Research Report

CAREGIVER BURDEN IN ALCOHOL DEPENDENCE SYNDROME AND ITS SOCIODEMOGRAPHIC CORRELATES: A CROSS-SECTIONAL STUDY FROM SOUTH INDIA

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ABSTRACT

Background: Caring for people with severe mental and medical illness adversely affects their natural caregivers, which is measured as caregiver burden (CGB). Even though many studies have investigated CGB in chronic medical and mental illnesses, such studies are minimal in substance use disorders with a chronic course, relapses and remissions. The current study intended to investigate the extent of CGB among caregivers of alcohol dependence syndrome (ADS) patients and how different sociodemographic and clinical variables affect CGB. **Methods:** We conducted a cross-sectional study in a tertiary psychiatry hospital among those who were admitted for the treatment of alcohol dependence. One hundred patients and their caregivers were included in the study. Data was collected using a semi-structured questionnaire, the severity of dependence assessed using the Severity of Alcohol Dependence Questionnaire (SADQ) and the burden using the Burden Assessment Schedule. Data were analysed using SPSS software, and relevant statistical tests were used. **Results:** All our patients were male, educated and married. Most of the patients started alcohol use before the age of 20 years, had been using alcohol for more than 10 years, 91% had a history of deaddiction treatment, and 80% were using nicotine. Most caregivers were females, either the spouse or parent, from low socioeconomic status, nuclear families, from a rural background. Most were educated but didn't have jobs and stayed with the patient for more than 10 years. Our study found that 93% of the caregivers experienced moderate to severe burden, and 73% of the patients had severe alcohol dependence. The caregiver being illiterate, unemployed, and not having a permanent residence were significantly associated with a high caregiver burden, and the caregiver being male with a low burden. Patients being illiterate, unemployed, and having more than two previous admissions were the factors associated with a severe burden. Logistic regression analysis found caregiver gender and education, patient employment and number of admissions to be predictors of severe burden. **Conclusions:** There is a high burden among caregivers of alcohol dependent patients. Caregiver gender and education, patient employment and number of admissions were the predictors of severe burden.

Keywords: Caregiver burden, alcohol dependence syndrome, severity of alcohol dependence

INTRODUCTION

Chronic illnesses can cause problems, difficulties, or adverse events that impact the lives of significant others, leading to physical, emotional, and financial toll on those who care for people with these illnesses, which is described as caregiver burden (CGB).[1] The World Health Organization (WHO) defines CGB as "the emotional, physical, financial demands and responsibilities of an individual's illness that are placed on the family members, friends or other individuals involved with the individual outside the health care system.[2] CGB can be subjective and objective, as explained by Platt S (1985).[1] Hoeing and Hamilton (1966) were the first to distinguish between objective and subjective burden. The objective burden of caregiving refers to the time spent on caregiving, the caregiving tasks performed, and possible financial problems.[3] The subjective burden of care refers to how the caregiver perceives the impact of the objective burden related to caregiving.[4] The burden perceived by caregivers of patients with psychiatric illness is a fundamental prognostic aspect, as the caregiver burden is reportedly a critical determinant for negative caregiving outcomes, which can also affect chronically ill patients.[5] CGB significantly influences care for patients with mental illnesses like schizophrenia,[6] bipolar disorders[7] and substance use disorders.[8] There are different instruments available to measure the subjective burden, like the Caregiver Reaction Assessment (CRA),[9] the Family Burden Interview Schedule (FBIS),[10] and the Burden Assessment Schedule (BAS) developed by WHO.[11]

