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ORIGINAL ARTICLE

A study on the association of psychiatric diagnoses and childhood adversities with suicide risk

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ABSTRACT

Background: In addition to psychiatric disorders, childhood adversities may increase the risk of suicidal behavior. In previous studies, the effects of clinical co-morbidity and overlap of childhood adversities has rarely been taken into account.

Aim: The study aims to search associations of psychiatric diagnoses and childhood adversities and trauma (CAT) with suicide risk.

Methods: Altogether 415 adult patients attending primary and psychiatric outpatient care filled in the Trauma and Distress Scale, including assessment of five core CAT domains (emotional, physical and sexual abuse, and emotional and physical neglect). The study patients' current psychiatric disorders and suicide risk were assessed by the Mini International Neuropsychiatric Interview.

Results: Age, poor perceived health, poor social support, current psychiatric treatment, all psychiatric disorders, except hypomania, emotional and physical abuse, and emotional neglect did associate significantly with suicide risk. Number of psychiatric disorders and CAT domains had dose-dependent effects on suicide risk. In multivariate analysis, current psychiatric treatment, current and life-time major depression, social phobia, alcohol, and drug dependency, as well as emotional abuse had direct associations with suicide risk. In females, manic disorders and drug dependence, and in males, dysthymia, social phobia, and emotional abuse associated with suicide risk.

Conclusions: Psychiatric disorders and most CAT domains associate with suicide risk. However, when the effect of co-morbidity and overlap of CAT domains is controlled, major depression, social phobia, alcohol, and drug dependency and emotional abuse seem to increase the risk of suicide. The risk profile varies between the genders.

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Clinical diagnoses; childhood adversity: risk of suicide

1. Introduction

Mood and anxiety disorders and alcohol and drug dependence are associated with suicidal ideations and behavior [1–4]. In addition to clinical disorders, childhood adverse and trauma (CAT) experiences are associated with suicidal behavior directly [5–10], and with mood disorders in particular [4,11–13]. Other factors, e.g. gender, social support, and physical health have often associated with suicidal behavior [4,14,15]. The association between clinical disorders, depression in particular, and suicidal behavior may be moderated by gender [16].

Co-occurrence of various psychiatric disorders and different types of CAT domains is common but rarely taken into account concurrently in the same studies. Therefore, our aim was to study: (1) how psychiatric disorders and five core CAT domains (emotional, physical and sexual abuse, and emotional and physical neglect) associate with risk of suicide, (2) how specific these associations are when the effects of clinical co-morbidity and overlap of CAT domains have been controlled, and (3) are there any gender differences in effects of CAT and psychiatric diagnoses on risk of suicide.

2. Material and methods

The study protocol was approved by the ethical committee of the University of Turku and Turku University Central Hospital. This study is part of the larger study aiming to analyze depressive and psychotic disorders and symptoms among patients attending primary and psychiatric outpatient care. Details of study sampling and methods used in the first phase of the study are described in an earlier report [17].

2.1. Patient samples

The study sample comprises consecutive 17+ year-old patients visiting a physician at primary care services and attending psychiatric care out-patient services during about 2 months in spring 2003 and 2004 in three Health Centres in South-Western Finland. In all, 2703 primary and 420 psychiatric care patients were invited to participate in the study and, following written informed consent, asked to complete a short questionnaire before seeing a doctor. Of the invited patients, 1358 (50.2%) primary and 283 (67.4%) psychiatric care patients returned the completed questionnaire.

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2.2. Clinical assessments

The questionnaire included questions about the patient's socio-demographic background, questions on perceived health (1 = extremely good to 5 = extremely poor), and three yes/no questions on interpersonal relationships (Do you have enough interpersonal relationships? Do you have close friends? Are you satisfied with your interpersonal relationships?). The sum score of these three questions (range 0–3) was used as a criterion for social relations.

