

Suicidal behavior in children and adolescents: Does a history of trauma predict less severe suicidal attempts?

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Abstract

OBJECTIVES: The aim of this study was to identify risk factors and possible predictors of severity of suicidal behavior of children and adolescents.

METHODS: Seventy-seven patients (15 boys and 62 girls) aged 15.5 ± 1.6 years on average, hospitalized due to a suicidal attempt in the department of pediatric psychiatry, were examined. Structured interviews with patients and their parents were used to clinically assess circumstances of suicidal behavior, relevant risk factors and severity of suicidal behavior.

RESULTS: The results indicated that patients with any previous traumatic experience tended to have somatically less severe suicidal attempts ($p = 0.050$). Intensity of suicidal intent was associated with a history of depression ($p = 0.014$) and anxiety disorders ($p = 0.004$), and the current stress from a mental disorder ($p = 0.014$). Somatic severity of suicidal behavior was significantly associated with intensity of suicidal intent ($p = 0.014$). A history of any trauma (previous traumatic experience predicted less severe suicidal behavior, $p = 0.053$) and the current stress from sexual problems ($p = 0.067$) were identified as predictors of somatic severity of suicidality. These two predictors showed only a trend level of significance. The only significant predictor of intensity of suicidal intent was the current stress from a mental illness ($p = 0.017$).

CONCLUSIONS: Several risk factors of somatic severity of suicidal behavior and intensity of suicidal intent were described. The most important finding of the study was the association between a history of psychological trauma and a tendency to have less somatically severe suicidal behavior.

INTRODUCTION

Completed suicide in children and adolescents is observed less often than in other age categories. However, suicides are the third leading cause of death of adolescents (Fleischman & Barondess, 2004). In children and adolescents, suicidal attempts are seen much more frequently than completed suicides and their incidence culminates just in adolescence. Similarly to adults, suicidal attempts are observed more often in females (Schmidtke *et al.* 1996). Each suicidal attempt is a risk factor for a future completed suicide. Moreover, suicidal attempts are harmful to psychosocial development of an individual (Otto, 1972).

Today, suicidal behavior is less and less explained causally. Instead, many studies focus on identification of risk factors and their joint influence over the development of suicidal behavior. As suicidal behavior is a multi-causal phenomenon, the risk-factor-based approach usually focuses on the assessment of psychiatric morbidity, psychosocial stressors, cultural differences and triggering circumstances (Mann *et al.* 1999; Kocourková & Koutek, 2006), and identifies differences between risk factors of a completed suicide and suicidal attempt. Although there are no hard data strictly separating these two categories of suicidal behavior, suicidal attempts are often associated with childhood traumatization, a history of suicidal behavior in family and female sex (Roy & Janal, 2005). Other significant risk factors include problems in sexual development (McDaniel *et al.* 2001), sexual abuse in childhood, (Brodsky *et al.* 2001) or rape trauma suffered in childhood and adolescence (Ullman & Brecklin, 2002). Suicidal behavior of peers plays its role as well (Bearman & Moody, 2004). Assessment of suicidal attempts should take into account their severity, both from the perspective of intensity of suicidal intent and somatic consequences.

In this trial, children and adolescent hospitalized due to a suicidal attempt were studied in order to find out risk factors associated with severity of suicidal behavior, intensity of suicidal intent and somatic severity of suicidal attempts. These factors relate to the presence of mental disorders, ways of family functioning, a history of trauma and the level of the current stress. Identification of these parameters should make it possible to improve our prediction abilities when assessing severity of suicidal behavior in childhood and adolescence.

METHODS AND SAMPLE

All patients hospitalized due to a suicidal attempt in the Department of Pediatric Psychiatry, Charles University, 2nd Faculty of Medicine in 2004 and 2005 were consecutively examined during a prospective study. The study was approved by the Ethical Committee of the Motol University Hospital.