Harmful use of alcohol is a public health problem that affects the user's physical and mental health directly and also affects the immediate family members and society at large. Alcohol consumption has been identified as one of the top five risk factors for illness, disability, and mortality worldwide.[12] According to the Global Status Report on Alcohol and Health 2018, harmful use of alcohol had resulted in three million deaths (5.3% of all deaths) and 132.6 million disability-adjusted life years (DALYs) in 2016 alone, thus making alcohol one of the leading causes of death and disability.[13] Chronic alcohol use can lead to physical illnesses like increased risk of hypertension, ischaemic heart disease, stroke, and various cancers. It also leads to the development of alcohol dependence syndrome (ADS), alcohol-induced psychiatric disorders, insomnia, and dementia.[14] Globally, around 2.3 billion (43% of the total population) are current drinkers, and in India, 9.1% of men and 0.4% of women meet the criteria for ADS.[13] According to the National Family Health Survey-4 (NFHS-4), 29.3% of males and 1.2% of females use alcohol in India. It is 37.5% and 1.6% in Kerala.[15] Thus, alcohol use remains a significant problem in our country, too.

Alcohol dependence in close relatives can affect other members of the family. Previous studies have shown that ADS in one family member can lead to emotional and economic burden, relationship distress, and family instability, thus leading to CGB.[16] ADS among parents can affect the psychological well-being of the children in the family. It can increase the risk of substance use among children, as shown in some studies.[17] The multiple physical health problems seen among people with ADS can lead to increased healthcare utilization, hospital visits, and admissions, which also cause a significant burden to caregivers.[18] A few studies have looked at CGB in patients with ADS. A study by Vaishnavi et al. (2017) demonstrated that ADS patients' caregivers reported significant objective and subjective burdens. Furthermore, the severity of ADS and the different burden domains positively correlated with a high significance level in that study.[19] Yet another study demonstrated a positive correlation between the measure of burden and alcohol use among caregivers.[20] One study looked at the stigma towards patients with ADS and found a relationship between increased stigma, caregiver burden, and mental health.[21]

Another review examined instruments to measure CGB and found no specific tools for substance use disorders (SUD) alone.[22]

Even though many studies have looked at CGB in chronic physical and psychiatric illnesses, such studies are fewer among patients with ADS. A few studies have been done in India, but mainly in the north. The studies that have already been done haven't systematically investigated how the different demographic and clinical factors influence CGB. The current study intended to investigate the extent of CGB among caregivers of ADS patients and how different sociodemographic and clinical variables affect CGB. The primary objective of the study was to measure the extent and severity of CGB. The other objectives were to measure ADS severity and how different demographic and clinical variables influence the CGB.

MATERIALS AND METHODS

Study Design and Settings

The manuscript adhered to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBES) guidelines.[23] It was a cross-sectional study conducted at the deaddiction center of a tertiary psychiatric hospital, Government Mental Health Center, Trivandrum. The study was started after obtaining permission from the institutional scientific and ethics committees (IEC number 3166/16/MHC TVM dated 23.01.2018). We recruited the patients and the caregivers from those admitted for ADS treatment. The study was conducted from February 2018 to June 2019. We used consecutive sampling until the sample size was achieved. Patients and caregivers were interviewed after completing the detoxification phase of one week for this study.

Study Participants

Patients who met the criteria for ADS according to the ICD-10 Classification of Mental and Behavioural Disorders, Diagnostic Criteria for Research (ICD 10-DCR),[24] between 18-65 years of age, who used alcohol for more than a year, and were ready to give informed consent were included. Patients with other significant psychiatric comorbidities (schizophrenia, bipolar disorder, obsessive-compulsive disorder, major depressive disorder) and using substances other than alcohol and tobacco were excluded. Caregivers who were 18 or older, a close relative of the patient (close relative was defined as spouse, parents, grandparents, siblings, or children for the study), and staying with the patient for more than a year were also included. Caregivers who could not give adequate information due to severe physical or mental illnesses were excluded.

Sample Size

In a study done in north India by Sen et al. (2016), the extent of burden in different areas of functioning was found to be 80%, and most of the caregivers were spouses.[25] Taking α as 5%, the prevalence of caregiver burden (p) as 80%,[25] and absolute precision as 10% of p, the minimum sample size for the study was calculated using the formula for cross-sectional studies. The minimum sample size required for the study was estimated to be 96 and rounded off to 100.