The questionnaire also included a list of depressive symptoms, assessed by the DEPS instrument [18]. Among the primary care sample, those who scored at least 8 on DEPS ($n = 202$) and every tenth of those who scored less than 8 ($n = 142$) were interviewed by telephone. The goal was to interview about 300 patients, of whom a considerable number had affective disorders. All psychiatric patients were contacted and 221 were successfully interviewed.

The telephone interview included the Mini International Neuropsychiatric Interview (MINI 5.0.0) [19] for diagnostic assessment. The MINI assessment includes eleven current diagnostic episodes (disorders): major depression, dysthymia, manic, hypomanic and psychotic disorder, generalized anxiety, panic disorder, social phobia, obsessive-compulsive and post-traumatic stress disorder, and alcohol and drug dependence. There were no patients with eating disorders, and somatoform disorders were not assessed. Main analyses were carried out according to current diagnoses. The MINI assessment also includes lifetime disorders for major depression, manic, hypomanic, and psychotic disorder and panic disorder. These diagnoses were used in sensitivity analyses.

The MINI [19] short version includes the Suicidal Scale with six items; each of them can be weighted according to its estimated contribution to risk level [20]: 'In the past month did you: C1 Think that you would be better off dead or wish you were dead?' (1 point), 'C2 Want to harm yourself or to hurt or to injure yourself?' (2 points), 'C3 Think about suicide?' (6 points), 'C4 Have a suicide plan?' (10 points), 'C5 Attempt suicide?' (10 points), and 'C6 Did you ever make a suicide attempt?' (4 points). In this study, the sum of these weighted items (range 0–33) was used as a criterion of suicide risk or risk of suicide.

In 2005, all MINI interviewed 345 primary and 221 psychiatric care patients were mailed an inquiry including the Traumatic And Distress Scale (TADS) [21]. The study protocol for this second inquiry was also approved by the ethical committee of the University of Turku and the Turku University Central Hospital. In the questionnaire, it was emphasized that the CAT questions were sensitive, and that response was fully voluntary. Completion and return of the questionnaire were considered informed consent. Altogether 255 (73.9%) primary and 160 (72.4%) psychiatric care patients returned the fully completed questionnaire, and they form the sample of the present study (Figure 1). Compared with the invited 2703 primary care patients, the patients returning the TADS were more often females (64.1% versus 72.2%; $p = .011$). There was no difference in age (mean age 49.9 versus 49.3 years; $p = .593$). Corresponding figures in the invited 420 versus the TADS-returning psychiatric care patients were, for females, 64.2 versus 71.3% ($p = .165$) and 45.0 years versus 45.0 years ($p = .958$).

The TADS includes 43 items on childhood trauma and adversity rated for their frequency in a Likert format: 0 = 'never', 1 = 'rarely', 2 = 'sometimes', 3 = 'often' and 4 = 'almost always'. From the TADS, five core CAT domain cases and severity scores can be calculated for emotional abuse (EmoAb), physical abuse (PhyAb), sexual abuse (SexAb), emotional neglect (EmoNeg), and physical neglect (PhyNeg). The TADS has proved to be a valid, reliable and clinically useful instrument for assessing retrospectively reported childhood traumatization in a general population sample [22].

