Predictors of Caregiver Burden in Family Caregivers of Male Patients with Opioid Use Disorders

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ABSTRACT

Background: We aimed to determine the factors that correlate and best predict caregiver burden in family caregivers of male patients with opioid use disorders, specifically with heroin use.

Methods: A total of 100 patients with opioid use disorders and their primary caregivers (n = 100) were included in the study. Both patients and caregivers completed sociodemographic data collection forms. The Addiction Severity Index was applied to the patients, and the Burden Assessment Scale, COPE Inventory, Hamilton Anxiety Rating Scale, and Hamilton Depression Rating Scale were applied to the caregivers. Patients and their caregivers were divided into groups according to sociodemographic and clinical characteristics and then the caregiver burden scores were compared. In addition, factors correlating with caregiver burden were determined. Finally, in considering all these data, the factors that best predict caregiver burden were identified using regression analysis.

Results: Factors that increased the burden of caregivers were duration of care, at least 1 instance of inpatient treatment, the presence of verbal and physical violence between patients and other family members, intravenous drug use, and moderate or severe dependence, according to Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5). Caregivers' active coping scores, based on the COPE Inventory, were found to negatively predict caregiver burden, while the patients' family-social relationship scores, based on the Addiction Severity Index, were found to positively predict caregiver burden.

Conclusions: Developing caregivers' coping skills and patients' family-social relationships may thus contribute to reducing the burden of disease related to heroin-addicted patients.

INTRODUCTION

Substance abuse is a global problem, affecting almost every country and approximately 190 million people all over the world.[1,2] Substance use disorders lead to destructive physical, mental, and socioeconomic consequences, not only for patients but also for their caregivers.[3] Because drug addiction is seen as an individual's problem, the effect of addiction on families and caregivers has been largely neglected in the scientific community.[4,5] More recently, however, researchers have acknowledged that substance addiction should be considered as a "family disorder."[3,6]

A "caregiver" is defined as an individual who provides care to other family members who are in need of supervision and assistance due to illness or who provide unrequited care to family members with special need.[7,8] "Caregiver burden" can be defined as the events, difficulties, and problems that affect the lives of caregivers of psychiatric patients adversely.[5] When considering the importance of family caregivers in the treatment process, factors affecting caregiver burden become highly significant. Unfortunately, research studies of the caregiver burden on caregivers of individuals with substance dependence disorders are very limited compared to those that focus on the patients themselves.

Studies examining caregiver burden have typically focused on schizophrenia, bipolar disorder, dementia, and chronic physical diseases,[9] while few have focused on unipolar depression, anxiety disorders, attention deficit and hyperactivity disorder, tic disorders, and substance use disorders.[10] In the limited number of caregiver burden studies related to substance use disorders, it was reported

that various factors associated with both patients and caregivers affect caregiver burden. For example, unemployment, being unmarried, behavioral problems, the substance use path of the patients, place of residence, income, care support, and closeness to the patient were identified as the most important caregiver-related factors that affect caregiver burden.[5,11,12] However, the effects of caregiver coping skills, anxiety and depression symptoms, and sociodemographic characteristics as well as the effects of patient sociodemographic and clinical characteristics and the severity of dependence have not been adequately investigated in terms of their impact on caregiver burden. Moreover, the literature thus far has included little discussion about the predictors of caregiver burden for the caregivers of opioid-addicted patients. In addition, most studies in this field have only been carried out using a small number of participants. Therefore, the aim of this study was to examine the predictive value of different variables regarding family caregivers and their heroin-addicted patients with respect to the caregiver's burden.

METHODS

Study Design and Participants

This cross-sectional study was conducted between February 2015 and August 2015. A total of 100 patients with opioid use disorders and their 100 primary caregivers were included in the study. The purpose and procedures of the study were explained to all the patients and caregivers, and all participants provided written informed consent. The study was approved by the local ethics committee of the Sülçuk University with the approval number 2015/28. The interview was not a mandatory component of the treatment.

All interviews with patients took place during the period of buprenorphine-naloxone stabilization, during which clinical withdrawal symptoms had disappeared completely. For this reason, the interviews were conducted with the patients in the alcohol and drug addiction service and at the outpatient clinic within 1 week following detoxification treatment. Caregivers were included in the study within the first week of their associated patient's admission. The interviews of patients and caregivers were conducted in person. The inclusion/exclusion criteria, materials used in the research, and the flow chart of the study are shown in Figure 1.