Study Variables, Study Tools, and Outcome Measures

The sociodemographic and clinical variables of ADS patients and their caregivers were collected using a semi-structured pro forma. The primary outcome measure was the severity of caregiver burden. CGB was assessed using the WHO Burden Assessment Schedule (BAS) developed by Thara et al. (1998).[11] It measures burden in domains like impact on well-being, impact on marital relationships, appreciation for caregiving, impact on relations with others, and perceived severity of the disease. It has 40 items (4 itms could only be answered if the caregiver is a spouse), and the total score ranges between 40-120. For this study, the degree of burden was scored as mild (BAS score

40-70), moderate (71-100) and severe (101-120). The secondary outcome was the severity of ADS, which was measured using the Severity of Alcohol Dependence Questionnaire (SADQ).[26] The SADQ is a 20-item questionnaire with a total score ranging from 0-60. A score of 31 or more indicates severe ADS, 16-30 means moderate dependence, and a score below 16 usually shows only mild physical dependency.

Data Collection and Statistical Analysis

The patients and caregivers admitted for in-patient treatment were approached for the study. They were recruited into the study after the acute detoxification phase of one week was over, after obtaining written informed consent. Primary psychiatric diagnosis was made using the ICD-10 DCR and verified by a consultant in the department who was not part of the research team. Sociodemographic and other variables were collected using a semi-structured pro forma prepared for the study. The severity of alcohol dependence was measured using the SADQ. The caregivers were then interviewed using the WHO BAS to measure the extent of CGB. Percentages with 95% confidence intervals (95% CI) and means with standard deviations (SD) were used to summarise data. The Chi-square test examined the association between demographic and clinical factors and the primary outcome. For this, we categorized the level of burden into two groups, severe and mild to moderate, and compared the independent variables between these two groups. The odds ratio with a 95% confidence interval was calculated for binary variables. The Chi-square test/Fischer's exact test was used to calculate the P value, and a value less than 0.05 was taken as significant. Simple binary logistic regression analysis was done to study the association of the independent variables (demographic and clinical) with severe CGB after adjusting for confounding variables using the enter method. Correlation between the different outcome measures was done using Pearson's correlation test. All data analysis was performed using Microsoft Excel software and IBM SPSS Version 16.

RESULTS

All the assessments were done on 100 patients and 100 caregivers, and all were included in the final analysis. Table 1 describes the sociodemographic and clinical variables of patients and caregivers included in the study. All the patients were men; the majority were aged between 30-60 years and were from a low socioeconomic, rural background. Most patients were from a nuclear family, had at least primary education or above, and were married and employed. The majority of the patients started using alcohol before the age of 20 years and had used it for over ten years. The majority of them reported a positive family history of ADS. Most of them had been using tobacco and alcohol and had a history of one or more previous admissions for ADS. Most caregivers were women between 20-60 years of age, from low socioeconomic, rural backgrounds, had at least primary education or above, and were unemployed. The majority of them were spouses or parents, staying with the patient for more than ten years. A positive family history of substance use was reported by most of the caregivers. Still, only a few were using any substance, with alcohol and tobacco being the substances of use. Regarding the outcome measures, 93% (95% CI = 88%-98%) of the caregivers reported moderate to severe caregiver burden while caring for their relative with ADS. All patients had at least moderate to severe alcohol dependence, with 73% reporting severe ADS.