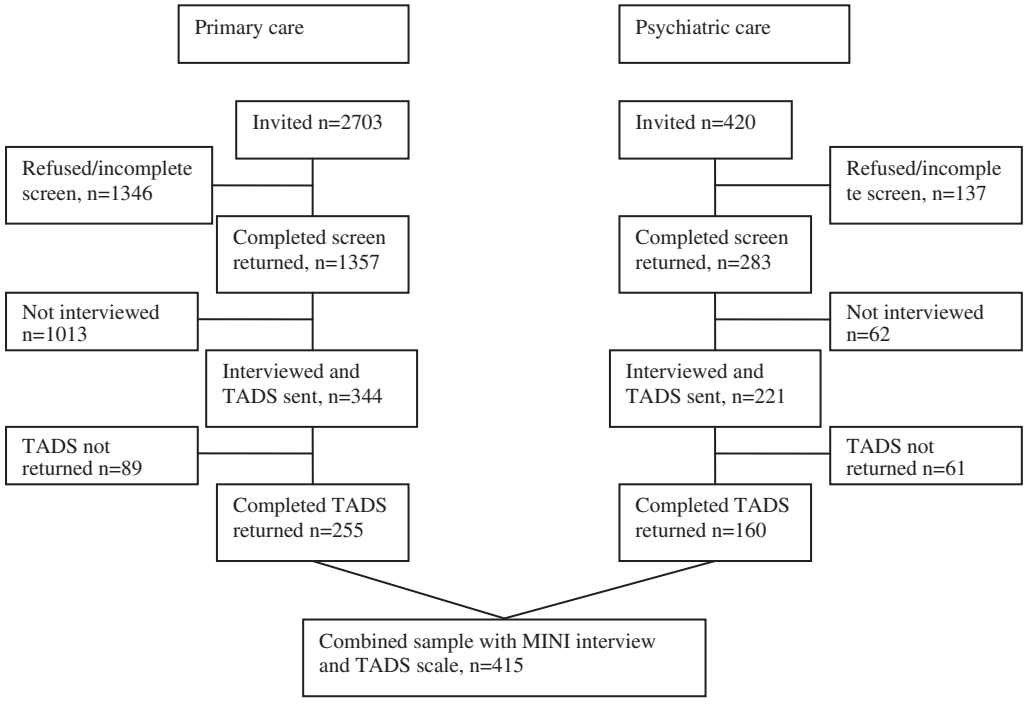

Figure 1. Chart flow for recruiting the study sample.

2.3. Statistical analyses

First, means and SD for suicide risk scores were calculated by the patients' socio-demographic background, MINI disorders and CAT domain cases. Differences between the groups with or without co-occurrence of clinical diagnoses and childhood adversities were tested by *t*-test. Spearman correlations (r_s) were calculated between suicide risk scores and CAT severity domains.

In the general linear model, variance was explained by current clinical diagnoses and CAT domains when the effects of gender, age, marital status and social relationships were controlled. In post hoc sensitivity analyses, current major depression, manic, hypomanic, and psychotic and panic episode were replaced by their life-time episodes. It was expected that co-occurrence between lifetime disorders would be higher, and specific associations with suicide risk scores different, compared with those for current disorders. The multivariate analyses were carried out for the entire sample and for females and males separately.

Data were analyzed using Statistical Programme for the Social Sciences (SPSS) v22.0, and $p < .05$ were considered significant.

3. Results

3.1. Bivariate analyses

Gender and marital status had no association with suicide risk, while older people reported lower levels of suicide risk. A low number of social relationships and poor health also associated with suicide risk. As expected, risk of suicide was more prevalent among the patients who were currently attending psychiatric care (Table 1).

All MINI diagnoses, except hypomania, and all CAT domains, except sexual abuse and physical neglect, associated significantly with risk of suicide, while the number of clinical diagnoses and CAT domains had a dose-dependent effect on suicide risk (Table 1).

Co-occurrence of many diagnoses (co-morbidity), as well as many CAT domains, was high (Table 1), indicating that their effects on suicide risk might mainly be nonspecific. Spearman correlation coefficients between all CAT domain scores, except SexAb, were very high ($r_s > 0.439$, $p < .001$), while the correlation between SexAb and other CAT domains was considerable ($r_s > 0.249$, $p < .001$). Suicide risk correlated significantly with EmoAb ($r_s = 0.316$, $p < .001$), PhyAb ($r_s = 0.261$, $p < .001$). EmoNeg ($r_s = 0.283$, $p < .001$) and PhyNeg ($r_s = 0.178$, $p < .001$), but not with SexAb ($r_s = 0.075$, $p = .126$).