Study Procedures and Measures

To evaluate the sociodemographic and clinical features of the patients and primary caregivers, 2 separate sociodemographic data forms were completed by the subjects. The Addiction Severity Index (ASI) was applied to the patients, and the Burden Assessment Scale (BAS), COPE Inventory (COPE), Hamilton Anxiety Rating Scale (HAM-A), and Hamilton Depression Rating Scale (HAM-D) were applied to the caregivers.

Patients and their caregivers were divided into groups according to sociodemographic and clinical characteristics (marital status, employment status, patients' path of heroin use, addiction severity, and treatment features) and then the caregiver burden scores were compared. In addition, factors correlating with caregiver burden were determined. Finally, with considering all these data, the factors that best predict caregiver burden were noted by regression analysis.

The ASI was developed by McLellan in 1980 to determine the severity of the addiction. It is a structured clinical instrument consisting of 140 items on 6 subscales: medical status (11 items), employment/support status (24 items), legal status (30 items), drug/alcohol use (27 items), family and social relationships (26 items), and psychiatric status (22 items). The severity of each problem area measured by the scale was scored by the interviewer with a rating of 0-9. High scores indicate that the individual requires more treatment or counseling in that area.

The BAS is a 19-item, self-rated scale that focuses on specific objective and subjective caregiver consequences. Ten items assess objective burden and refer to the observable behavioral effects of caregiving, such as financial problems, limitations on personal activity, household disruptions, and disrupted social interactions. Nine items assess subjective aspects of burden, such as caregiver feelings, behaviors, and emotional experiences. It is administered as a 4-point Likert scale.[13] The validity and reliability study for the Turkish version was performed.[14]

The HAM-D is a widely used scale that measures the level of depression and scored by clinician. Its scoring is as follows: 0-7 points indicate "no depression," 8-15 points indicate "mild depression," 16-28 points indicate "moderate depression," and 29 points and higher indicate "severe depression." The scale was developed by M. Hamilton, and the Turkish validity and reliability studies of the scale were published.[15]

The HAM-A was one of the first scales developed to measure the severity of anxiety symptoms, and it is still widely used in clinical research. The scale consists of 14 items, each defined by a series of symptoms, that measure both psychic anxiety (i.e., mental agitation and psychological distress) and somatic anxiety (i.e., physical complaints related to anxiety). It was developed by M. A. X. Hamilton, and the validity and reliability studies of the Turkish version were conducted.[16]

The COPE Inventory (COPE) is a multidimensional coping inventory used to assess the different ways that people respond to stress.[17] It is a self-report scale consisting of 15 subscales. The first 5 subscales measure problem-focused coping (instrumental social support, active coping, restraint coping, suppression of competing activities, and planning). Subscales 6-10 measure aspects of what might be viewed
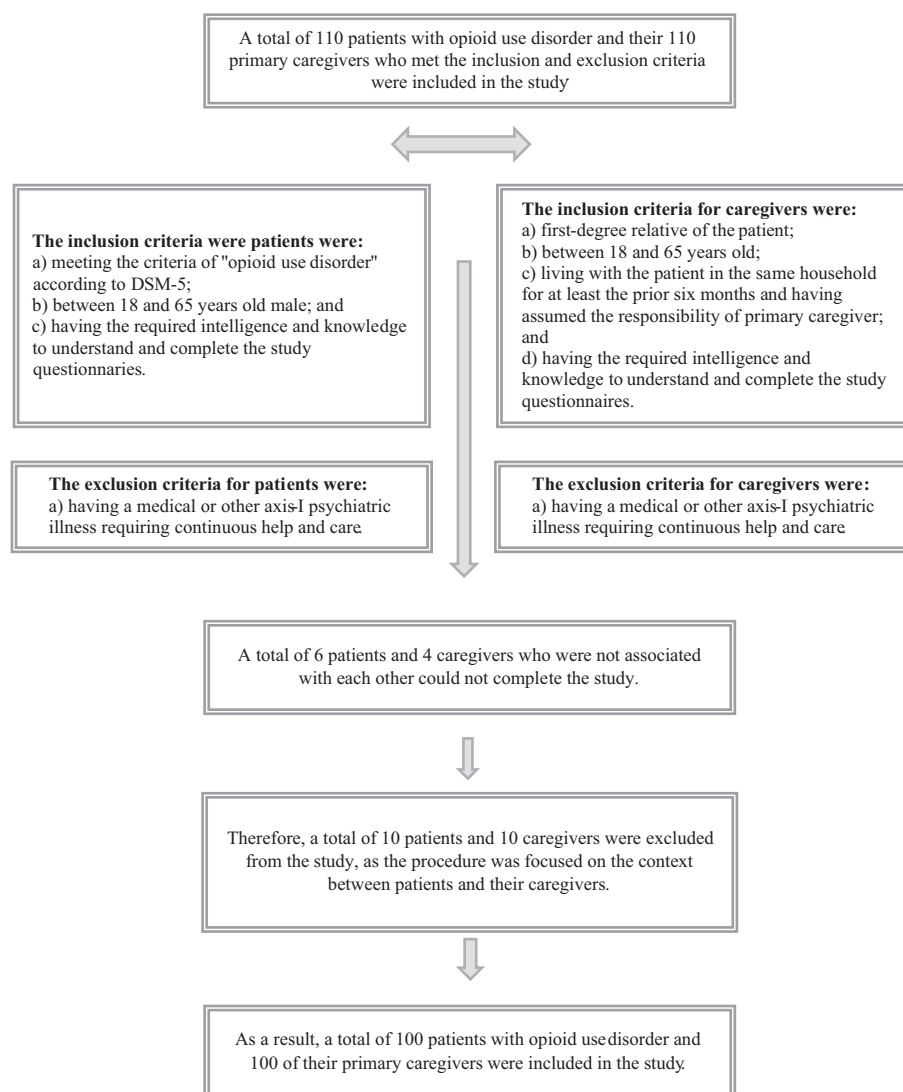
Figure 1. Collecting data and illustrating the flow chart of the research.