The study sample consisted of 77 patients (15 boys and 62 girls) aged 15.5 ± 1.6 years on average (ranging from 9.6 to 17.9 years). They were children and adolescents who were taken to the Department of Pediatric Psychiatry from the Department of Anesthesiology and Resuscitation, Department of Pediatrics or other departments of the Motol University Hospital or other hospitals. Only few patients were admitted directly without previous hospitalization in another department. The examination was based on a 1-hour structured interview designed by the authors of this study. The interview focused on motivation and form of suicidal behavior and other causes and factors participating in a suicidal attempt. Suicidal intent intensity and somatic severity of suicidal behavior were assessed and psychopathological symptoms, both acute and historical, were identified. Patients were examined by two of the authors within 48 hours after they were hospitalized. The results were evaluated consensually. The examination included an interview with parents on family history and a questionnaire focusing on child's school adaptation. The questionnaire, designed by the authors of the study, monitored adaptation to pre-school facilities, adaptation during the beginning of school attendance, school results, integration into a peer group, and relationships with teachers. A history of bullying and occurrence of suicidal behavior in the patient's close environment were identified as well.

The authors assessed four categories of somatic severity of a suicidal attempt. The first group contained patients with mild somatic severity (e.g. those who did not have to be hospitalized and were admitted directly, or those who were admitted after the examination in an outpatient department). The second group consisted of patients whose somatic condition required therapeutic intervention but their health was not significantly jeopardized (moderate suicidal attempt). The third group included patients who were in danger of health and their state required longer hospitalization in a somatic department (medium suicidal attempt). Patients who were in an imminently life threatening condition due to their suicidal behavior (in most cases they were hospitalized in the Department of Anesthesiology and Resuscitation) were assigned to the fourth group. For statistical purposes, the authors merged these groups into two final groups: (1) patients with mild and moderate suicidal attempt; and (2) patients with somatically medium or severe suicidal attempt.

During examination, the authors assessed also the intensity of a suicidal intent which they classified by means of the following four categories. Patients with an ambivalent attitude towards death were assigned to the first category (mild intensity). The second category included patients with suicidal ideation, though not significant (moderate intensity). Patients who apparently desired to die were assigned to the third category (medium intensity of a suicidal intent). Finally, patients who unequivocally wanted to die came under the

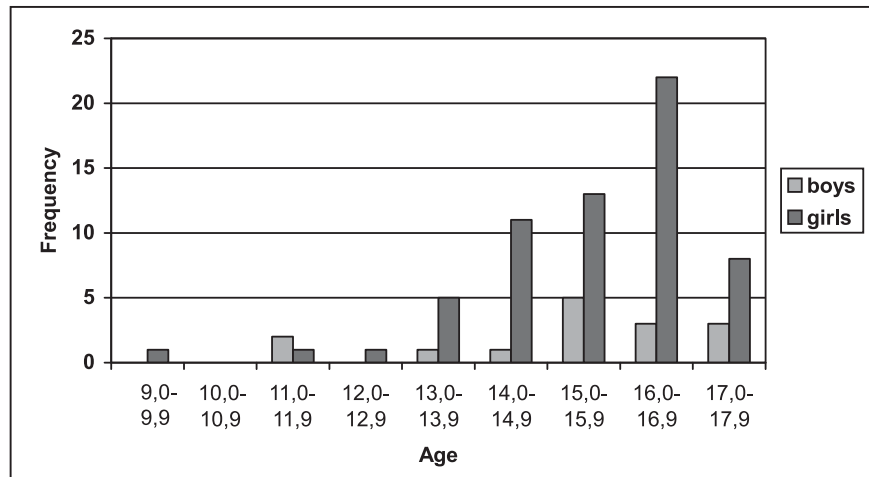


Figure 1: Incidence rate of suicidal attempts sorted by age and gender

fourth category (severe suicidal intent). For statistical purposes, these categories were merged into two final groups: (1) patients with mild and moderate suicidal intent; and (2) patients with medium or severe suicidal intent.

Statistical analysis was done using the Statistical Package for the Social Sciences software (SPSS, version 16.0). The sample was described by descriptive statistical methods. Associations between somatic severity / suicidal intent intensity and anamnestic data was identified by means of χ^2 test and Fisher's exact test. Predictors of somatic severity and suicidal intent intensity were analyzed by a logistic regression model.

RESULTS

Number of patients sorted by gender and age

Out of all 77 patients, girls were significantly superior in number (62:15). Suicidal behavior is rare in children under 14 years of age. However, its incidence rises sharply around 15 years of age (see Figure 1).