3.2. Multivariate analyses

In the general linear model for the entire sample, of clinical diagnoses, major depression, social phobia, alcohol and drug dependence, of CAT domains, emotional abuse and physical abuse non-significantly associated specifically with risk of suicide when the effects of gender, age, marital status, perceived health and social relationships had been controlled (Table 2). Of background controlling factors, only psychiatric care associated with risk of suicide. In females, CAT domains had no specific association, while their current mania, hypomania and drug dependence had specific associations with risk of suicide. In males, dysthymia and social phobia of psychiatric disorders and emotional abuse of CAT domains associated specifically with risk of suicide.

In post hoc analyses, current major depression, manic, hypomanic and psychotic and panic episode was replaced by corresponding life-time episodes. Other diagnoses were

Table 1. Suicide risk scores (range 0–3; mean and SD) by background, MINI diagnoses and CAT domains.

	N	%	Mean	SD	*p*
Total	415	100.00	1.88	4.51	
Gender					.148
Men	117	28.19	2.39	5.38	
Women	298	71.81	1.68	4.12	
Age					.003
19–24	35	8.43	2.06	5.49	
25–44	127	30.60	2.13	4.15	
45–54	120	28.92	2.89	5.97	
55–64	90	21.69	0.82	2.62	
65–80	43	10.36	0.40	1.05	
Mariatal status					.470
Single	62	14.94	2.42	5.09	
Married	179	43.13	1.48	3.61	
Cohabiting	69	16.63	2.28	5.40	
Divorced/separated	72	17.35	2.24	5.10	
Widowed	33	7.95	1.45	4.41	
Number of social relationships					.011
0	48	11.57	3.69	6.16	
1	52	12.53	2.52	3.86	
2	42	10.12	1.62	3.83	
3	273	65.78	1.48	4.32	
Health					<.001
Very good	11	2.65	0.00	0.00	
Good	120	28.92	1.00	3.35	
Moderate	200	48.19	1.90	4.61	
Poor	77	18.55	2.95	5.16	
Very poor	7	1.69	7.86	7.84	
Treatment place					<.001
Primary care	255	61.45	0.79	2.06	
Psychiatric care	160	38.55	3.63	6.42	
Clinical disorders					
Major depression	126	30.36	3.95	6.24	<.001
Dysthymia	61	14.70	4.05	6.79	<.001
Mania	8	1.93	7.25	8.01	.001
Hypomania	5	1.20	4,40	5,32	.210
Psychotic disorder	13	3.13	5,77	8,27	.002
Generalised anxiety	100	24.10	4.16	6.57	<.001
Panic disorder	17	4.10	5.18	7.32	.002
Social phobia	23	5.54	6.48	7.61	<.001
Obsessive–compulsive disorder	28	6.75	6.54	7.72	<.001
Post-traumaic stress disorder	9	2.17	6.33	8.57	.003
Alcohol dependence	45	10.84	5.13	6.61	<.001
Drug dependency	8	1.93	10.00	8.25	<.001
Number of MINI diagnoses					<.001
0	210	50.60	0.37	1.16	
1	87	20.96	2.17	5.21	
2–3	87	20.96	3.38	5.31	
4+	31	7.47	7.10	7.89	
CAT domains					
Emotional abuse	216	52.05	2.76	5.52	<.001
Physical abuse	198	47.71	2.90	5.79	<.001
Sexual abuse	57	13.73	2.65	5.13	.164
Emotional neglect	280	67.47	2.30	4.68	.007
Physical neglect	240	57.83	2.22	4.82	.073
Any TADS domain case	356	85.78	2.12	4.81	.008
Number of CAT cases					<.001
0	68	16.39	0.26	0.96	
1	71	17.11	1.48	3.98	
2	78	18.80	1.19	3.10	
3	62	14.94	3.00	6.29	
4	102	24.58	2.42	4,83	
5	34	8.19	3.88	6.24	

Table 2. General linear model for suicide risk scores in all and females and males separately.

