

Posttraumatic growth in family members of individuals with methamphetamine use disorder

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ABSTRACT

Objectives: This study aimed to determine post-traumatic growth and its predictors in female relatives of patients with methamphetamine use disorder.

Methods: The volunteers in our study consisted of 80 adult women who were first-degree relatives of male patients diagnosed with MUD. The Post-Traumatic Growth Inventory, the Hospital Anxiety-Depression Scale, the Impact of Events Scale, and the short form of the Coping with Stressful Situations Inventory were given to the relatives of the patients.

Results: In our study, being employed and being married were found to affect task-oriented coping and changes in self-perception positively. Task-oriented coping or seeking emotional support from others predicted higher PTG. Task-oriented coping was positively associated with emotional coping and a change in the philosophy of life. The regression analysis determined that task-oriented and avoidant coping mechanisms were the best predictors of post-traumatic growth.

Conclusions: The findings suggest that environmental and personal factors, such as being married, being employed, and the quality of social relationships that emerge with emotional and instrumental support, influence the experience of life crises. In addition, the duration of methamphetamine uses, the problem's, and the search for solutions were all associated with higher post-traumatic growth. Thus, the results of this study demonstrate that task-oriented coping, seeking emotional support, and the duration of methamphetamine use may contribute to post-traumatic growth.

Keywords: Posttraumatic growth, coping, methamphetamine abusers, family members

Post-traumatic growth (PTG) refers to the positive changes experienced by individuals as a result of an adaptive process during coping with a challenging life event [1]. Although individuals experience negativity in stressful life events, they can develop positive changes by improving their perspectives and recognizing personal and social resources [2, 3]. PTG is also

explained as a person's better functioning in certain areas of life after the traumatic event and the person's better revealing of his or her potential [4]. The positive psychological change includes appreciating life, setting new priorities, increasing personal power, identifying new possibilities, strengthening relationships, and spiritual growth [5].



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A recent meta-analysis shows that PTG levels across studies show high heterogeneity, ranging from 10% to 77.3%. Approximately one in two people who experience a traumatic event report moderate to high post-traumatic growth. The same study showed that a long period since the traumatic event was associated with higher PTG in women and youth [6, 7].

PTG can also be considered an adaptive coping strategy for traumatic experiences [8]. Coping, a continuous change in behavior and cognitions to cope with different needs beyond one's competence [9], is a fundamental factor that affects individuals' emotional and behavioral responses to stress. It is also an important factor for post-traumatic growth. In Aldwin's 'transformative coping' model [10], transformative positive coping leads to a higher level of functioning. In the stress-strain-coping support (SSCS) model [11], having a close relative with a methamphetamine abuse disorder creates a long-standing stressful life situation for the family members. In such cases, family members may resort to "coping", such as being active in facing difficulties, solving problems, mediating their destiny, and not being powerless. By responding to buffer the effects of stress, they may find ways to reduce the tension experienced by themselves or other family members - such as children.

Being a parent or relative of a patient is a traumatic and challenging experience. There are many studies showing the successful adaptation of parents whose children have been exposed to these challenging experiences. In studies, investigating PTG in parents of children with severe illness, PTG was reported as moderate in a significant proportion of parents [12, 13]. Mothers were reported to have higher PTG levels than fathers in a study of the parents with severe illness [13]. Bellizzi and Blank also [14] found that young women show more post-traumatic growth than older women in a study of individuals with breast cancer survivors [14].

Affected family members use one or more of three coping approaches to deal with the problem: putting up with the behavior (e.g., accept things as they are, inaction, resignation), withdrawal from the relative and the immediate situation (e.g., gaining independence from the problem, becoming involved in other activities), and standing up to or confront the behavior associated with the problem (e.g., set boundaries for unacceptable behavior; protecting other family mem-

bers, especially children, from the relative's behavior; insisting on the relative seeking treatment; seeking assistance from the police and judiciary) [15, 16].

