

Association of caregiver burden with cognition in persons suffering from Schizophrenia

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Abstract

Introduction: Schizophrenia is a chronic psychiatric illness which has enormous impact on the persons suffering from the illness as well as the persons taking care of them. Cognitive deficits are common in the persons suffering from Schizophrenia, which further lead to impairment in the daily living of the individual. Caregiving of persons with Schizophrenia places a significant burden on the caretakers and this study tries to study the association between the caregiver burden and the cognitive deficits in persons suffering from Schizophrenia.

Aims:

- 1) To measure the cognitive deficits in persons suffering from Schizophrenia.
- 2) To find the caregiver burden in the caregivers of persons suffering from Schizophrenia.
- 3) To find the relationship between the caregiver burden with cognition of persons suffering from Schizophrenia.

Materials and Methods: This is an cross-sectional study and the study sample consisted of 60 persons suffering from Schizophrenia and their respective caregivers attending the Government Hospital for Mental Care, Visakhapatnam. Persons suffering from Schizophrenia's cognitive status was assessed using the Cognitive Assessment Interview (CAI). Caregivers' sociodemographic data was taken and the caregivers' burden was assessed using the Burden Assessment Schedule (BAS). Statistical analysis of the data was carried out using SPSS software version 23.

Results: The mean Global Cognitive assessment score was 2.73 with a S.D. of 0.74. The mean score of caregiver burden according to the BAS was 76.9 with a S.D. of 6.7. There was a statistically significant correlation between the global cognitive score and the caregiver burden ($r=0.783, p<0.01$).

Conclusions: This study concludes that there is cognitive impairment seen in persons suffering from Schizophrenia. Caregivers of persons suffering from Schizophrenia have significant burden. There is a significant correlation between the cognitive impairment and the caregiver burden.

Key words: Schizophrenia, Cognition, Caregivers, Burden.

Introduction

Schizophrenia is a severe mental disorder and having huge impact on patients and their families. The caring for a person with schizophrenia is has enormous caregiver burden and is associated with reduced quality of life and significant impacts on the health and functioning of caregivers.

Caregiver burden refers to the physical, emotional, financial demands of an individual's illness which were taken care by the family members, friends or other individuals involved with the individual^[1]. "Care-giver" in mental illness refers to a person who resides with a person and provide care to that person. The caregiver may include a relative or any other person who performs the function^[2].

The care of persons with mental illness has shifted from earlier institutional mental health setup to general hospital setup and community care and this has become a challenging task for caregivers especially in the current era of de-institutionalization^[3]. Deinstitutionalization has highlighted the role of family members as the primary source of care giving to persons with mental illness. It may cause a significant burden on the caregiver as a result of the shift of burden of care from hospital to families, in terms of frequent hospitalizations and the need for long-term psychosocial and financial support.

Schizophrenia is an illness affecting person speech, thought, emotion, perception and cognitive domains. Cognitive impairment is one of the important core features of schizophrenia. In the past decade, a large body of empirical evidence has been accumulated showing that cognitive disturbances are important determinants of functional outcome variables such as social relationships and work status. For example, a meta-analysis demonstrated that memory dysfunction is a particularly strong predictor of functional outcome in schizophrenia^[4]. It may affect the caregiver burden directly or indirectly and it needs to be addressed if patients are to be treated effectively. Cognitive impairment could be the earlier manifestation before the psychotic symptoms become contrasting. It is one of the resistant domains for medical management of illness as there were very few medications having therapeutic effect on cognitive domain. There were very less studies regarding the impact of cognition domain of schizophrenia on caregivers burden.

Hence, in this study, we tried to study the association between the cognitive impairment in the patients of schizophrenia and the burden experienced by their caregivers.

Aim: To find the relationship between the caregiver burden with cognition of persons suffering from Schizophrenia.

Materials and Methods

Study Design: Cross sectional study.

Sampling Method: Convenience sampling.