Family situation, hereditary predisposition and personal anamnesis factors

Family situation of our patients was complicated, as 60% of them had first-hand experience with the divorce of their parents. As far as family functioning is concerned, only 22% families were harmonious, whereas 49.4% families showed conflicts, 18.2% families were dysfunctional and 10.4% families showed evident signs of pathological environment. Six patients experienced father's death; none experienced mother's death. Eight percent (8%) of fathers and 25% of mothers underwent psychiatric therapy. Alcohol abuse was found in 26% of fathers and 5% of mothers, abuse of other addictive substances was observed in 4 % of fathers and 1% of mothers. Twenty one percent (21%) of fathers and 26% of mothers of our patients were unemployed.

Previous trauma – namely bereavement, bullying, sexual abuse and assault – was found out in 45% of patients.

Sixty five percent (65%) of patients had their first suicidal attempt; 23% of patients were hospitalized for their second attempt, and 12% had multiple attempts.

Previous self-injuring behavior was noted in 32% of patients. No case of the current psychopathology was observed.

Form and severity of suicidal behavior

Intoxication was the most frequent form of suicidal behavior (69 cases, almost 90 %). Intoxication combined with other forms such as cutting, jumping from a great height or strangulation was noted in 14 cases. Psychiatric drugs and analgesics were used most often in cases of intoxication; combination of drugs was frequent. Intoxication in combination with alcohol was observed in 23 cases and with other narcotic in 1 case. Somatic severity of a suicide attempt could be assessed only in 74 patients, as there were no valid data available in three patients. Group of somatically mild to moderate cases consisted of 47 patients; group of medium to severe cases included 27 patients. Mild or moderate intensity of suicidal intent was noted in 34 patients; medium and severe suicidal intent was observed in 43 cases.

Suicides were attempted most often at home (77%), school (5%) or in other places (18 %), mostly outdoors. Suicidal behavior was not witnessed in 69% cases, or it was seen by parents (9%), siblings (5%), peers (6%), parents and siblings together (5%), or other persons (6%).

Relationship between somatic severity of suicidal behavior and anamnestic factors / current situation

The results are summarized in Table 1. A significant association between somatic severity of suicidal behavior and any previous trauma was observed ($p=0.050$). Surprisingly, somatic severity of suicidal attempts of

Table 1: Somatic severity of suicidal behavior and anamnestic factors

Factor	Factor present?	N = 74	Somatically severe or medium suicidal behavior (N; %)	Significance (chi ² or Fisher's exact test) *
HISTORY OF MENTAL DISORDERS				
Depression	Yes	45	17 (37.8%)	chi ² =0.083, p=0.77
	No	29	10 (24.5%)	
Schizophrenia	Yes	1	1 (100 %)	Fisher's exact test p=0.37
	No	73	26 (35.6 %)	
Anxiety disorders	Yes	8	3 (37.5 %)	Fisher's exact test p=1.00
	No	66	24 (36.4 %)	
Conduct disorders	Yes	30	9 (30.0 %)	chi ² =0.92, p=0.34
	No	44	18 (40.9 %)	
Addictive substances – addiction / abuse	Yes	17	4 (23.5 %)	chi ² =1.6, p=0.2
	No	57	23 (40.4 %)	
Self-injurious behavior	Yes	25	9 (36.0 %)	chi ² =0.004, p=0.95
	No	49	18 (36.7 %)	
Eating disorder	Yes	14	5 (35.7 %)	chi ² =0.04, p=0.95
	No	60	22 (36.7 %)	
TRAUMATIC EXPERIENCE				
Any trauma	Yes	33	8 (24.2 %)	chi ² =3.85, p=0.050
	No	41	19 (46.3 %)	
Bereavement	Yes	8	2 (25.0 %)	Fisher's exact test P=0.46
	No	66	25 (37.9 %)	
Sexual abuse	Yes	7	3 (42.9 %)	Fisher's exact test P=0.7
	No	67	24 (35.8 %)	
Bullying	Yes	5	0 (0.0 %)	Fisher's exact test p=0.08
	No	69	27 (39.1 %)	
CURRENT STRESS				
Family relationships	Yes	48	15 (31.3 %)	chi ² =1.62, p=0.2
	No	26	12 (46.2 %)	
Relationships with peers	Yes	8	2 (25.0 %)	Fisher's exact test p=0.7
	No	66	25 (37.9 %)	
Relationships with partner	Yes	25	10 (40.0 %)	chi ² =0.2, p=0.65
	No	49	17 (34.7 %)	
Sexual problems	Yes	5	4 (80 %)	Fisher's exact test p=0.056
	No	69	23 (33.3 %)	
Problems at school or work	Yes	20	5 (25.0 %)	chi ² =1.56, p=0.21
	No	54	22 (40.7 %)	
Associated with mental disorder	Yes	17	8 (47.1 %)	chi ² =1.07, p=0.30
	No	57	19 (33.3 %)	
CURRENT MENTAL DISORDER				
Depression	Yes	63	24 (38.1 %)	Fisher's exact test p=0.74
	No	11	3 (27.3 %)	
Schizophrenia	Yes	1	1 (100.0 %)	Fisher's exact test p=0.37
	No	73	26 (35.6 %)	
Anxiety disorders	Yes	13	4 (30.8 %)	Fisher's exact test p=0.76
	No	61	23 (37.7 %)	
Conduct disorders	Yes	23	8 (34.8 %)	chi ² =0.042, p=0.84
	No	51	16 (37.3 %)	
Addictive substances – addiction / abuse	Yes	13	2 (15.4 %)	chi ² =3.03, p=0.08
	No	61	25 (41.0 %)	
Self-injurious behavior	No			
Eating disorder	Yes	6	2 (33.3 %)	Fisher's exact test p=1.00
	No	68	25 (36.8 %)	
OTHER CHARACTERISTICS				
Sex	Female	59	22 (37.3 %)	chi ² =0.08, p=0.78
	Male	15	5 (33.3 %)	
Type of family	Both parents	28	12 (42.9 %)	chi ² =0.79, p=0.37
	1 parent	42	15 (35.7 %)	
	1 biol./1 step	2	0 (0 %)	
	Institutional	2	0 (0 %)	