Methamphetamine use disorder (MUD) is a current social problem that is not only limited to the effects on the life of the individuals with addiction but also affects their family considerably. Social support from relatives is essential in the treatment of addiction. Although there are few studies on post-traumatic growth in substance and alcohol addictions [17, 18], there are no studies dealing with post-traumatic stress and growth variables in the relatives of addicts. In this context, it is thought that the study will make an important contribution to the literature by filling this gap.

Our study aimed to determine post-traumatic growth and its predictors of female relatives of patients with MUD.

METHODS

The data of this study were collected between 01.12.2021 and 01.07.2022. The volunteers participating in our study consisted of 80 adult women who were first-degree relatives of male patients diagnosed with methamphetamine addiction who applied to the Alcohol and Substance Addiction Treatment Clinic of a Training and Research Hospital outpatient clinic. Volunteers aged 18-75 years were included in the study. The exclusion criteria were determined as (1) not giving informed consent, (2) illiteracy, (3) having mental retardation, (4) severe psychiatric disorders, (5) systematic diseases, (6) being a relative of individuals with multiple substance or alcohol use disorders. All participants reviewed the informed consent form and provided written consent. This study was designed in accordance with the 2013 Brazilian version of the Declaration of Helsinki and was approved by the local ethics committee (dated 01.12.2021 and decision number 2011-KAEK-25 2021/12-23). Good clinical practice principles were followed throughout the study. After their informed consent was obtained, the Post-Traumatic Growth Inventory (PTGI), the Hospital Anxiety-Depression Scale (HADS), the Impact of Events Scale (IES), and the short form of the Coping with Stressful Situations Inventory (CISS-21) were given to the relatives of the patients.

PTGI was developed by Tedeschi and Calhoun

[19] to assess post-trauma growth and self-improvement a person undergoes. The scale is a Likert type, scored between 0 and 5. The range of the scale is 0-5. The higher scores indicates that a person has experienced a high level of growth after a traumatic experience. Its adaptation, validity and reliability study into Turkish language was performed by Kağan *et al.* [20]. IES is a self-report scale measuring the level of post-traumatic stress developed by Horowitz *et al.* [21], later revised by Weiss and Marmar [22] according to DSM-IV post-traumatic stress disorder criteria and adapted into Turkish by Çorapçioğlu *et al.* [23]. HADS was developed by Zigmond and Snaith [24] to determine the level of anxiety and depression experienced by a person. It was adapted into Turkish by Aydemir *et al.* [25].

CISS-21 [26] measures three dimensions of coping (task-focused, emotion-focused, and avoidance-focused coping) and consists of 21 items. Participants rate each item on a five-point Likert scale (1 = “never” to 5 = “very much”) to determine which coping strategies they use for different stressful situations. Boysan [27] carried out a validity and reliability study in Turkish.

Statistical Analysis

Statistical analyses were performed with the SPSS 22.0 software (SPSS Inc., Chicago, IL, USA). Variables were expressed as the mean \pm standard deviation, and categorical variables were expressed as frequency and per cent. Quantitative data were compared with the independent samples t-test and analysis of variance (ANOVA); Pearson correlation analysis was used to measure the relationship between measurement scales. Linear regression analysis with a backward stepwise method was performed to determine the risk factors of PTGI total. A p value of less than 0.05 was considered statistically significant for all tests.

RESULTS

Twelve (15%) of the MUD were assessed in out-patient clinic and hospitalized, and the rest were followed up on an outpatient basis. Regarding daily methamphetamine use, 49 (61.3%) individual used 0.5-1 mg, and 31 (38.8%) used more than 1 g. duration of any substance use 8.47 ± 6.5 days (min: 1 max: 33), age of

onset of any substance 20.65 ± 7.05 years (min:13 - max:45), mean age of onset of methamphetamine 25.7 ± 8.25 years (min: 15 - max: 57), duration of methamphetamine use was 3.71 ± 2.29 days (min: 1 - max: 12). The mean age of the volunteers was 43.36 ± 13.33 years (min: 20 - max: 72). Other sociodemographic data of the volunteers are given in Table.1.