as emotion-focused coping (positive reinterpretation, turning to religion, humor, emotional social support, and acceptance). The final 5 subscales measure coping responses that are dysfunctional and less useful (mental disengagement, focus on and venting of emotions, denial, behavioral disengagement, and substance use). Turkish psychometric study was conducted.[18]

Statistical Analysis

Descriptive statistics (frequency and ratio) were used for sociodemographic variables. The Kolmogorov–Smirnov test was used to analyze the distribution of continuous variables. Group differences were examined using a t-test or chi-square/Fisher's exact test. Pearson's and Spearman's rank correlation coefficients were used for correlation analyses. Generalized linear regression analysis was performed to determine the predictor variables of caregiver burden. All analyses were conducted using Statistical Package for the Social Sciences for Window, version 17.0 (IBM Corp.,

Armonk, NY, USA), and P values of less than .05 were considered statistically significant.

RESULTS

The mean age of first heroin use by participants was 18.83 ± 4.80 (11-37), and the duration of regular heroin use was 3.35 ± 1.81 (1-8) years. A total of 72 (72%) of the patients used heroin via inhalation alone, 5 (5%) used intravenously, and 23 used both inhaled and intravenous heroin. The patients' mean daily dose of heroin ranged from 0.5 g to 5 g. The levels of opioid dependency of the patients, according to DSM-5, were mild: 21 (21%) patients, moderate: 44 (44%) patients, and severe: 35 (35%) patients. A total of 71 (71%) of the caregivers were female, while 29 (29%) were male.

In terms of the relationship between caregiver and patient, 52 (52%) of the caregivers were mothers of the patients, 25 (25%) were fathers, 15 (15%) were spouses, and 8 (8%) were

siblings. The mean age of the caregivers was 43.01±10.50 (20-71). The mean duration of caregiving was 2.90±1.99 (0.5-9) years.

Patients were divided into groups according to sociodemographic and clinical characteristics before the caregiver burden scores were compared. According to the results, patient age, marital status, employment status, levels of education, forensic and prison history, number and duration of imprisonments, suicide history, self-harm or injury history, age of first heroin use, and additional illegal substance use had no statistically significant impact on caregiver burden. Factors that increased the burden of caregivers were at least 1 instance of inpatient treatment, the presence of verbal and physical violence between patients and other family members, intravenous drug use, and moderate or severe dependence, according to DSM-5 (Table 1).

According to the correlation analysis results, a statistically significant low degree of positive correlation was found between the ASI drug/alcohol use score, family/social relations, and psychiatric status subscale scores of the patients and the BAS scores of the caregivers (Table 2).