We looked at the relationship between caregiver and patient factors and the severity of the burden using the Chi-square test. Table 2. shows the relationship between different caregiver factors and the severity of the burden. The caregiver being a man, illiterate, unemployed, and not having a permanent residence showed statistically significant association with severe CGB scores. None of the other factors showed any significant association. The association of the different

Table 1. Demographic and clinical variables of patients and caregivers

Patients' demographic variables		Frequency (%) (N = 100)	Caregivers' demographic variables		Frequency (%) (N = 100)
Age in years	<30	5 (5.0)	Age in years	<30	9 (9.0)
	30-60	91 (91.0)		30-60	62 (62.0)
	>60	4 (4.0)		>60	29 (29.0)
Gender	Men	100 (100.0)	Gender	Men	32 (32.0)
	Women	0 (0.0)		Women	68 (68.0)
Religion	Hindu	74 (74.0)	Religion	Hindu	75 (75.0)
	Muslim	10 (10.0)		Muslim	10 (10.0)
	Christian	16 (16.0)		Christian	15 (15.0)
Place of origin	Rural	64 (64.0)	SES	BPL	84 (84.0)
	Urban	36 (36.0)		APL	16 (16.0)
SES	BPL	84 (84.0)	Education	Illiterate	14 (14.0)
	APL	16 (16.0)		Primary	68 (68.0)
Type of families	Nuclear	65 (65.0)		≥Secondary	18 (18.0)
	Joint	35 (35.0)	Employment	Employed	30 (30.0)
Marital status	Single	21 (21.0)		Unemployed	70 (70.0)
	Married	63 (63.0)	Relation to the patient	Spouse	40 (40.0)
	Separated	16 (16.0)		Parents	43 (43.0)
Education	Illiterate	8 (8.0)		Siblings	8 (8.0)
	Primary	77 (77.0)		Children	9 (9.0)
	≥Secondary	15 (15.0)	Duration of stay with the patient	<5 years	3 (3.0)
Employment	Employed	72 (72.0)		5-10 years	12 (12.0)
	Unemployed	28 (28.0)		>10 years	85 (85.0)
Patients Clinical Variables			Permanent residence	Yes	69 (69.0)
Age of onset of alcohol use	<20 years	85 (85.0)		No	31 (31.0)
	20-40 years	14 (14.0)	F/h/o substance use	Yes	68 (68.0)
	>40 years	1 (1.0)		No	32 (32.0)
Duration of Alcohol use	5-10 years	3 (3.0)	Type of substance used	No use	76 (76.0)
	>10 years	97 (97.0)		Alcohol	7 (7.0)
Previous admissions for ADS	0	9 (9.0)		Tobacco	3 (3.0)
	<2	52 (52.0)		Both	14 (14.0)
	>2	39 (39.0)			
Comorbid nicotine use	Yes	80 (80.0)			
	No	20 (20.0)			
F/h/o alcohol use	Yes	72 (72.0)			
	No	28 (28.0)			
SADQ Score	<16	0 (0.0)			
	16-30	27 (27.0)			
	>30	73 (73.0)			
Caregiver burden (BAS score)	Mild	7 (7.0)			
	Moderate	72 (72.0)			
	Severe	21 (21.0)			

APL – Above poverty line, ADS – Alcohol dependence syndrome, BAS -Burden Assessment Schedule, BPL – Below poverty line, F/h/o – Family history of, SADQ – Severity of Alcohol Dependence Questionnaire, SES – Socio-economic status

patient factors are shown in Table 3. Among the patient's demographic characteristics, being illiterate and unemployed were significantly associated with severe burden. Patients with a

Table 2. Relationship between the caregiver variables and the severity of caregiver burden