	All					Female					Male				
	B	*t*	*p*	95% CI		*B*	*t*	*p*	95% CI		*B*	*t*	*p*	95% CI	
Gender	1.488	0.929	0.354	−1.662	4.638										
Male	0.310	0.654	0.514	−0.622	1.241										
Female	—														
Age	−0.022	−1.205	0.229	−0.059	0.014	−0.018	−0.920	0.359	−0.057	0.021	−0.056	−1.260	0.211	−0.146	0.033
Marital status											−1.933	−0.839	0.404	−6.510	2.644
Single	−1.141	−1.139	0.255	−3.112	0.829	−1.300	−1.214	0.226	−3.409	0.808					
Married	−1.315	−1.676	0.095	−2.857	0.227	−1.507	−1.878	0.061	−3.087	0.073	−0.933	−0.460	0.647	−4.966	3.100
Cohabiting	−0.835	−0.909	0.364	−2.642	0.972	−1.302	−1.344	0.180	−3.208	0.605	0.287	0.132	0.895	−4.018	4.592
Divorced/separated	−0.706	−0.814	0.416	−2.410	0.998	−0.712	−0.799	0.425	−2.466	1.042	−0.748	−0.331	0.742	−5.243	3.746
Widowed	—					—					—				
Social relationships	0.014	0.068	0.946	−0.396	0.424	0.147	0.620	0.536	−0.320	0.615	−0.244	−0.557	0.579	−1.112	0.625
Health	0.224	0.748	0.455	−0.365	0.814	0.172	0.517	0.606	−0.484	0.829	0.225	0.362	0.718	−1.011	1.461
Treatment place															
Psychiatric care	**1.374**	**2.937**	**0.004**	**0.454**	**2.293**	**1.701**	**3.430**	**0.001**	**0.725**	**2.678**	0.762	0.696	0.488	−1.411	2.934
Primary care	—					—					—				
Clinical disorders															
Major depression	**1.178**	**2.323**	**0.021**	**0.181**	**2.176**	0.968	1.744	0.082	−0.125	2.060	1.634	1.495	0.138	−0.538	3.806
Dysthymia	0.706	1.178	0.239	−0.472	1.885	−0.294	−0.449	0.654	−1.581	0.994	**3.805**	**2.735**	**0.008**	**1.041**	**6.569**
Mania	1.711	1.118	0.264	−1.299	4.722	**8.167**	**3.204**	**0.002**	**3.148**	**13.187**	−3.174	−1.384	0.170	−7.728	1.381
Hypomania	2.187	1.203	0.230	−1.388	5.762	**5.079**	**2.407**	**0.017**	**0.925**	**9.233**	−2.382	−0.695	0.489	−9.187	4.423
Psychotic disorder	0.499	0.419	0.676	−1.846	2.845	0.037	0.023	0.982	−3.129	3.203	−1.205	−0.492	0.624	−6.071	3.662
Generalised anxiety	0.322	0.572	0.568	−0.784	1.427	0.633	1.044	0.297	−0.560	1.826	−1.173	−0.895	0.373	−3.777	1.431
Panic disorder	0.480	0.450	0.653	−1.617	2.577	0.111	0.094	0.925	−2.197	2.418	−1.100	−0.460	0.646	−5.847	3.647
Social phobia	**2.256**	**2.353**	**0.019**	**0.371**	**4.141**	0.871	0.759	0.448	−1.387	3.129	**4.952**	**2.666**	**0.009**	**1.263**	**8.641**
Obsessive–compulsive disorder	1.071	1.108	0.268	−0.829	2.970	0.940	0.905	0.366	−1.106	2.987	3.564	1.519	0.132	−1.097	8.225
Post-traumaic stress disorder	−0.444	−0.303	0.762	−3.329	2.440	0.360	0.246	0.806	−2.516	3.235	−9.063	−1.906	0.060	−18.510	0.384
Alcohol dependence	**1.649**	**2.365**	**0.019**	**0.278**	**3.020**	1.776	1.947	0.053	−0.020	3.571	0.563	0.422	0.674	−2.087	3.213
Drug dependency	**5.978**	**3.990**	**<0.001**	**3.032**	**8.923**	**4.732**	**3.006**	**0.003**	**1.633**	**7.831**	8.679	1.915	0.059	−0.322	17.680
CAT domains															
Emotional abuse	**0.155**	**2.034**	**0.043**	**0.005**	**0.305**	0.064	0.800	0.424	−0.093	0.220	**0.583**	**2.984**	**0.004**	**0.195**	**0.972**
Physical abuse	0.187	1.957	0.051	−0.001	0.374	0.155	1.446	0.149	−0.056	0.366	0.058	0.280	0.780	−0.354	0.470
Sexual abuse	0.074	0.916	0.360	−0.085	0.233	0.080	1.021	0.308	−0.074	0.234	−0.142	−0.419	0.676	−0.817	0.532
Emotional neglect	−0.090	−1.286	0.199	−0.229	0.048	−0.080	−0.977	0.329	−0.241	0.081	−0.127	−0.880	0.381	−0.413	0.159
Physical neglect	−0.074	−0.993	0.321	−0.221	0.073	0.009	0.114	0.909	−0.151	0.169	−0.179	−1.063	0.291	−0.512	0.155
Significant associations bolded	Adjusted *R* squared =0.252					Adjusted *R* squared = 0.276					Adjusted *R* Squared = 0.334				

