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Self-harm, suicidal ideation and suicide attempts among college students

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ABSTRACT

Self-harm, suicidal ideation, and suicide attempts are well represented behaviours in the general population of both developed and developing countries. These behaviours are indicative of underlying risk factors that show a strong interdependent correlation. In this study we attempted to define correlates for and prevalence of self-harm, suicidal ideation, and suicide attempts among Turkish college students. This 2006 study included 636 students from two Turkish state universities. Our results showed that the lifetime prevalence of self-harm was 15.4%, the prevalence of suicidal ideation was 11.4%, and the prevalence of suicide attempts was 7.1%. We uncovered correlates for self-harm, including low income, unsatisfying familial relationships, smoking, and alcohol, inhalant, and tranquilizer abuse. Tranquilizer abuse shared a dual role as a correlate for suicide ideation and as a means to attempt suicide. Additionally, we found that drug abusers and adolescents who practise self-harm presented the highest suicide risk.

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1. Introduction

In recent literature self-harm has been recorded most prevalently among young people (Ross and Heath, 2002; Nock et al., 2006; Laukkanen et al., 2008). Historically related to different psychiatric disorders such as depression, bipolar disorder, and borderline personality disorder (Suyemato, 1998), self-harm has also been shown to be common in non-clinical samples of adolescents and young adults (Laye-Gindhu and Schonert-Reichl, 2005).

The dominant approach of the literature is to distinguish between suicide attempts and self-harm without intent to die (Messer and Fremouw, 2008). "Although suicidal ideation has been found in 28–41% of self-injury cases, still, upward of 85% of self-injury events are undertaken with the primary goal of releasing tension, rather than of ending life" (Yates, 2004). On the other hand, recent non-fatal self-harm indicates a large increase in the individual risk of lethal suicide intervention (Owens et al., 2002). Furthermore, those who have attempted suicide and present a history of self-harm also tend to be more depressed, impulsive (Dougherty et al., 2009), anxious and underestimating the lethality of their suicide attempts. Therefore, clinicians may be unintentionally evaluating the suicide risk in self-mutilators as less serious than it actually is (Stanley et al., 2001).

The incidence and prevalence of self-harm are difficult to calculate because of the lack of a stringent defininiton of self-harm. However, previous studies show the incidence of self-harm in the psychiatric population to be much higher than in the general population — ranging from 4.3% to 20% of all psychiatric inpatients and ranging from 40% to 61% of adolescent inpatients (Suyemoto, 1998). In the literature the prevalence of self-harm in community adolescents ranges from 15% to 46.5% (Laye-Gindhu and Schonert-Reichl, 2005; Lloyd-Richardson et al., 2007) and in college students from 6.9% (Rodham et al., 2004) to 13.9% (Favazza et al., 1989; Ross and Heath, 2002). A relatively new study evaluating 13 to 18-year-old Finnish adolescents found that 11.5% had a lifetime prevalence of self-cutting, 1.8% is currently self-cutting, and all other self-harm was recorded at 10.2% (Laukkanen et al., 2008). A study performed on Turkish college students in 2003 in a metropolitan university found self-mutilation rate to be 8% (Oksuz and Malhan, 2005). A Turkish regional study sampling a group of students from a non-clinical high school found self-mutilative behaviour at 21.4% (Zoroglu et al., 2003).

Additionally, deliberate self-harm and suicide attempts have been associated with many familial and external factors, such as parental psychopathology, neglect, parental substance abuse, and abuse in the context of pathological family relationships (Hawley et al., 1995; Baer and Maschi, 2003; Gratz, 2003; Ystgaard et al., 2004; Ilomäki et al., 2006).

In a sample of non-clinical Turkish high school students, suicide attempts were found to be more frequent in probands who self-mutilated (58.6) (Zoroglu et al., 2003). Turkish researchers, (Evren

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and Evren, 2005) found that age at initial substance use among substance dependent patients was lower in the group reporting self-harm (14.8 ± 3.5 years) than the group not reporting self-harm (18.7 ± 4.6 years).

Rapid urbanization and economic restructuring are defining forces in much of the developing world and may lead to unique stressors (Das et al., 2007). Most of violence-related deaths occur in low- to middle-income countries, such as in a substantial number of those countries in 2000 the suicide rate was considerably higher than the global average (13.5 per 100,000 population) (Matzopoulos et al., 2008). Although suicide is forbidden in Islamic culture, a recently published review showed that deliberate self-harm and suicide have increased in recent years in Pakistan, a low income country with a predominantly Muslim population (Shahid and Hyder, 2008). Contrary to Pakistan, official suicide statistics suggest that suicide mortality is low in Turkey; as low as 3 per 100,000 population (Oksuz and Malhan, 2005; Eskin et al., 2007). On the other hand non-fatal suicidal behaviours have been found to be common among younger segments of the population in Turkey, such as among college students (Eskin et al., 2007).