Caregiver variables		Caregiver burden		Odds ratio (95% CI)	P value
		Severe F (%) n1 = 21	Mild-moderate F (%) n2 = 79		
Age in years	<30	0 (0.0)	9 (9.0)	-	0.12
	30-60	12 (12.0)	50 (50.0)		
	>60	9 (9.0)	20 (20.0)		
*Gender	Male	1 (1.0)	31 (31.0)	0.07 (0.01 -0.60)	0.003
	Female	20 (20.0)	48 (48.0)		
SES	BPL	18 (18.0)	66 (66.0)	1.18 (0.30-4.6)	1.0
	APL	3 (3.0)	13 (13.0)		
*Education	Illiterate	7 (7.0)	7 (7.0)	5.14 (1.55-16.9)	0.009
	Primary or >	14 (14.0)	72 (72.0)		
*Employment	Unemployed	20 (20.0)	50 (50.0)	11.6 (1.47- 90.9)	0.003
	Employed	1(1.0)	29 (29.0)		
Relation with patient	Spouse	9 (9.0)	31 (31.0)	-	0.12
	Parent	12 (12.0)	31 (31.0)		
	Sibling	0 (0.0)	8 (8.0)		
	Children	0 (0.0)	9 (9.0)		
Duration of stay with the patient	>10 years	18 (18.0)	67 (67.0)	-	0.63
	5-10 years	3 (3.0)	9 (9.0)		
	<5 years	0 (0.0)	3 (3.0)		
*Permanent residence	Absent	11 (11.0)	20 (20.0)	3.2 (1.19- 8.77)	0.03
	Present	10 (10.0)	59 (59.0)		
F/h/o sub-stance use	Present	18 (18.0)	50 (50.0)	3.48 (0.94- 12.83)	0.66
	Absent	3 (3.0)	29 (29.0)		
Type of substance used	Alcohol	1 (1.0)	6 (6.0)	-	0.18
	Tobacco	1 (1.0)	2 (2.0)		
	Both	0 (0.0)	14 (14.0)		
	No use	19 (19.0)	57 (57.0)		

*– P value < 0.05; APL – Above poverty level, BPL – Below poverty line, CI – Confidence interval, F – Frequency, F/h/o – Family history of, SES – Socio-economic status

history of more than two previous admissions for the treatment of ADS showed a statistically significant CGB. When the severity of ADS and the severity of the CGB were compared, people with severe ADS (SADQ score >30) had severe CGB; the finding was statistically significant. None of the other clinical factors showed a statistically significant association with the severity of CGB.

A stepwise logistic regression analysis of the independent variables that had shown statistically significant association with CGB was done to understand how different variables predict the severity of CGB. The process was found to be significant with a P value <0.001 (standard error [SE] = 0.246, *df* -1). The level of significance was set at P value <0.05. For outcome prediction, the percentage Cox & Snell R was found to be 43.9%, and Nagelkerke R was found to be 68.3%. The results are shown in Table 4. The gender and education of the caregivers, as well as the employment and the number of previous admissions of the patients were found to be the predictors of caregiver burden after adjusting for caregiver's employment, having a permanent residence, patient's education and the severity of dependence. On assessing the correlation

Table 3. Relationship between the patients' demographic and clinical variables with the severity of caregiver burden

Variables		Caregiver burden		Odds ratio (95% CI)	P value
		Severe F (%) n1 =21	Mild-moderate F(%) n2 = 79		
Age in years	<30	0 (0.0)	5 (5 .0)	-	0.49
	30-60	20 (20.0)	71 (71 .0)		
	>60	1 (1.0)	3 (3 .0)		
Place of origin	Rural	14 (14.0)	50 (50 .0)	1.16 (0.42-3.20)	0.49
	Urban	7 (7.0)	29 (29 .0)		
SES	BPL	18 (18.0)	66 (66 .0)	1.18 (0.30-4.60)	0.56
	APL	3 (3.0)	13 (13 .0)		
Family type	Nuclear	13 (13.0)	52 (52 .0)	0.88 (0.31-2.28)	0.46
	Joint	8 (8.0)	27 (27 .0)		
Marital status	Single	4 (4.0)	17 (17 .0)	-	0.21
	Married	11 (11.0)	52 (52 .0)		
	Separated	6 (6.0)	10 (10 .0)		
*Education	Illiterate	4 (4.0)	4 (4 .0)	4.41 (1.0-19.3)	0.04
	Primary or >	17(17.0)	75 (75 .0)		
*Employment	Unemployed	12 (12.0)	16 (16 .0)	5.25 (1.8-14.6)	0.002
	Employed	9 (9.0)	63 (63 .0)		
Age of onset of alcohol use	<20 years	19 (19.0)	66 (66 .0)	-	0.07
	20-40 years	1 (1.0)	13 (13 .0)		
	>40 years	1 (1.0)	0		
Duration of alcohol use	>10 years	21 (21.0)	76 (76 .0)	-	1.00
	5-10 years	0 (0.0)	3 (3 .0)		
*Number of previous admissions	0	1 (1.0)	8 (8 .0)	-	0.003
	<2	5 (5 .0)	47 (47 .0)		
	>2	15 (15 .0)	24 (24 .0)		
Comorbid nicotine use	Present	20 (20 .0)	60 (60 .0)	6.3 (0.79-50.3)	0.07
	Absent	1 (1 .0)	19 (19 .0)		
F/h/o alcohol use	Present	18 (18 .0)	54 (54 .0)	2.77 (0.74-10.30)	0.09
	Absent	3 (3 .0)	25 (25 .0)		
*Severity of ADS	Mild	0 (0.0)	0 (0.0)	-	0.001
	Moderate	0 (0.0)	27 (27 .0)		
	Severe	21(21 .0)	52 (52 .0)		