N – Number of patients; * df=1;

Table 2: Intensity of suicidal intent and anamnestic factors

Factor	Factor present?	N = 77	Severe or medium suicidal intent (N; %)	Significance (chi ² or Fisher's exact test) *
HISTORY OF MENTAL DISORDERS				
Depression	Yes	46	30 (65.2%)	chi ² =4.071, p=0.044
	No	31	13 (41.9%)	
Schizophrenia	Yes	1	0 (0.0 %)	Fisher's exact test p=0.442
	No	76	43 (56.6 %)	
Anxiety disorders	Yes	9	9 (100.0 %)	Fisher's exact test p=0.004
	No	68	34 (50.0 %)	
Conduct disorders	Yes	31	18 (58.1 %)	chi ² =0.104, p=0.747
	No	46	25 (54.3 %)	
Addictive substances – addiction / abuse	Yes	18	7 (38.9 %)	chi ² =2.739, p=0.098
	No	59	36 (61.0 %)	
Self-injurious behavior	Yes	25	15 (60.0 %)	chi ² =0.259, p=0.61
	No	52	28 (53.8 %)	
Eating disorder	Yes	14	9 (64.3 %)	chi ² =0.494, p=0.482
	No	63	34 (54.0 %)	
TRAUMATIC EXPERIENCE				
Any trauma	Yes	35	19 (54.3 %)	chi ² = 0.063, p=0.802
	No	42	24 (57.1 %)	
Bereavement	Yes	10	6 (60.0 %)	Fisher's exact test p=1.00
	No	67	37 (55.2 %)	
Sexual abuse	Yes	7	3 (42.9 %)	Fisher's exact test p=0.693
	No	70	40 (57.1 %)	
Bullying	Yes	5	3 (60.0 %)	Fisher's exact test p=1.00
	No	72	40 (55.6 %)	
CURRENT STRESS				
Family relationships	Yes	48	23 (47.9 %)	chi ² =3.248, p=0.072
	No	29	20 (69.0 %)	
Relationships with peers	Yes	9	3 (33.3 %)	Fisher's exact test p=0.172
	No	68	40 (58.8 %)	
Relationships with partner	Yes	26	16 (61.5 %)	chi ² =0.516, p=0.472
	No	51	27 (52.9 %)	
Sexual problems	Yes	6	4 (66.7 %)	Fisher's exact test p=0.689
	No	71	39 (54.9 %)	
Problems in school or work	Yes	21	13 (61.9 %)	chi ² =0.430, p=0.512
	No	56	30 (53.6 %)	
Associated with mental disorder	Yes	17	14 (82.4 %)	Fisher's exact test p=0.014
	No	60	29 (48.3 %)	
CURRENT MENTAL DISORDER				
Depression	Yes	66	40 (80.6 %)	Fisher's exact test p=0.052
	No	11	3 (27.3 %)	
Schizophrenia	Yes	1	0 (0 %)	Fisher's exact test p=0.442
	No	76	43 (56.6 %)	
Anxiety disorders	Yes	13	8 (61.5 %)	chi ² =0.206, p=0.650
	No	64	35 (54.7 %)	
Conduct disorders	Yes	23	12 (52.2 %)	chi ² =0.179, p=0.672
	No	54	31 (57.4 %)	
Addictive substances – addiction / abuse	Yes	13	6 (46.2 %)	chi ² =0.596, p=0.440
	No	64	37 (57.8 %)	
Self-injurious behavior	No			
Eating disorder	Yes	6	4 (66.7 %)	Fisher's exact test p=0.689
	No	71	39 (54.9 %)	
OTHER CHARACTERISTICS				
Sex	Female	62	34 (54.8 %)	chi ² =0.130, p=0.718
	Male	15	9 (60.0 %)	
Type of family	Both parents	30	17 (56.7 %)	chi ² =0.129, p=0.719
	1 parent	42	22 (52.4 %)	
	1 biol./1 step	2	2 (100.0 %)	
	Institutional	2	1 (50.0 %)	