Comparison of Demographic and Clinical Data with Scale Scores

When the scale scores of the employed and unemployed individual were compared with the independent samples t-test, the CISS task-oriented scores ($p = 0.035$) and PTGI Appreciation for life scores ($p = 0.017$) of the employed individual were found to be significantly higher.

Compared with the independent samples t-test, those whose relatives use 0.5-1 g methamphetamine and 1 g methamphetamine daily, CISS-task-oriented scores of those whose relatives use more than 1 g methamphetamine per day were found to be significantly higher ($p = 0.021$).

There was a statistically significant difference in IES-hyperarousal scores when the participants' educational status and marital status were compared with the one-way ANOVA test in terms of scale subscores. As a result of the post hoc Tukey test performed to determine significance, the scores of primary school graduates were significantly higher than those of sec-

Table 1. Sociodemographic status of volunteers

		n	%
Education	Primary	43	53.8
	Secondary	15	18.8
	High	16	20.0
	University	6	7.5
Marital status	Single	6	7.5
	Married	67	83.8
Working status	Divorced	7	8.8
	Employed	24	30.0
Living place	unemployed	56	70.0
	Urban	48	60.0
	Town	25	31.3
	Village	7	8.8

Table 2. Scale scores of volunteers

	Minimum	Maximum	Mean	Standard Deviation
HADS anxiety	2.00	15.00	7.262	2.849
HADS depression	4.00	16.00	9.100	2.646
HADS total	8.00	26.00	16.362	4.022
IES intrusion	5.00	28.00	18.387	5.166
IES avoidance	2.00	24.00	12.412	4.905
IES hyperarousal	2.00	21.00	11.900	5.237
IES total	18.00	66.00	42.700	11.259
CISS task-focused	16.00	35.00	26.800	3.820
CISS emotion-focused	14.00	34.00	19.250	3.866
CISS avoidance-focused	7.00	25.00	12.375	4.487
PTGI Changes in Self-Perception	12.00	43.00	28.550	7.479
PTGI Appreciation for life	2.00	23.00	9.675	4.221
PTGI Improved relationships	0.00	16.00	6.650	3.907
Total	19.00	67.00	44.875	11.713

HADS = Hospital anxiety-depression scale, IES-Int = IES- intrusion, IES-T = IES total, CISS-TOC = CISS task-oriented coping, CISS-EOC = CISS emotion-oriented coping, CISS-AOC = CISS Avoidance-oriented coping, PTGI = Post-Traumatic Growth Inventory, PTGI-AL = PTGI Appreciation for life

ondary school graduates ($p = 0.035$) and high school graduates ($p = 0.081$).

There was a statistically significant difference in comparing the participants' marital status and HAD depression scores in the one-way ANOVA test. As a result of the post hoc Tukey test performed to determine the significance, the scores of the singles were significantly higher than those of the married ($p = 0.036$).

There was a statistically significant difference in comparing the participant's marital status and CISS task-oriented scores in the one-way ANOVA test. As a result of the post hoc Tukey test performed to determine the significance, the scores of the married were significantly higher than the singles ($p = 0.004$).

There was a statistically significant difference in the marital status of the participants in terms of PTGI Changes in Self-Perception when compared with the one-way ANOVA test ($p = 0.012$). As a result of the post hoc Tukey test performed to determine the significance, it was understood that the difference was due to the married group. There was also a statistical difference in total PTGI among married people ($p = 0.014$).

HAD depression ($p = 0.018$), CISS task-oriented coping ($p = 0.023$), and PTGI-change in self-perception ($p < 0.001$) were statistically higher than relatives of addicted persons who have been hospitalized.