* – P value < 0.05; ADS – Alcohol dependence syndrome, APL – Above poverty level, BPL – Below poverty line, CI – Confidence interval, F – Frequency, F/h/o – Family history of, SES – Socio-economic status

between the severity of ADS and the severity of CGB (Figure 1), a moderate positive correlation was observed, which was statistically significant. (Pearson's r = 0.463, P value <0.001).

DISCUSSION

The current study examined the extent of caregiver burden suffered by carers of patients with ADS and how different patient and caregiver factors influenced the burden. Understanding this is of clinical and social importance, as caregiver burden can affect the mental health and the quality of life of the caregivers, and the quality of care given to the patient.[27,28]

In our study, most caregivers were women from low socioeconomic families, had primary education, and were unemployed. In India,

caring for sick people often falls on the women, who are supposed to take care of the family and household responsibilities. This is reflected in most women being unemployed in India or engaged in non-paid work, with only a 24.5% labour force participation rate (LFPR) among women.[29] Most of the caregivers, being women, are involved in non-paid jobs, like the role of homemakers, which may be the reason for the low employment among caregivers. This is significant and shows how a close family member's illness affects the women in the family, personally and economically. The burden of caregiving is often placed on the shoulders of women, which can affect the mental health of women. High levels of unemployment among caregivers of substance use disorders (83%) were found in the study by Vaishnavi et al. (2017) and other studies.[19,30] The caregivers were mostly the spouse (40%) or the parents (43%) of the patients, had been staying with them for more than ten years, and most of them had their permanent residence. The study by Vaishnavi et al. (2017) also had a similar demographic profile of the caregivers, where most were women and either spouses or parents.[19] Most caregivers were illiterate in their study, which is different from the current study, probably because of Kerala's higher literacy rate.[31] Other studies also reported that most caregivers are spouses or parents.[25,30] In our study, most caregivers had a family history of substance use, but only 24% were using any substance. Since most caregivers were females, and substance use among females is less in the country, this might have led to the low prevalence of substance use among caregivers.[15] A positive family history is a noticeable finding since it is evident that alcohol and other substance use disorders can run in families because of the shared genetic etiology.[32] A positive family history of substance use was also found in similar studies.[33] Since most caregivers in the current study were the patients' spouses, a positive family history may not significantly contribute to the CGB.