N – Number of patients; * df=1;

Table 3: Predictors of suicidal behavior

	Beta	S.E.	Wald	df	p	Exp (B)
Predictors of somatic severity						
Any trauma	-1.032	0.533	3.753	1	0.053	0.356
Stress from sexual problems	2.151	1.177	3.343	1	0.067	8.596
Predictors of suicidal intent intensity						
Current stress from mental disorder	1.705	0.712	5.726	1	0.017	5.5

patients with previous trauma was significantly lower than expected.

Associations between somatic severity and previous bullying ($p=0.08$), current stress associated with sexual problems ($p=0.056$) and current addiction and addictive substances abuse ($p=0.08$) were marginally significant (i.e. significance at the trend level $p<0.1$).

Relationship between suicidal intent intensity and anamnestic factors / current situation

The results are summarized in Table 2. A significant relationship between the intensity of suicidal intent and previous depression ($p=0.044$) or anxiety disorder ($p=0.004$) was found. Suicidal intent intensity was significantly affected by the stress generally associated with a mental disorder ($p=0.014$) being one of the current risk factors.

The relationship with previous addiction or addictive substances abuse ($p=0.098$), current depression ($p=0.052$) and current stress associated with family problems ($p=0.072$) was marginally significant (i.e. significance at the trend level $p<0.1$).

Relationship between somatic severity of suicidal behavior and suicidal intent intensity

A significant association between somatic severity of suicidal behavior and suicidal intent intensity was noted ($\chi^2=5.996$; $df=1$; $p=0.014$).

Predictors of severity of suicidal behavior

In the first step of logistic regression, significant and marginally significant values obtained from the above-mentioned analyses were entered as dependent variables. In the second step, a group of predictors with highest prognostic value were chosen, so adding other predictors would not improve the estimation (see Table 3).

Any previous trauma ($p=0.053$) and the current stress from sexual problems ($p=0.067$) were identified as marginally significant predictors of somatic severity of suicidality (the presence of trauma predicted less severe suicidal behavior).

The only predictor of suicidal intent intensity was the current stress associated with a mental disorder ($p=0.017$).

DISCUSSION

Girls were significantly superior in number in the sample of children and adolescents hospitalized in the Department of Pediatric Psychiatry, Charles University, 2nd Faculty of Medicine, in 2004 and 2005. The results indicate that the incidence of suicidal attempts grows sharply in adolescence, which corresponds with long-term global statistical data. Many studies report that the highest risk of suicidal attempts is observed in adolescent girls (Haberhauer, 1994; King, 2003; Koutek & Kocourková 2007).

The most frequent form of suicidal behavior was drug intoxication, most often with psychiatric drugs and analgesics. Psychiatric medications prescribed during previous therapy were used as well. Analgesics are very easily available at home. This form of suicidal behavior was preferred probably for its availability and painlessness. Drug intoxication is one of the "soft" forms that have higher chance of survival. On the other hand, it represents a significant percent of causes of death in completed suicides – for example in 2002, 8% of all victims of suicides in the Czech Republic died of intoxication, in females it was even 20%. Gibbons *et al.* (2005) reported positive correlation between suicide rate and the prescription of tricyclic antidepressants that are known for their high toxicity. Thirty percent (30%) of patients consumed alcohol and 1% of patients took narcotics before their suicidal behavior. Alcohol could be a trigger that numbed their self-control and fear. Ohberg *et al.* (1996) found alcohol in 36% of suicide victims, Haberbauer *et al.* (1994) reported alcohol abuse in 38% of patients with suicide attempts. Weilemann *et al.* (1996) reported that consumption of alcohol during suicidal behavior is observed more frequently in people who are not alcohol addicts than in alcoholics.