current episodes, but because of their clinical nature they also represent a longer period than a short episode. In lifetime episodes, there is not exactly a question of co-morbidity, because episodes of different diagnoses might have occurred at different times. In the comparative general linear model (Table 2), major depression ($p = .015$; 95% CI 0.236-2.148), social phobia ($p = .038$; 95% CI 0.105–3.839), alcohol ($p = .017$; 95% CI 0.293–3.017) and drug dependence ($p \leq .001$; 95% CI 3.046–8.894) associated significantly with risk of suicide. In females, psychotic disorders ($p = .015$; 95% CI 0.352–3.245), alcohol ($p = .023$; 95% CI 0.289–3.860) and drug dependence ($p = .001$; 95% CI 2.339–8.484) associated significantly with risk of suicide. In males, emotional abuse ($p = .019$; 95% CI 0.080–0.860), dysthymia ($p = .004$; 95% CI 1.383–6.999) and social phobia ($p = .002$; 95% CI 2.289–9.859) associated significantly with risk of suicide.

4. Discussion

4.1. Major findings

In line with earlier studies [1–10,23,24], a great majority of psychiatric diagnoses and CAT domains associated significantly with risk of suicide. Number of psychiatric diagnoses and CAT domains had a dose-dependent effect on suicide risk: the more diagnoses or CAT domains the patients had the more severe was their risk of suicidal ideation and behavior. In multivariate analyses, current major depression, social phobia, alcohol, and drug dependency of the psychiatric diagnoses, and emotional abuse of the CAT domains associated specifically with risk of suicide. In the model including lifetime diagnoses, results for the entire sample were very similar. However, there were also remarkable gender differences in specific associations between CAT domains and psychiatric diagnoses and suicide risk.

4.2. Background and risk of suicide

It is worth noting that young age, perceived poor health and low social support, in line with previous studies [4,14,15], had a highly significant association with risk of suicide, but no significant independent effect in the multivariate model; psychiatric disorders, depression in particular, explained away their effects. It seems that clinical depression is the key mediator between background factors and suicide risk.

4.3. Psychiatric disorders

In accordance with previous studies [1,2,4], major depression had a specific association with risk of suicide also in the present entire sample. It was notable, however, that the suicide risk score in the patients with major depression was lowest of all diagnostic groups; in females and males separately, association between major depression and suicide risk was not significant.