Table 1. Comparison of Caregivers' Burden Scores (BAS) According to the Sociodemographic and Clinical Characteristics of the Patients

Sociodemographic and Clinical Characteristics of the Patients	n	BAS Scores of Caregivers M ± SD	χ^2	z	P	Effect Sizes
Marital status						
Married	25	50.72±10.67		-0.215	.830	
Single	75	50.48±10.17				
Employment status						
Working	35	50.00±11.39		-0.228	.820	
Not working	65	50.83±9.65				
Forensic history						
Yes	64	51.18±10.26		-1.031	.302	
No	36	49.38±10.25				
Prison history						
Yes	23	51.91±10.10		-0.910	.363	
No	77	50.12±10.31				
Suicide history						
No	51	49.64±9.73				
Suicidal thoughts	30	51.90±11.08	1.009		.604	
Suicide attempt	19	50.78±10.53				
Self-harm-injury history						
Yes	56	51.48±10.57		-1.129	.259	
No	44	49.34±9.79				
Domestic violence						
No	50	47.54±10.39				
Verbal	35	52.34±9.71	9.272		.010*	0.10**
Verbal and physical	15	56.33±7.70				
Paths of heroin use						
Inhalation	72	49.02±10.52		-2.382	.017*	0.56***
Inhalation and intravenous	28	54.42±8.47				
Treatment						
Outpatient	41	47.90±10.26		-2.269	.023*	0.44***
Inpatient (at least one time)	59	52.37±9.91				
Severity of the substance use disorder (according to DSM-5)						
Mild	21	43.76±10.26				
Moderate	44	51.13±10.56	12.213		.002*	0.13**
Severe	35	53.85±7.89				

*P < .050; **Partial eta squared calculated; ***Cohens' d calculated.
M, mean; SD, standard deviation

Table 2. Correlations Between the Sociodemographic/Clinical Quantitative Values ues tiPatients and the BAS Scores of the Caregivers

Sociodemographic/Clinical Quantitative Values of Patients	M ± SD (Min-Max)	BAS Scores of Caregivers M ± SD (Min-Max) 50.54 ± 10.24 (27-70)	
		r[a]	P
Age	23.07±4.26 (18-35)	0.028	.785
Marriage length (in years)	5.34±4.60 (0.5-20)	0.048	.820
Age of marriage	23.06±2.72 (18-28)	-0.127	.545
Number of people at home	4.09±1.28 (2-8)	0.043	.673
Number of imprisonments	1.39±1.07 (1-6)	-0.244	.262
Total prison time (in months)	8.91±12.78 (0.1-60)	-0.295	.172
Age at time of first illegal substance use	15.75±3.42 (9-25)	-0.045	.654
Age at time of first heroin use	18.83±4.80 (11-37)	-0.004	.968
Age at time of regular heroin use onset	19.25±4.77 (12-37)	-0.13	.896
Duration of regular heroin use (in years)	3.35±1.81 (1-8)	0.179	.045*
Number of hospitalizations	1.63±1.03 (1-5)	0.093	.490
Number of quit attempts	3.17±1.88 (1-10)	0.088	.384
Longest remission time (in months)	4.16±4.74 (0-18)	0.134	.182

[a]Spearman's correlation analysis was performed because at least one of the variables was not normally distributed.
*P < .050.
M, mean; SD, standard deviation; Min, minimum; Max, maximum.

There was also a statistically significant low degree of positive correlation between the duration of regular heroin use (in years) and the BAS scores of the caregivers. However, there was no statistically significant correlation between the other quantitative values of the patients and the BAS scores of the caregivers (Table 2).

Caregivers were divided into groups according to sociodemographic and clinical characteristics before comparing the caregiver burdens. According to the results, caregiver gender, age, marital status, proximity to the patient, education level, place of residence (rural or urban), employment status and income, history of medical or psychiatric disease, and lack of support in caregiving were found to have no effect on caregiver burden. However, duration of care did increase the caregiver burden. Moreover, a statistically significant moderate positive correlation was found between the total, psychic, and somatic scores of the HAM-A, the total score of the HAM-D, and the BAS scores of the caregivers (Table 3).

A statistically significant low degree of negative correlation was found between the active coping subscale scores and BAS scores of the caregivers. Low to moderate positive correlation was found between the total score of less useful coping techniques and BAS scores, and a low to moderate positive correlation was found between the substance use subscale and BAS scores (Table 4).