Study Group: The study group consisted of 60 Schizophrenic patients and their caregivers attending Government Hospital for Mental Care, Visakhapatnam.

Inclusion criteria

- 18 to 55 years old both male and female persons and having a Diagnosis of Schizophrenia according to I.C.D. -10 criteria.
- Patients' caregivers who are giving care to their mental ill person included in our study.

Exclusion criteria

- Patients with medical or neurological illness
- H/O head trauma.
- Mental retardation
- Patient meeting ICD-10 criteria for substance dependence.
- Patient who refused to participate.

Mentally ill persons fulfilling the inclusion criteria were taken up for the study. They were enrolled after taking informed consent from them to be included in the study. They were interviewed along with detailed history and mental status evaluation. A diagnosis of Schizophrenia was confirmed if they satisfy for ICD-10 criteria. Then these patients were evaluated clinically.

The patient's socio-demographic data and illness history were obtained. The caregivers' sociodemographic data was also taken.

Permission from the hospital authorities was taken prior to conducting the study.

Study tools

Self-designed semi-structured Performa was used. It included the following:

- a) Socio-demographic data sheet.
- b) Clinical profile sheet.

Cognitive Assessment Interview

The CAI is a brief tool for rating cognition in persons with schizophrenia. The CAI had good internal consistency (Cronbach's alpha = .92) and good test-retest reliability ($r = .83$)^[5]. The measured domains include Working memory, Attention/ Vigilance, Verbal Learning and Memory, Reasoning and Problem solving, Speed of Processing and Social Cognition.

Burden Assessment Schedule (BAS)

Burden Assessment Schedule (BAS) was developed by the Schizophrenia research foundation (SCARF) to assess caregiver burden. The scale reflects the opinions of caregivers themselves, rather than those of the researchers^[6]. Inter-rater reliability for the scale is 0.80 (kappa, $p < 0.05$). The test-retest reliability is 0.91, and the alpha coefficient is 0.92.

Statistical Analysis

Statistical analysis of the data was carried out using SPSS software version 23. Mean and standard deviation were presented for all the continuous variables. To examine the relationship between the cognitive assessment and the caregiver burden, Pearson's correlation statistics were applied.

Results

Sociodemographic Data

A total of 60 persons with schizophrenia were included in the study. There were 27 males and 33 females. The mean age of the mentally ill person sample is 31.2 years (S.D-8.9 years). The caregivers group consisted of 20 females and 40 males with a mean age of 43.1 years (S.D-11.1 years). 53 percent of patients were unemployed and the others were employed in various

fields. All of the caregivers were working in various fields. The mentally ill persons had a mean duration of illness of 6.3 years and the mean duration of untreated psychosis was 15.2 months.

Table 1: Sociodemographic and Clinical characteristics

	Patients	Caregivers
Age	Mean-31.9 (S.D. -8.9) years	Mean 43.1(S.D. -11.1) years
Gender	27 males (45%)	40 males (66.6%)
	33 females (55%)	20 females (33.4%)
Employment	47% employed	100% employed
Duration of Illness	Mean 6.3 years (S.D. -3.1) years	
Duration of Untreated Psychosis	Mean-15.2 months (S.D. -8) months	
Burden Assessment Score		Mean-76.9 (S.D.- 6.7)

Cognitive Assessment Scores

Mentally ill persons had a mean score of 2.8 on the working memory domain with a S.D of 0.85, mean score of 2.6 with a S.D. of 0.81 in the attention/vigilance domain. Mentally ill persons had a mean score of 2.55 in the verbal learning and memory domain and a mean of 2.61 in the Reasoning and Problem-solving domain. They had a mean score of 3.61 in the speed of processing domain and a mean of 2.45 in the Social cognition domain. The mean Global Cognitive assessment score was 2.73 with a S.D. of 0.74. A statistically significant correlation was found between the total duration of illness and the global cognitive assessment score ($r=0.386$, $p<0.01$).

