressed during the psycho-education sessions. The social support domain measures the availability as well as importance of social networks outside the family. This study was conducted in a government-supported tertiary health care center that provides free services to patients generally drawn from lower socioeconomic populations. Caregivers from these groups may experience greater stigma, have less time to participate in outside social activities, and have less access to formal social support networks such as advocacy or self-help groups, which are less available in India.

There were some limitations in the present study. We did not monitor changes in psychopathology or medications among the patients before and after psycho-education. In addition, because multiplex families are less frequently encountered in the treatment setting, the multiplex family sample was smaller than the simplex family sample. Whether more subtle differences may emerge from larger samples is unclear. It is also unknown whether the beneficial effects are as lasting for the two groups.

Conclusion

In conclusion, the burden of illness was significantly greater for caregivers in multiplex families compared with simplex families, although the coping styles appeared to be similar. Psycho-education was beneficial for caregivers in both sets of families, suggesting that similar psycho-education programs may be effective in single and multiple affected families. It is recommended that psycho-education should be offered routinely to Indian families.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

This work was funded in part by "Neurobehavioral Family Study of Schizophrenia" (MH63480 to VLN) and by grant "Training Program for Psychiatric Genetics in India" (D43 TW006167) from the National Institutes of Health (NIH), USA. Salary of Dr. Triptish Bhatia is supported by NIH-funded project: "The impact of Yoga supplementation on cognitive function among Indian outpatients with schizophrenia"; TW008289 to TB. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or other funding agencies.

References

1. Jablensky A. Epidemiology of schizophrenia: The global burden of disease and disability. *European Archives of Psychiatry and Clinical Neuroscience*. 2000; 250:274–285. [PubMed: 11153962]
2. Kulhara P, Chakrabarti S, Avasthi A. Psychoeducation intervention for caregivers of Indian patients with schizophrenia: A randomized controlled trial. *Acta Psychiatrica Scandinavica*. 2009; 119:472–483. [PubMed: 19032700]

3. Lemos S, Vallina O, Fernandez MP. Early intervention in schizophrenia. *International Journal of Psychology and Psychological Therapy*. 2003; 3:267–281.
4. Barbato A, D'Avanzo B. Family interventions in schizophrenia and related disorders: A critical review of clinical trials. *Acta Psychiatrica Scandinavica*. 2000; 102:81–97. [PubMed: 10937780]
5. Dixon L. Providing services to families of persons with schizophrenia: Present and future. *Journal of Mental Health Policy & Economics*. 1999; 1:3–8.
6. Walz GP, Leuchet S, Bduml J. The effect of family interventions on relapse and rehospitalization in schizophrenia—A meta-analysis. *Schizophrenia Bulletin*. 2001; 27(1):73–92. [PubMed: 11215551]
7. Gutierrez-Recacha P, Chisholm D, Haro JM, Salvador-Carulla L, Ayuso-Mateos JL. Cost-effectiveness of different clinical interventions for reducing the burden of schizophrenia in Spain. *Acta Psychiatrica Scandinavica*. 2006; 432(Suppl):29–38.
8. Hogarty GE, Anderson CM, Reiss DJ. Family psychoeducation, social skills training, and maintenance chemotherapy in the aftercare treatment of schizophrenia: One-year effects of a controlled study on relapse and expressed emotion. *Archives of General Psychiatry*. 1986; 43:633–642. [PubMed: 2872870]
9. Leff J, Berkowitz R, Shavit N. A trial of family therapy v. a relatives group for schizophrenia. *British Journal of Psychiatry*. 1989; 154:58–66. [PubMed: 2673479]
10. McFarlane WR, Link B, Dushay R. Psychoeducational multiple family groups: Four-year relapse outcome in schizophrenia. *Family Process*. 1995; 34:127–144. [PubMed: 7589414]
11. Nasr T, Kausar R. Psychoeducation and the family burden in schizophrenia: A randomized controlled trial. *Annals of General Psychiatry*. 2009; 8:17–23. [PubMed: 19638229]
12. Hua WQ, Zhang CZ. Psychological burden for family member of patient with first episode schizophrenia and the intervention effect. *Medical Journal of Chinese People's Health*. 2009; 27(11):1308–1311.
13. Liu XJ, Song XK, Zhang YL. Influence of health education to the parents of first-in-hospital patients with schizophrenia. *Chinese Journal of Practical Nursing*. 2007; 23:63–64.
14. Bharathi GD, Huang N, Lu Z. Psychosocial interventions for patients with schizophrenia. *Shanghai Archives of Psychiatry*. 2011; 23(6):368375.
15. Gottesman IL, Erlenmeyer-Kimling L. Family and twin strategies as a head start in defining prodromes and endophenotypes for hypothetical early-interventions in schizophrenia. *Schizophrenia Research*. 2001; 51:93–102. [PubMed: 11479071]
16. Reddy M, Chandrasekhar CR. Prevalence of mental and behavioural disorders in India: A meta-analysis. *Indian Journal of Psychiatry*. 1998; 40:149–157. [PubMed: 21494462]
17. Murali MS. Epidemiological study of prevalence of mental disorders in India. *Indian Journal of Community Medicine*. 2001; 26:198.
18. Anderson, C., Reiss, D., Hogarty, G. Schizophrenia and the family: A practitioner's guide to psychoeducation and management. New York: Guilford Press; 1986.
19. Deshpande SN. Rehabilitation in schizophrenia. 2003 Project report submitted to WHO.
20. Deshpande SN, Mathur MN, Das SK, Bhatia T, Sharma S, Nimgaonkar VL. A Hindi version of the diagnostic interview for genetic studies. *Schizophrenia Bulletin*. 1998; 24:489–493. [PubMed: 9718640]
21. Maxwell, E. Family interview for genetic studies (FIGS). Rockville: National Institute of Mental Health; 1992. Intramural Research Program-clinical neurogenetics branch
22. Chakraborty S, Mehar H, Bhatia T, Deshpande SN. Differences among major mental disorders in disability, quality of life and family burden: A short term study. *Indian Journal of Social Psychiatry*. 2011; 27:38–44.
23. Goldberg, D. General health questionnaire (GHQ-12). Windsor, UK: NFER-Nelson; 1992.
24. Thara R, Padmavati R, Kumar S, Srinivasan L. Burden assessment schedule: Instrument to assess burden of caregivers of chronic mentally ill. *Indian Journal of Psychiatry*. 1998; 40:21–29. [PubMed: 21494438]
25. Rao K, Subbakrishna DK, Prabhu GG. Development of a coping checklist: A preliminary report. *Indian Journal of Psychiatry*. 1989; 31:128–133. [PubMed: 21927370]