Regression Analyses

Factors that related statistically significantly with the caregiver BAS scores (COPE-active coping, COPE-less

useful coping, COPE-substance use scores, caregiving time (in years), caregiver HAM-D and HAM-A scores, patient ASI drug/alcohol use, ASI family/social relationships, ASI psychiatric status scores, verbal and physical violence between family members, and intravenous heroin use) were analyzed using the generalized linear regression model. As a result, the caregiver COPE-active coping scores were in the negative (−), and the patient ASI family/social relationships scores were found to be the major predictor

Table 3. Correlations Between the Sociodemographic/Clinical Quantitative Values and the BAS Scores of the Caregivers

Sociodemographic/Clinical Quantitative Values of Caregivers	M ± SD (Min-Max)	BAS Scores of Caregivers M ± SD (Min-Max) 50.54 ± 10.24 (27-70)	
		r[a]	P
Age	43.01±10.50 (20-71)	-0.109	.282
Duration of caregiving (in years)	2.90±1.99 (0.5-9)	0.277	.005*
Total HAM-D score	12.20±7.39 (1-28)	0.511	<.001**
Total HAM-A score	10.76±7.03 (1-27)	0.536	<.001**
Psychic scores of HAM-A	5.10±3.22 (0-14)	0.562	<.001**
Somatic scores of HAM-A	5.64±4.19 (0-18)	0.494	<.001**

[a]Spearman's correlation analysis was performed because at least one of the variables was not normally distributed.
*P < .050; **P < .001.
M, mean; SD, standard deviation; Min, minimum; Max, maximum; HAM-A, Hamilton Anxiety Rating Scale; HAM-D, Hamilton Depression Rating Scale.

Table 4. Correlations Between the COPE Scores and BAS Scores of the Caregivers

COPE Inventory Scale	M ± SD (Min-Max)	BAS Scores of Caregivers M ± SD (Min-Max) 50.54 ± 10.24 (27-70)	
		r^a	P
Problem-focused total scores	59.31±5.38 (47-70)	-0.013	.896
Instrumental social support	12.28±2.09 (6-16)	-0.014	.899
Active coping	12.58±1.81 (9-16)	-0.238	.017*
Restraint coping	10.57±1.64 (7-15)	0.085	.401
Suppression of competing activities	11.71±1.42 (9-15)	-0.024	.810
Planning	12.30±1.62 (8-16)	-0.006	.956
Emotion-focused total scores	54.95±4.81 (40-65)	0.087	.391
Positive reinterpretation	12.60±1.51 (9-16)	-0.127	.208
Turning to religion	15.31±1.58 (8-16)	-0.042	.681
Humor	5.72±2.15 (4-11)	-0.037	.717
Emotional social support	11.36±1.69 (7-16)	0.172	.087
Acceptance	9.96±2.53 (4-14)	0.168	.096
Less useful coping total scores	40.82±7.84 (27-57)	0.345	<.001**
Mental disengagement	9.33±2.18 (4-14)	0.168	.095
Focus on and venting of emotions	11.47±2.27 (7-16)	0.301	.002*
Denial	7.96±2.31 (4-14)	0.043	.674
Behavioral disengagement	7.06±2.31 (4-13)	0.207	.059
Substance use	4.91±1.71 (4-11)	0.315	.001**

[a]Spearman's correlation analysis was performed because at least 1 of the variables was not normally distributed.
*P < .050; **P < .001.
BAS, Burden Assessment Scale; COPE, COPE Inventory; M, mean; SD, standard deviation; Min, minimum; Max, maximum.

Table 5. Predictors of Caregiver Burden According to the GLM

Variables Related to BSA (Predictors)	Direction of Effect	β	Wald χ^2	P
COPE-active coping	-	-1.044	4.281	.039*
COPE-less useful coping total scores	+	0.145	1.857	.173
COPE-substance use	+	-0.002	0.003	.954
Duration of caregiving (in years)	+	0.750	1.837	.175
HAM-A	+	0.534	3.419	.064
HAM-D	+	0.081	0.081	.776
ASI drug/alcohol use	+	0.439	0.274	.600
ASI family/social relationships	+	1.131	5.012	.025*
ASI psychiatric status	+	0.108	0.039	.843
Domestic violence (verbal+physical)	+	2.096	1.374	.241
Drug use method (intravenous)	+	3.805	2.022	.155

β, regression coefficient; dependent variable, BAS.
The Wald χ^2 statistic tests the significance of each coefficient (β).
*P < .050.
ASI, Addiction Severity Index; BSA, Burden Assessment Scale; COPE, COPE Inventory; Hamilton Anxiety Rating Scale; HAM-D, Hamilton Depression Rating Scale; GLM, Generalized Linear Model.

of caregiver burden in the positive (+) direction. Table 5 shows the results of the multiple regression analyses using the generalized linear model.