Relatives of an individual with addiction who did not attempt suicide had higher rates of HAD Depression ($p = 0.021$), CISS Avoidance-oriented coping ($p = 0.037$), and PTGI Appreciation for life ($p = 0.043$) compared to relatives of suicidal individual with methamphetamine abuse. IES-intrusion ($p = 0.030$), PTGI-Improved relationships ($p = 0.021$), and PTGI-total ($p = 0.024$) were statistically significantly higher in the relatives of those who attempted suicide. Correlations between age, CISS, PTGI, and IES scores are given in Table 3.

Predictors of PTGI Total Score

To investigate variables that predict PTGI total score, variables that are significantly correlated ($p < 0.05$) with PTGI total score; CISS-task-oriented coping, CISS avoidance-oriented coping, and the variable which fulfils $p < 0.20$ criteria (Pearson correlation analysis revealed a non-significant association between age and PTGI total score [$p = 0.095$] and the

non-significant association between IES avoidance and PTGI total score [$p = 0.136$]) were included in the regression analysis. The backward stepwise method was used in the regression analysis. IES avoidance was excluded in the second step; age was excluded in the third step. Results showed that the regression model was significant ($F=11.794$; $p < 0.001$). The severity of CISS task-oriented coping, and CISS avoidance-oriented coping accounted for PTGI total score at the rate of 0.215 ($R^2 = 0.215$). When the severity of CISS task-oriented coping, PTGI total score increased by 1.058 units ($\beta = -1.058$; $p = 0.001$) and when CISS avoidance-oriented coping score increased by one unit, PTGI total score increased by 1.004 units ($\beta = 1.004$; $p < 0.001$) (Table.4).

DISCUSSION

Our study to determine post-traumatic growth and its predictors in female relatives of individuals with methamphetamine use, being employed and being married were found to positively affect task-oriented coping and changes in self-perception. The regression analysis determined that task-oriented and avoidant coping mechanisms were the best predictor of post-traumatic growth.

Schaefer and Moos [28] argue in their "conceptual model of positive outcomes of life crises and transitions" that environmental and personal factors influence the experience of life crises through cognitive appraisal processes and coping responses. Individual components include socio-demographic characteristics, self-efficacy, resilience, optimism, self-confidence, adaptability, motivation, health status, and previous crisis experience. Relationships, family, friends and social environment, material resources and other aspects of life constitute the environmental components. Event-related factors include the effects of the severity, the duration, and the timing of the life crisis on the individual. These components, which they consider in their models, are interconnected with feedback loops and affect each other.

We can see some components of this cycle among the findings of our study in which we examined the family members of individual with MUD. For example, being employed and married positively affected task-oriented coping and changes in self-perception.

CISS task-oriented scores and PTGI Appreciation of life scores of employed working relatives were significantly higher. The fact that task-oriented coping was one of the best predictors of post-traumatic growth was also consistent with the feedback loops mentioned above. In a systematic review of 39 studies, Linley and Joseph demonstrated that PTG is positively associated with coping strategies such as problem-focused, acceptance, and positive reinterpretation coping [29].

Our finding that changes in the philosophy of life were negatively associated with age is consistent with the literature. One review found that the combined prevalence of moderate to high TSG was higher in those under 60 than in older people [6, 7]. An inverse relationship was found between age and PTG in adults aged 20-70 [30]. Age has been negatively associated with PTG in a range of events throughout life [31, 32].

As we assessed the effects of the traumas, we determined that primary school graduates have higher IES-hyperarousal scores than secondary school, high school and university graduates, that may indicate that the physiological effect of trauma may be higher at lower education levels. Research supports the idea that primary school graduates have higher IES-hyperarousal scores than other education levels. For example, one study showed that among adults aged 55-74, those with less than a high school or college education were more likely to report higher levels of trauma exposure and higher IES-hyperarousal scores than those with higher education levels [33]. Additionally, various studies have found a positive correlation between lower educational attainment and post-traumatic stress disorder [34, 35].