Table 2: Scores on Cognitive Assessment Interview

Cognitive domain	
Working memory	Mean- 2.8; S.D.- 0.85
Attention and Vigilance	Mean- 2.6; S.D.- 0.81
Verbal Learning and memory	Mean- 2.55; S.D. – 0.67
Reasoning and Problem solving	Mean- 2.61; S.D.- 0.75
Processing Speed	Mean-3.61; S.D.- 0.83
Social Cognition	Mean- 2.45; S.D.- 0.81
Global Cognitive Assessment Score	Mean 2.73; S.D.- 0.74

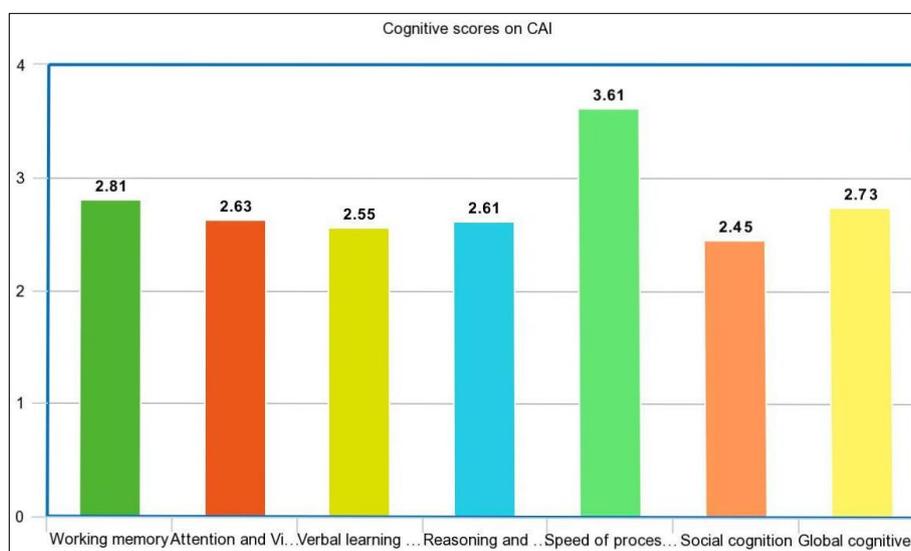


Table 3: Correlation between the total duration of illness and the global cognitive assessment score

Correlation			
		Globalcog	Duration of illness
Globalcog	Pearson Correlation	1	.386**
	Sig. (2-tailed)		.002
	N	60	60
Duration of illness	Pearson Correlation	.386**	1
	Sig. (2-tailed)	.002	
	N	60	60

**Correlation is significant at the 0.01 level (2-tailed).

Burden Assessment

The mean score of caregiver burden according to the BAS was 76.9 with a S.D. of 6.7. There was a statistically significant correlation between the working memory and the burden scores ($r=0.625$, $p<0.01$), between attention/vigilance and the caregiver burden ($r=0.649$, $p<0.01$), between verbal learning and memory and the caregiver burden ($r=0.582$, $p<0.01$), between Reasoning and Problem-solving and the caregiver burden ($r=0.535$, $p<0.01$), between the speed of processing and the caregiver burden ($r=0.588$, $p<0.01$) and between the social cognition and the caregiver burden ($r=0.698$, $p<0.01$). There was a statistically significant correlation between the global cognitive score and the caregiver burden ($r=0.783$, $p<0.01$).

Table 4: Correlation between the care giver burden and the global cognitive assessment score

Correlations			
		BAS	Globalcog
BAS	Pearson Correlation	1	.783**
	Sig. (2-tailed)		.000
	N	60	60
globalcog	Pearson Correlation	.783**	1
	Sig. (2-tailed)	.000	
	N	60	60

**Correlation is significant at the 0.01 level (2-tailed).

Table 5: Correlation between various domains of cognition with Caregiver burden

Correlation Statistics	
Working memory with BAS	$r=0.625$, $p<0.01$
Attention and Vigilance with BAS	$r=0.649$, $p<0.01$
Processing Speed with BAS	$r=0.588$, $p<0.01$
Social Cognition with BAS	$r=0.698$, $p<0.01$
Global Cognitive Assessment Score with BAS	$r=0.783$, $p<0.01$

A statistically significant correlation was also found between the duration of illness and the caregiver burden experienced ($r=0.561$, $p<0.01$). Caregiver burden scores were also found to be more in patients who were unemployed.