DISCUSSION

In our study, when the caregiver burden was compared by sociodemographic and clinical characteristics of patients, patient age, marital status, education level, employment status, forensic and prison history, number and duration of imprisonments, suicide history, self-harm or injury history, age of first heroin use, and additional illegal substance use had no statistically significant impact on caregiver burden. Factors that increased caregiver burden were at least one period of inpatient treatment, the presence of verbal and physical violence between patients and other family members, intravenous drug use, and moderate or severe dependence, according to DSM-5. There was a positive correlation between the duration of regular heroin use and caregiver burden. ASI alcohol/drug use, family/social relationships, and psychiatric status scores were positively correlated with caregiver burden. However, the medical status, employment/support status, and legal status scores of the ASI were found to have no effect on caregiver burden. In a study conducted in Nepal with 50 opioid-dependent patients and their spouses, the ASI medical status and family/social relationships scores were positively correlated with caregiver burden, while other areas of the ASI were not associated with burden. According to our knowledge, this is the only study other than ours that evaluated the relationship between ASI scores and family burden.[19]

In another study that did not rely on the ASI, no relationship was found between addiction severity and subjective or objective caregiver burden, nor was any relationship found between caregiver burden and patient age, level of education, or duration of addiction.[12] In terms of the factors that increased caregiver burden in our study—at least one period of inpatient treatment, intravenous substance use, and being moderately or severely dependent, according to DSM-5 criteria—all determined the severity of addiction. As a result, it was found that the severity of addiction was positively related to caregiver

burden. The literature includes both studies that report that the caregiver burden increases with the severity of addiction[20] and that there is no relationship between the 2 factors.[12] In our study, a positive correlation was found between the patients' duration of regular heroin use and caregiver burden. Similar to our findings, a study found a positive correlation between duration of addiction and Zarit Burden Interview score in their study with male heroin addicts and their relatives.[11] However, in an Indian study conducted with opioid-dependent male patients and their spouses, no correlation was found between the duration of dependence and the perceived disease burden of the spouses.[19]

Similar to our findings, another study with male heroin addicts and their relatives found no significant correlation between caregiver burden and the age of the onset of heroin use or the education level of the patient.[11] Also similar to our findings, a study found that the prison history of patients did not affect the subjective or objective burdens of the caregivers.[21]

In this study, when the relationships between anxiety/depression levels of caregivers and caregiver burden are evaluated, the caregivers' HAM-D and HAM-A scores were positively correlated with their BAS scores. As our study was cross-sectional, it is difficult to determine whether the caregivers' symptoms of depression and anxiety increased their burden or whether the caregiving burden led to anxiety and depression. Psychiatric symptoms of caregivers, such as depression and anxiety, may make it more difficult to cope with a loved one's addiction and, thus, lead to a greater caregiving burden. Likewise, the persistent stress of living with a drug addict may result in caregivers developing psychiatric symptoms like anxiety and depression.

According to our findings, when considering the results of the relationship between caregiver burden and coping skills, caregiver burden was reduced by caregivers employing "active coping" methods. On the other hand, the "less useful coping methods" and "substance use" coping methods increased caregiver burden. To our knowledge, the relationship between caregiver burden and the coping skills of caregivers of heroin-addicted patients has not yet been evaluated. Although the literature includes studies that used different coping scales but found that coping methods were not associated with caregiver burden,[22] the majority of the data suggest that coping methods are associated with caregiver burden and psychiatric symptoms.

Similar to our findings, in some studies conducted with relatives of patients with schizophrenia and bipolar disorder, it was found that caregiver burden increased when caregivers relied on less useful coping methods.[23,24] In addition, other studies found that problem-focused coping methods reduced the burden of caregivers of schizophrenia and dementia patients.[25,26] However, it is difficult to compare the results of the present study with the mentioned studies because the patient diagnostic groups are different.

In this article, as a result of regression analysis, patient ASI family/social relationship scores and the active coping scores of the caregivers were found to be the most important predictors of caregiver burden. High scores in the area of family/social relationships indicated that the patient needed more treatment and assistance in locating and entering suitable treatment. As the severity score in this area increased, the caregiver burden also increased. Family members play a significant role in the treatment process by providing motivation and emotional and logistical assistance during the treatment-seeking, initial contact, and follow-up stages.[27] Lower family relations were reported by people who injected drugs as well as their family members.[28] Previously, a positive correlation between spouses' perceived burden and patient ASI family/social relationships scores was reported.[19] However, the association between caregiver burden and family/social relationships as a predictor has not, to our knowledge, been previously evaluated.