In this study, another marginally significant factor associated with the intensity of suicidal intent (see Table 2) was the current stress from family situation. Harmonious family relationships were observed only in 22% patients, whereas other families showed a certain degree of dysfunction (relationships in 10% families were even considered as pathologic). In the families of our patients, an increased percentage of parents in psychiatric treatment and alcohol abuse mainly among fathers were found out.

The problem of family transmission of suicidal behavior was studied by Brent *et al.* (2002). They reported increased risk of suicidal behavior of children whose parents suffered from affective disorders or attempted suicide themselves. Brent *et al.* found the correlation between suicidal behavior of children of parents with affective disorder and their impulsive aggressiveness, plus sexual abuse. The correlation between children's suicidal attempts and psychopathologies of parents was found by Krakowski & Czobor (2004).

Thirty-five percent (35%) of patients attempted suicide repeatedly. Many studies report that previous suicidal behavior is a risk factor for repeating such behavior or committing completed suicide. Self-injuring behavior without any suicidal features is another risk factor of suicidal behavior (Maris, 1992). The prevalence of self-injuring behavior has been growing significantly in young people (Cleaver, 2007; Jacobson & Gould, 2007). Skegg (2005) reports that 5% of persons hospitalized for self-injuring behavior commit suicide within 9 years after the hospitalization. This finding is also supported by the fact that 32% of patients from our study had a history of self-injuring behavior, whereas self-injuring behavior was not observed in them as current psychopathology. Obviously, autoaggressive inclinations of our patients were expressed by their suicidal behavior. Esposito *et al.* (2003) found other differences between the adolescents with single and multiple suicidal attempts. Adolescents with multiple suicidal attempts were more often diagnosed to have mood disorders, stronger depressive symptoms, more severe behavioral disorders, higher degree of affective dysregulation and more severe self-injuring behavior.

In our sample of patients, a surprising association between previous psychological trauma and somatic severity of suicidal behavior was found. Interestingly, the patients with previous trauma tended to have less somatically severe suicidal attempts. The relationship of previous trauma and suicidal behavior has been analyzed by many studies. Such traumas are often associated with the current suicidal behavior. Sarchiapone *et al.* (2007) observed significantly higher score of trauma in patients with depression after a suicidal attempt. Read *et al.* (2001) reports that sexual abuse in childhood is more important for prediction of suicidal behavior than currently diagnosed depression. The correlation between posttraumatic stress and suicide behavior in adolescents was found by Mazza (2000). He reports that the relationship between posttraumatic symptomatology and suicidal behavior in adolescent cannot be explained by means of depression or gender. Roy & Janal (2005) identified several risk factors of suicidal behavior such as female sex, trauma in childhood and suicidal behavior in family anamnesis. However, they did not confirm mutual interaction of these factors. The design of our study, nevertheless, does not allow us to describe the effect of previous psychological trauma on the incidence of suicidal behavior, but only

its severity. Unfortunately, we have found no adequate references to this topic.

The study results indicate that the risk factors concerning the intensity of suicidal intent is a history of depression, anxiety disorders and addictive substances abuse. The current stress resulting from a mental disorder and the current depression are important as well. Grunebaum *et al.* (2006) observed that depressive patients, who attempted suicide and, at the same time, experienced sexual abuse in childhood, were more aggressive, generally younger, and suffered from more severe personality and depressive disorders, as compared with patients who did not attempt suicide. Palmer *et al.* (2005) reported on the correlation between suicidal behavior and schizophrenia. However, there was only one schizophrenic patient in our sample.

CONCLUSION

In this study, several risk factors of somatic severity of suicidal behavior and intensity of suicidal intent were described. The most important finding of the study is the association between a history of psychological trauma and a tendency to have less somatically severe suicidal behavior. Although the results are limited by the sample volume, they open further discussion about mechanisms of suicidal behavior in children and adolescents.

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