In the present study, all patients were males, reflecting the substance use pattern in Kerala; most of the people using alcohol are males.[15] The mean age of the patient population was 41.8 years (SD – 9.1 years), and most patients were aged between 30 and 60 years. This is an important finding because it shows how alcohol use affects society's most economically productive age group and adds to the burden of the disease. In the present study, 64% of the patients were from a rural background; this is interesting because even though the study center is located in an urban area, most patients seeking help here are from a rural background. There may be a higher perceived stigma among the urban populace and the affluent, who prefer private consultations or general hospital settings rather than psychiatric hospitals, which explains this interesting finding. Other studies have also demonstrated this fact.[34] Previous studies have shown a similar patient profile.[19,25,30] In our study, 85% of patients started using alcohol before the age of 20 years. This finding is much different from previous studies, which found the mean age of onset as 28 years and 27±6 years, respectively.[33,35] In the present study, 97% of the patients had used alcohol for over ten years. Even though the duration of alcohol use was not a significant predictor of the severity of the burden in the present study, previous studies have shown that long-term alcohol use can lead to the chance of developing many physical complications of alcohol use, which can add to the burden of illness.[36] Among patients, 91% had at least one, and 39% had more than two previous admissions. Multiple inpatient admissions can add to the CGB as the caregiver generally has to stay with the patient; which can affect them economically.

Along with alcohol, 80% of the patients were using nicotine. Smoking rates among alcoholic dependent persons are as high as 90%, with approximately 70% of them smoking at least one pack of cigarettes daily. Similarly, smokers are far more likely to consume alcohol than

Table 4. Logistic regression analysis results of the independent variables that showed significance

| Variables	Adjusted OR (95% CI)	P value
*Caregiver gender	0.02 (0.001-0.38)	0.009
*Caregiver education	8.25 (1.08-62.8)	0.042
*Patient employment	7.37 (1.33-40.9)	0.022
*Patients' number of admissions	9.18 (2.04-41.2)	0.004

* - P value <0.05; OR- Odd's ratio

non-smokers, and smokers who are dependent on nicotine have a 2.7 times greater risk of becoming alcohol dependent than non-smokers.[37] Thus, nicotine use can be a major reason that can affect the course and outcome of ADS. We found that 73% of the patients had severe alcohol dependence syndrome with a SADQ score of over 30, and 23% had moderate dependence. These findings show the extent of the problem in our community, as most of the treatment-seeking population has severe ADS. This finding differed from the study by Vaishnavi et al. (2017), where only 17% had severe ADS.[19] A study by Swaroopachary et al. (2019) reported that 63% of their sample had severe dependence, and 32% had moderate dependence, almost similar to our finding.[38] The CGB was measured using the BAS, and 93% of the caregivers experienced moderate to severe burden, with 21% experiencing severe CGB. This shows that ADS in close relatives significantly affects the family members caring for them. Similar levels of CGB among patients with substance use disorders were demonstrated in a recent review.[39] How the CGB impacts the mental health of caregivers is also important. One study compared CGB in patients with ADS and schizophrenia and found similar CGB in both groups. They also found higher anxiety and depressive symptoms in caregivers of patients with ADS.[40] The study setting can explain the high prevalence of severe ADS and CGB in our study: a tertiary psychiatry hospital, where more severe cases come for treatment. In another study, being unemployed and being a female caregiver were also associated with severe CGB.[38]

We looked at the association between the study variables and the severity of CGB. Among caregiver variables, the caregiver being male was associated with statistically significant lower CGB. Males, who may not often be directly involved in patient care and who are more socially connected and employed, may feel less impact compared to female caregivers. Our study found that the caregiver being male is a protective factor against CGB. The caregiver being illiterate, unemployed, and not having a permanent residence were also significantly associated with severe CGB. Being illiterate can lead to a poor understanding of illness and the ability to care for them and reduce employment opportunities. Not having a home also affects people, as there is no place to look after the sick person. Mattoo et al. (2013) found that being from a rural background and being unemployed are significantly associated with severe burden.[30] In another study, caregivers being female and unemployed were associated with severe CGB.[38] None of the other caregiver sociodemographic factors were significantly related to the severity of the burden in the current study.