When we evaluated the coping strategies, the CISS task-oriented coping scores, PTGI changes in Self-Perception scores, and PTGI-total scores of the married participants were higher than those of the singles. Single participants have higher HAD depression scores than that of the married. Barsakova and Oesterich [36] stated that marital status is not directly related to PTG and that the quality of social relationships that emerge through emotional and instrumental support is more valuable. They also suggested that coping strategies, such as a problem-oriented approach or seeking emotional support from others, predicted higher PTG.

In the evaluation of the relationship between the clinical features of the individuals abuse and the variables of the relatives, we determined that the relatives

of individuals with drug addictions who used more than 1 gram of methamphetamine per day who and were hospitalized had higher CISS task-oriented coping scores. Also, HAD depression and PTGI Change in Self-Perception scores were higher in the relatives of individuals with drug addiction who received hospital treatment. Additionally, relatives of those who attempted suicide had higher IES entry, development of PTGI in relationships, and total PTGI. These findings suggest that as the severity of the problem increases, the search for solutions also increases and may lead to more positive results regarding post-traumatic development.

Duration of methamphetamine use was positively associated with CISS-AOC. Family members using the avoidant coping style may have experienced surrender, realizing that nothing can keep their drug-addicted relatives from taking drugs and that the problem is out of their control. In a review, Henson *et al.* [37] suggested that engaged and tolerant-inactive maladaptive coping strategies had a significantly more significant adverse influence on family member's physical health and/or socializing than withdrawal coping strategies. It has been observed that individuals with methamphetamine abuse, who feel that their families tolerate drug use, have had methamphetamine use for many years [38].

The study concluded that task-oriented coping is linked with positive emotional coping and an alteration in a person's philosophy of life. Additionally, emotional coping was positively associated with IES-Total and negatively associated with CISS-Avoidance. The CISS assumes that task-oriented and emotional coping can have positive relationships, while the relationship between task-oriented and emotional coping and avoidance is believed to be negative. Thus, the overall conclusion is that people use a combination of task-oriented, emotional, and avoidance coping when managing stressful situations.

In our study, when we focused on the relationship between trauma and coping strategies, we found that IES-Intrusion was negatively associated with CISS-emotion-focused coping and positively associated with a change in the philosophy of life, consistent with the views of Jones *et al.* [39]. The fact that ruminative thinking by reliving the problem is negatively related to avoidance-focused coping also supports their view.

According to the authors, when people face a traumatic event with intrusive rumination, they want to reflect on the trauma for a long time, make sense of what happened to them, and cognitively reprocess their life assumptions. Cognitive processing of trauma can lead to a person's maturation and development, creating an opportunity to change their worldview and develop new perspectives.

In the regression analysis, CISS-TOC and CISS-Avoidance were both highly effective on the PTGI Total Score, indicating that focusing on solving the problem or avoiding the negative effects of the problem is beneficial and contributes to post-traumatic growth.

Limitations

The most important limitation of the study is data reliability since research findings are based on self-report questionnaires. Cross-sectional design does not allow any inference about causality or association. In addition, the sample size is not at a level to ensure the representativeness and generalizability of the findings.

CONCLUSION

The finding of coping mechanisms as a predictor of post-traumatic growth in female relatives of individuals with methamphetamine use in our study shows the importance of appropriate coping mechanisms in the relatives of the patients. Family members should be supported to use adaptive coping strategies to maintain their supportive role. This cooperation will be beneficial in improving the patient's addiction and reducing the risk of relapse.

Authors' Contribution

Study Conception: ÇT, ÖŞ; Study Design: ÇT, GŞ, ÖŞ; Supervision: ÇT, SÜ, ÖŞ; Funding: ÇT, SÜ, ÖŞ; Materials: ÇT, GŞ; Data Collection and/or Processing: ÇT; Statistical Analysis and/or Data Interpretation: ÇT, SÜ, ÖŞ; Literature Review: ÇT, SÜ, GŞ; Manuscript Preparation: ÇT, SÜ and Critical Review: SÜ.

Conflict of interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

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