Discussion

In our study there were comparatively less male mentally ill persons compared to females. However, the caregivers were comparatively more males. In our culture the male persons will take the responsibility for managing all the family issues and this could be the reason for comparatively male caregivers. The mean age of the patients was 31.2 years, which is in

accordance with the study done by Subho Chakrabarti *et al.* ^[7], where the mean age of the schizophrenia patients was 32.13 years.

In our study, around 53% mentally ill persons were unemployed where as in a study done by Vasudeva *et al.* ^[8], more than half of the patients were employed. This could be explained by the fact that patients attending our hospital are mostly from a rural background and of a lower socio-economic status. In our study, all of the caregivers were employed in various fields, as in most cases, they are the sole breadwinners for the family and have to provide the patients their daily needs. This also explains the significant burden placed on the caregivers.

Processing speed is a potential endophenotype for Schizophrenia and studies concluded that it is the central feature of cognitive impairment in patients of Schizophrenia. In our study, the highest impairment was seen in the speed of processing domain (mean-3.61), supporting the assertion that speed impairment is a central feature of the cognitive deficit in schizophrenia. A study done by Crawford *et al.* ^[9], also concluded the same.

In our study, a positive correlation was found between Global cognitive assessment score and caregiver burden. Similar findings were reported by Ochoa *et al.* ^[10], for objective burden, where cognitive impairment also moderately and positively correlated with patients' contribution to total family income. In a study done by Mantovani *et al.* ^[11], objective burden experienced by the caregivers was shown to be predicted by negative symptoms of schizophrenia. Some studies, however, found that the positive symptoms contribute more to the caregiver burden, compared to the negative symptoms and cognitive impairment.

In our study, the mean duration of illness was 6.91 years which is similar to the study done by Vasudeva *et al.* ^[8], where the mean duration of illness was 7.44 years which is explained by the fact that schizophrenia is a chronic and debilitating illness. Our study noted that the majority of mentally ill persons had longer duration of mental illness. Since our hospital is tertiary centre for coastal zone of the state the mentally ill persons who were tried treatment else where and not improved can be referred to our centre at the later phase of illness and this could be the reason for longer duration of illness reported in our study.

We found a statistically significant relationship between the duration of illness and the cognitive impairment which is probably due to the progressive nature of the cognitive impairment in Schizophrenia. A study done by Talreja *et al.* ^[12], also concluded the same. As the illness progress to chronic state the positive symptoms may not become prominent and the cognitive symptoms become marked and this could be noted as positive correlation between global cognitive assessment scores and duration of mental illness. The person with mental illness having poor problem solving skills, and poor in working memory can perform less in doing any skilled work or multitasking. This may affect the work performances along with difficulties in some activities of daily living. This may impact the caregiver performance leading significant burden as noted in our study as correlation between burden assessment scores and cognitive scores.

Conclusions

This study concludes that cognitive impairment is seen in patients of schizophrenia. Impairment in the speed of processing is more in schizophrenic patients compared to the other domains. There is a significant burden on the caregivers of patients suffering from schizophrenia. The caregiver burden is influenced by various clinical and sociodemographic characteristics of the patient like the duration of illness, cognitive impairment which significantly contribute to the burden experienced by the caregivers.

Limitations

Cognitive impairment in schizophrenia is progressive. As our study is cross sectional study, it might not fully assess the total impact of cognitive impairment.

A larger sample would have more practical implications.

As the study was carried out in a hospital setting, it cannot be generalized to community

The scale used was an interview based scale. A pencil paper battery would have been more useful

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