26. Faul E, Erdfelder E, Lang AG, Buchner A. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavioral Research Methods*. 2007; 39:175–191.
27. Endicott J, Spitzer RL, Fleiss JL, Cohen J. The global assessment scale: A procedure for measuring overall severity of psychiatric disturbance. *Archives of General Psychiatry*. 1976; 33:766–771. [PubMed: 938196]
28. Birchwood M, Cochrane R. Families coping with schizophrenia: Coping style, their origins and correlates. *Psychological Medicine*. 1990; 20:857–865. [PubMed: 2284393]
29. Xia I, Merinder LB, Belgamwar MR. Psychoeducation for schizophrenia (Review). *The Cochrane Library*. 2013; doi: 10.1002/14651858.cd002831.pub2
30. Pekkala E, Merinder L. Psychoeducation for schizophrenia. *Cochrane Review*. 2002; 6:1–41.
31. Smith JV, Birchwood MJ. Specific and non-specific effects of educational intervention with families living with a schizophrenic relative. *British Journal of Psychiatry*. 1987; 150:645–652. [PubMed: 3651703]
32. Creado DA, Parkar SR, Kamath RM. A comparison with level of functioning in chronic schizophrenia with coping and burden in caregivers. *Indian Journal of Psychiatry*. 2006; 48:27–33. [PubMed: 20703411]

Figure 1.
Changes in Domains of the Burden Assessment Schedule Following Psycho-Education

Figure 2.
Changes in Domains on the Coping Check-List Following Psycho-Education

Table 1

Demographic and Clinical Details of Patients and Their Caregivers

Variables	Simplex (N = 50)	Multiplex (N = 30)	p-value
Patients			
Age (years)	34.94 $\pm$ 8.26	41.9 $\pm$ 5.21	0.003
Gender (M/F)	62%/38%	67.4%/32.6%	NS
Marital status (Ever/Never married)	46%/54%	50%/50%	NS
Global Assessment of Function score: past month	27.82 $\pm$ 5.14	28.4 $\pm$ 6.36	NS
Caregivers			
Age (years)	50.5 $\pm$ 10.36	50.8 $\pm$ 10.57	NS
Gender (M/F)	31/19	21/9	NS
Type of relationship to patient identified (Parent/Sibling/Spouse)	68%/8%/28%	63.4%/13.2%/23.4%	NS

Notes: Values for continuous variables presented as mean $\pm$ standard deviation. NS: not significant.

Table 2**Effects of Psycho-Education on Burden and Coping**

Simplex (N = 50)		Multiplex (N = 30)			
Burden Assessment Scale (BAS)	Effect size	Z*	p-value	Effect size	Z* p-value
B1 : spouse related	-2.1	-3.5	0.000 *	-3.2	-4.2 0.002 *
B2: physical and mental health	-3.7	-5.7	0.000 *	-3.3	-4.8 0.000 *
B3: external support	-0.3	-2.9	0.001 *	-0.3	-2.0 0.063
B4: caregiver's routine	-3.8	-5.9	0.000 *	-3.3	-4.7 0.000 *
B5: support of patients	-3.7	-6.1	0.000 *	-5.0	-4.8 0.000 *
B6: taking responsibility	-3.1	-5.9	0.000 *	-2.9	-4.8 0.000 *
B7: other relations	-0.6	-2.9	0.001 *	-0.3	-1.6 0.250
B8: patient's behaviour	-2.2	-5.9	0.000 *	-0.4	-4.8 0.000 *
B9: caregivers strategy	-2.7	-5.9	0.000 *	-3.4	-4.8 0.000 *
Coping Checklist (CCL)					
C1: problem solving	2.81	-5.9	0.000 *	3.3	-4.8 0.000 *
C2: distraction positive	2.9	-6.1	0.000 *	1.9	-4.6 0.000 *
C3: distraction negative	-2.5	-5.9	0.000 *	-2.6	-4.7 0.000 *
C4: acceptance	2.5	-5.8	0.000 *	2.7	-4.7 0.000 *
C5: religion/faith	0.30	-2.6	0.11	0.43	-2.3 0.31
C6: social support	0.03	-1.0	1.000	0.0	0.00 1.000
C7: denial	-2.6	-6.03	0.000 *	-2.9	-4.7 0.000 *

Note:

* Negative Z scores and effect sizes denote improvement.