There were interesting gender differences in dysthymia and manic episodes. In males, dysthymia associated significantly and positively with suicide risk, while in females, this (non-significant) association was negative. It seems that specifically chronically lowered mood increases suicide risk in males, but not to the same extent in females. On the other hand, in females, manic and hypomanic episodes associated positively with suicide risk, while in males, these associations (non-significant) were negative, indicating that manic behavior increases suicide risk in females specifically. However, the low numbers of manic/hypomanic episodes limit the reliability of the findings.

Co-morbidity with other diagnoses is common in bipolar patients and extremely common in bipolar patients with a history of childhood maltreatment; they also have a higher risk of suicide attempts compared with the bipolar patients without childhood maltreatment [25,26]. In a prospective national 36-year follow-up study, the absolute risk of suicide among men was highest in bipolar disorder (7.77%), followed by unipolar affective disorder (6.67%), and among women in schizophrenia (4.91%), followed by bipolar disorder (4.78%) [27]. The results of our study suggest that in female patients, increased risk of suicidal ideation and behavior is specifically related to the manic episodes.

An extensive literature has shown that the risk of attempted and completed suicides is increased in patients with schizophrenia, psychotic depression, and other psychotic disorders, and that psychotic patients with co-morbid depression are at particular risk of suicide [28–30]. According to our results, current psychotic episode, because of co-morbidity with depression and few subjects with current psychotic episode, had no independent effect on suicide risk, while with life-time psychotic episodes the independent association was significant; but only in females. Thus, it seems that the association between current psychotic episode and suicide risk is mainly due to co-morbidity with other disorders, but, in accordance with a prospective study [27], more long-term vulnerability to psychotic breakthroughs may have a suicide-risk-increasing effect in females particularly.

Several studies have found that anxiety disorders in general and PTSD in particular associate with suicidal behavior [3,31]. Findings concerning a specific association between anxiety disorders and suicidal behavior have been contradictory [32–34]. Co-morbidity between depression and anxiety disorders, general anxiety in particular, is great [35]. However, in this study, in relation to risk of suicidal ideation and behavior, the effect of general anxiety towards risk of suicide was mainly reduced by the effect of major depression; only social phobia had an independent association with risk of suicide; in males particularly. Individuals with social anxiety often avoid seeking assistance, leading to co-morbid mental disorders, greater disability, and an increased risk of suicide [35]. In accordance with our results, Gallaghner *et al.* [24] recently found that social anxiety symptoms at baseline associated with suicidal ideation at 18 months' post-baseline, even after controlling for baseline depressive symptoms and ideation.

In line with previous studies [36–39] alcohol and drug dependence consistently associated with risk of suicide. In males, however, alcohol abuse had no specific association with suicide risk, indicating that co-morbid affective disorders, dysthymia and social anxiety in particular, are more decisive regarding suicide risk of men. Suicidal behavior is a significant problem for co-morbid individuals seeking addiction treatment. Major depression, bipolar disorder, borderline personality disorder and post-traumatic stress disorder are especially associated with suicidal behavior in those with addictive disorders [37].

4.4. Childhood adversities

In line with previous studies [5–7,12], most types of CAT measured in the present study were associated with risk of suicide, while co-occurrence of CAT with psychiatric disorders further increased the risk of suicide risk. In a review, maltreated individuals with depressive, anxiety, and substance use disorders had an earlier age at onset, greater symptom severity, more comorbidity, and greater risk for suicide and poorer treatment response than non-maltreated individuals with the same diagnoses [40]. These findings emphasize that the risk of suicidal thoughts and behavior in patients with co-occurrence of several psychiatric disorders and CAT domains is extremely high and, therefore, they need special attention in clinical practice.