Active coping is one of the subfields of problem-focused coping methods. Active coping involves concentrating efforts on doing something about the problem, taking additional action to try to get rid of the problem, taking direct action to get around the problem, and doing what has to be done, one step at a time. Whether an event is perceived as stressful depends on the nature of the event and a person's coping and defense mechanisms.[29] At the same time, dysfunctional coping methods of caregivers with patients' disease symptoms may increase agitation and behavioral problems in patients. Likewise, negative emotional reactions to stressors may increase the burden felt by the caregiver. Problem-focused coping methods play an important role in helping people to examine the problem, produce alternative solutions, and focus on solving and preventing the problem.[30]

As a component of problem-focused coping, active coping helps people manage emotional stress caused by problems. In studies conducted with caregivers of chronic psychiatric patients, patients' symptoms and behavioral problems were mentioned as among the most common determinants of caregiver burden.[21] Since these studies were conducted with psychiatric patients rather than opioid addicts, however, it is difficult to compare the results of our study with their results.

The main limitations of this study are as follows: (a) due to the conditions of the drug addiction and treatment center, all of the patients who participated in the study were male, (b) absence of axis-2 diagnoses evaluation in patients and also caregivers, (c) absence of data regarding total number of people in households, (d) caregiver stigma and displeasure were not evaluated, both of which can affect caregiver burden, and (e) lack of controlling for intra-familial correlation of variables.

CONCLUSIONS

The result of the present study shows that active coping strategies were found to be some of the most important predictors of caregiver burden in caregivers of opioid-addicted patients. This finding emphasizes a field that, to our knowledge, has received little attention in the literature. Our results suggest that developing the coping skills of caregivers of heroin-addicted patients could contribute to reducing the burden of addiction. Moreover, the family and social relationships of the patients also emerged as important factors that determine caregiver burden. More epidemiological and longitudinal studies, as well as research including subjects from different cultures, are needed to gain a better understanding of the generic and specific factors that affect the associations between coping skills, family relationships, and the disease burden of addiction.

REFERENCES

1. Gica S, Donmez Z, Unubol B, Iyisoy M, Gulec H. Predictors of relapse in the early stages of the treatment among inpatients with opioid use disorder: a single-center, prospective cohort study. *Psychiatry Clin Psychopharmacol*. 2020;30(3):1. [CrossRef]

2. Sharma B, Arora A, Singh K, Singh H, Kaur P. Drug abuse: uncovering the burden in rural Punjab. *J Fam Med Prim Care*. 2017;6(3):558-562. [CrossRef]

3. Shekhawat BS, Jain S, Solanki HK. Caregiver burden on wives of substance-dependent husbands and its correlates at a Tertiary Care Centre in Northern India. *Indian J Public Health*. 2017;61(4):274-277. [CrossRef]

4. Lamichhane N, Shyangwa PM, Shakya R. Family burden in substance dependence syndrome. *J Gandaki Med Coll*. 2008;1:56-65.

5. Mattoo SK, Nebhinani N, Kumar BNA, Basu D, Kulhara P. Family burden with substance dependence: a study from India. *Indian J Med Res*. 2013;137(4):704-711.

6. Tyo M, McCurry M. … JH-J of A undefined. Predictors of burden and resilience in Family Caregivers of individuals with opioid use disorder. *europepmc.org*. Available at: https://europepmc.org/article/med/34120121. Accessed November 22, 2021.

7. Sharma A, Sharma A, Gupta S, Thapar S. Study of family burden in substance dependence: a tertiary care hospital-based study. *Indian J Psychiatry*. 2019;61(2):131-138. [CrossRef]

8. McPeake J, Devine H, MacTavish P, et al. Caregiver strain following critical care discharge: an exploratory evaluation. *J Crit Care*. 2016;35:180-184. [CrossRef]

9. Duman ZÇ, Bademli K, Aileleri KPH. Sistematik Bir Inceleme (Families of chronic psychiatric patients: A systematic review). *Psikiyatr Guncel Yaklasimlar*. 2013;5(1):78.

10. Atagün Mİ, Balaban ÖD, Atagün Z, Elagöz M, Özpolat AY. Kronik hastalıklarda bakım veren yükü (Caregiver burden in chronic diseases). *Psikiyatr Güncel Yaklaşımlar*. 2011;3(3):513-552.

11. Cicek E, Demirel B, Ozturk HI, Kayhan F, Cicek IE, Eren I. Burden of care and quality of life in relatives of opioid dependent male subjects. *dod. Psychiatr Danub*. 2015;27(3):0-277.