Figure 1. Scatter plot showing a correlation between the severity of alcohol dependence syndrome (X-axis) and the severity of caregiver burden (Y-axis)
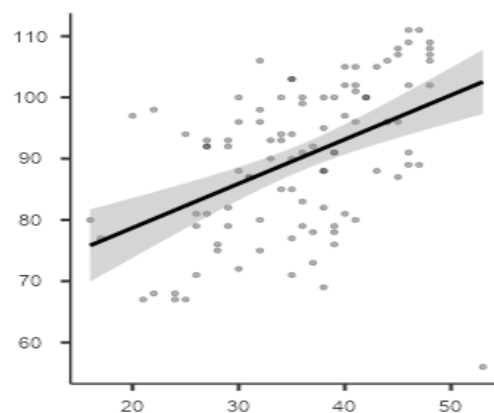
The patient being illiterate and unemployed showed statistically significant association with severe CGB in our study. Mattoo et al. (2013) also found that being unemployed and being from rural areas were statistically significant determinants of severe burden.[30] Another study by Senthil et al. (2015) found a statistically significant burden among illiterate patients.[35] When the patient is unemployed, they cannot contribute financially to the family; their alcohol use again results in economic instability, impacting the caregivers and other family members. None of the other demographic factors of patients showed any significant association with the burden. Among clinical variables, having more than two previous admissions for ADS was significantly associated with severe CGB. More admissions can lead to the failure of the caregiver to fulfill other family duties and add to the economic burden through loss of employment. Senthil et al. (2015) found a significant association between the age of onset of alcohol use, duration of alcohol use, and severity of burden.[35] The CGB was severe among the patients with severe ADS; this finding was statistically significant. Our study showed a moderate positive correlation between the severity of the ADS and the severity of the burden. This points to the need for early identification of alcohol dependence and its proper treatment to reduce caregiver burden. Studies by Vaishnavi et al. (2017) and Swaroopachary et al. (2018) also found a positive correlation between dependence and burden severity.[19,38]

Simple binary logistic regression analysis was used to study the association of the independent variables (demographic and clinical) with the severity of burden. It was found that caregiver gender and education, patient employment, and patient's number of previous admissions were predictors of severe CGB. Mattoo et al. (2013) also conducted logistic regression analysis and found living in a rural area as the predictor of severe burden.[30]

The results of our study are not surprising because education and employment are important predictors of socioeconomic status and can directly affect the patient and caregiver. Studies exploring the relationship between economic condition and caregiver burden have shown that a lower socioeconomic level is associated with an increased caregiver burden.[41] A recent review looked at the predictors of CGB among patients with SUD and found that behavioral problems among patients, lack of social support, rural background, and low income are predictors of CGB.[39]

The study findings point to the need for proper interventions to address CGB. We should plan interventions for early identification and management of ADS, which can reduce the burden. Some significant predictors of CGB, like education and employment, are non-modifiable; hence, interventions targeting the caregivers are also needed, particularly social and occupational support for the family members. Caregiver support groups can also help reduce the CGB by providing mutual support. Most caregivers being women points to the need for women empowerment interventions, too. Such interventions will help us lower the impact of long-term caregiving.

Conclusion

We found that most caregivers suffer moderate to severe burden that can significantly affect them and the care for the patient. Factors such as the severity of the ADS and different demographic and clinical characteristics influence the severity of CGB. The current study points to the need to develop systematic interventions to address the CGB, which can positively impact patients with ADS and their caregivers.

Limitations The study was conducted in a tertiary psychiatry hospital, where most severe disorders are treated. This might have led to an increased estimation of the CGB and severity of ADS. It makes the results less generalizable to

the population. Multiple admissions, a predictor of severe CGB, can also be due to physical comorbidities related to ADS, which was not evaluated in the current study; it might have also added to the higher CGB. The study's sample size is smaller when compared to the prevalence of ADS in the community. The caregivers' psychiatric and physical comorbidities were not evaluated in this study, which could have influenced the CBG. The caregiver's undetected comorbidities might have added to the increased burden that we found in our study. Another significant limitation is that a subdomain analysis of CGB was not done, which could have helped to understand which areas of caregiving were affected.

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Conflict of interest

The authors declare no conflict of interest.

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