Specific associations between CAT domains and suicidal ideations and behavior vary considerably. According to a review, various forms of childhood maltreatment maintain an independent association with adolescent suicidal ideation and suicide attempts [16]. In a national study, after adjusting for demographic variables, and psychiatric disorders, childhood physical, emotional, and sexual abuse were directly related to the risk of violent behavior toward self and others [41], while in patients attending a general hospital because of a suicide attempt, physical, and sexual abuse were independently associated with repeated suicide attempts [42]. In the present study, only emotional abuse associated independently with risk of suicide. The finding that the independent effect of physical abuse was almost significant ($p = .051$) in the main analysis suggests that also childhood physical abuse may increase risk of suicidal ideation and behavior. On the basis of previous studies and this study, it seems that childhood abuse does, but neglect does not, have an independent effect on adult suicidal ideation and behavior.

Contrary to several previous studies [9,16,43,44], sexual abuse was not associated with suicide risk in the present study. However, in a prospective cohort of street youth, it was found that physical abuse, emotional abuse, and emotional neglect, but not sexual abuse, associated with suicide attempts in adjusted analyses [45]. It is possible that the association between sexual abuse and risk of suicide varies between cultures. In a population sample, in which we also used the TADS, sexual abuse associated significantly with depressive symptoms and seeking help for mental problems [22], and in a high-risk sample with paranoid symptoms [46], but in this study sexual abuse played a smaller role than other CAT domains.

5. Strengths and limitations

Definition of suicidal behavior range in severity from suicidal ideation to a serious attempt with intention to die [47]. The present study is focused on patients with reported suicide risk including suicide ideations and behavior, not on actual suicide attempters, among whom frequencies of CAT experiences, e.g. sexual abuse, may considerably differ from those found in the present study. On the other hand, if childhood maltreatment is associated with suicide, not only suicide attempts, the results may be biased towards lower effect-sizes, especially in cross-sectional studies and longitudinal studies that start at an older age. Some individuals may first attempt suicide and then complete suicide before they can be included in the study.

We used the MINI instrument's [19] short version and its Suicidal Scale with six items. Each item was weighted according to its estimated contribution to risk level [20], and the sum of the weighted items (range 0–33) was used as an indicator of suicide risk. In a prospective study [20], the Suicidal Scale of the MINI was a significant predictor of suicidal behavior and suicidal behavior + non-suicidal self-injury. According to the authors, the MINI Suicidal Scale cannot be used as a screening tool, but it may be useful for making a clinical judgment with an emphasis on the risk profile of the individual instead of a categorical grouping of patients into low-, moderate-, and high-risk groups. On the other hand, in a recent study on instruments for assessment of suicide risk, none of the 15 analyzed instruments fulfilled the requirements for sufficient diagnostic accuracy [48].

We assessed associations between suicide risk and several psychiatric disorders and multiple types of CAT in the same study sample. Many earlier studies have focused on a few types of CAT and/or on a limited number of psychiatric disorders. We also analyzed the role of co-morbidity and co-occurrence of CAT in relation to suicide risk to elicit independent factors in the severity of risk of suicide.

Psychiatric disorders were assessed by a telephone interview which may limit the reliability. The MINI instrument is validated with DSM-IV and ICD-10 classifications, and is suitable for telephone interview [49], and as telephone interviewer we used an experienced and trained psychiatric nurse.

The TADS is a self-report instrument. It is possible that an interview would be a more reliable method for assessing childhood adversities. However, our earlier studies have shown that the TADS is a reliable instrument with good concordance between self-reported and telephone-interviewed TADS domains [22].

The relatively small number of study participants, the fact that only the patients willing to participate were recruited, and the small number of some diagnoses may subject the study to sampling error and selection bias. The cross-sectional study design and retrospective assessment of CAT experiences set limits to any causal conclusions. However, there is some evidence that childhood adverse experiences can be reliably assessed retrospectively [50] and that retrospective recall bias is likely to be conservative, leading to underreporting of both childhood adversities [51] and clinical disorders [52].

Disclosure statement

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