12. Nebhinani N, Anil BN, Mattoo SK, Basu D. Family burden in injecting versus noninjecting opioid users. *Ind Psychiatry J*. 2013;22(2):138-142. [CrossRef]

13. Reinhard SC, Gubman GD, Horwitz AV, Minsky S. Burden assessment scale for families of the seriously mentally ill. *Eval Program Plann*. 1994;17(3):261-269. [CrossRef]

14. Aydemir Ö, Sücüllüoğlu Dikici D, Akdeniz F, Kalayci F. Hastalık Yükü Değerlendirme Ölçeği'nin Türkçe Sürümünün Güvenilirlik ve Geçerliliği (Burden of Disease Assessment Scale in Turkish Reliability and Validity of Version). *Arch Neuropsychiatry/Noropsikiatri Ars*. 2012;49(4):276-280.

15. Akdemir A, Örsel S, Dağ İ, et al. HDDÖ'nin geçerliği, güvenirliği ve klinikte kullanımı (The validity of the HDDS reliability and clinical use). *Psikiyatr Psikol Psikofarmakol Derg*. 1996;4(4):251-259.

16. Yazıcı MK, Demir B, Tanrıverdi N, Karaağaoglu E, Yolaç P. Validity and inter-rater reliability of Hamilton Anxiety Rating Scale. *Turk Psikiyatr Derg*. 1998;9:114-117.

17. Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies: a theoretically based approach. *J Pers Soc Psychol*. 1989;56(2):267-283. [CrossRef]

18. Agargün MY, Besiroglu L, Kiran ÜK, Özer ÖA, Kara H, COPE. (Basa Çikma Tutumlarini Degerlendirme Ölçegi): Psikometrik özelliklere iliskin bir ön çalisma (The psychometric properties of the COPE inventory in Turkish sample: a preliminary research). *Anadolu Psikiyatr Derg*. 2005;6(4):221.

19. Shyangwa PM, Tripathi BM, Lal R. Family burden in opioid dependence syndrome in tertiary care centre. *JNMA J Nepal Med Assoc*. 2008;47(171):113-119. [CrossRef]

20. Chandra K. *Burden and Coping in Caregivers of Men with Alcohol and Opioid Dependence* [MD dissertation]. Chandigarh: India Postgrad Inst Med Educ Res; 2004. (Published online)

21. Biegel DE, Ishler KJ, Katz S, Johnson P. Predictors of burden of family caregivers of women with substance use disorders or co-occurring substance and mental

disorders. *J Soc Work Pract Addict*. 2007;7(1-2):25-49. [CrossRef]

22. Kumar R, Saini R. Extent of burden and coping strategies among caregivers of mentally-ill patients. *Nursing and Midwifery Research Journal*. 2012;8:274. [CrossRef]

23. Chadda RK, Singh TB, Ganguly KK. Caregiver burden and coping: a prospective study of relationship between burden and coping in caregivers of patients with schizophrenia and bipolar affective disorder. *Soc Psychiatry Psychiatr Epidemiol*. 2007;42(11):923-930. [CrossRef]

24. Hanzawa S, Bae JK, Tanaka H, et al. Caregiver burden and coping strategies for patients with schizophrenia: comparison between Japan and Korea. *Psychiatry Clin Neurosci*. 2010;64(4):377-386. [CrossRef]

25. Budd RJ, Oles G, Hughes ICT. The relationship between coping style and burden in the carers of relatives with schizophrenia. *Acta Psychiatr Scand*. 1998;98(4):304-309. [CrossRef]

26. Chou KR, LaMontagne LL, Hepworth JT. Burden experienced by caregivers of relatives with dementia in Taiwan. *Nurs Res*. 1999;48(4):206-214. [CrossRef]

27. Sarkar S, Patra BN, Kattimani S. Substance use disorder and the family: an Indian perspective. *Med J DY Patil Univ*. 2016;9(1):7. [CrossRef]

28. Li L, Tuan NA, Liang LJ, Lin C, Farmer SC, Flore M. Mental health and family relations among people who inject drugs and their family members in Vietnam. *Int J Drug Policy*. 2013;24(6):545-549. [CrossRef]

29. Stres GP. *Anksiyete ve kadın (Anxiety and women)*. Ankara: Hacettepe Üniversitesi Yayınları Hüksam. (Published online 2003).

30. Lazarus RS, Stress FS. *Appraisal and coping*. New York, NY: Springer Publishing Company; 1984.