We investigated self-harm in non-clinical samples of college students. By using different sample groups than prior studies we aimed to expand the data pool concerning self-harm, suicide ideation, and suicide attempts in Turkey. Most research on self-harm has examined the correlates for this behaviour; however, this area has not yet been adequately researched (Gratz, 2003). We analysed correlates of self-harm, suicide ideation, and suicide attempts. It is our hope that the basic research of our study will help our colleagues understand regional differences (Madge et al., 2008; Portzky et al., 2008) in their evaluation of self-harm in Turkish college students in comparison to other countries.

2. Materials and methods

The presented data were collected as part of a larger study on behaviour and attitudes of students about diet, exercise, ethics, demographics, and risk taking behaviour.

2.1. Subjects

The study sample included 293 (46.1%) males and 343 (53.9%) females aged 16–22. The average female age was slightly younger than the males (19.2 ± 0.9 and 19.5 ± 0.7 years, respectively). The subjects of the study comprised undergraduate students at Gaziosmanpasa University (rural setting) and Istanbul University (metropolitan setting). Gaziosmanpasa University's students represent rural university students in our sample and Istanbul University's students represent metropolitan university students in our sample. Between March 2007 and May 2008 we studied both the Faculty of Education and the Faculty of Arts and Sciences from each university.

The required sample size for expected lifetime prevalence of self-harm was 10% (Hawton et al., 2002) ± 2% error with a 95% confidence interval. This was based on 710 students from a total of 3991 sampled using a stratified cluster sampling procedure. Faculty departments were the primary sampling unit. The sample was stratified on the basis of gender and grade. All students present in class on the day of the survey were asked to complete the forms inside the classroom. Seventy-four questionnaires were excluded from data analysis because they were not filled in seriously/declined to participate ($n = 5$) or were missing data ($n = 69$), which yielded an overall response rate of 89.6%. A signed informed consent, including information about the type of research and objectives of the study, was collected from all participants. Confidentiality and anonymity were assured, participation was on a voluntary basis, and participants did not receive any payment.

2.2. Questionnaires

Two questionnaires were used in this study. The first questionnaire was used to define the basic demographic characteristics of the participants, such as age, gender, etc. The second questionnaire, developed and the reliability and validity have been demonstrated by Ogel et al. (2003), consisted of seven sections covering housing and family, health, self-harm, illicit drug abuse, peer pressure, trauma experience, and legal and psychiatric situations. The second questionnaire has been previously used in published studies (Corapcioğlu and Ogel, 2004). The questionnaire was given in Appendix 1.

2.3. Statistical analysis

The significance of observed associations was tested using the chi-square statistic. Odds ratios (*OR*) with 95% confidence intervals were used to illustrate the differences of correlates for self-harm, suicide ideation, and suicide attempt. Identifying self-harm, suicide ideation, and suicide attempt as dependent variables, the Forward Stepwise (Wald) Logistic Regression model was performed. The odds ratio (with 95% confidence intervals) was used to assess significant associations. Data gathered from this study was analyzed with a computer using SPSS 10.0 for Windows (Istanbul University with permission and license, 2005; Chicago, IL, USA). The significance level was considered to be $p<0.05$.

3. Results

As shown in Table 1, self-harm was significantly common among females and self-harm and suicide attempts were significantly common in the rural area. In contrast, age and maternal and paternal educational levels were not significant factors for self-harm, suicidal ideation, and suicide attempts.

As seen in Table 2, low income and not having good family relationship were significant correlates for self-harm and suicide attempt. According to Table 3, frequent alcohol consumption, smoking, cannabis, and inhalant and tranquilizer abuse are correlates for self-harm.

In the sample, the lifetime prevalence of self-harm was 15.4%, suicidal ideation 11.4%, and suicide attempts 7.1%. While self-harm (70.4% vs. 37.4%, $\chi^2 = 65.0$, d.f. = 1, $p<0.0001$) was significantly higher among males than females, no gender difference was reported in the prevalence of suicidal ideation (11.8% in both genders) and suicide attempts (6.7% vs. 6.8%, $\chi^2 = 0.001$, d.f. = 1, $p>0.05$). We also found that self-harm and suicide attempts were significantly more common among adolescents sampled in the rural area ($\chi^2 = 4.76$, d.f. = 1, $p<0.05$ and $\chi^2 = 5.13$, d.f. = 1, $p<0.05$ respectively) (Table 1).

According to univariate analysis, self-mutilators were more likely than non-self-mutilators to report suicidal ideation (59% vs. 11%), ($\chi^2 = 102.8$, d.f. = 1, $p<0.001$) and suicide attempt (63% vs. 14%), ($\chi^2 = 67.6$, d.f. = 1, $p<0.001$). Moreover, after adjusting for age and gender in the multivariate model, self-harm is a strong predictor of suicide ideation and attempt; *OR* (95% *CI*) for suicide ideation was 9.4 (4.4–20.3) and suicide attempt was 7.6 (2.9–20.0).

Table 1
Demographic characteristics of the sample (univariate analysis).

	Self-harm: *n* (%)	Suicidal ideation: *n* (%)	Suicide attempts: *n* (%)
Gender			
Female	39 (11.4)*	42 (11.8)	24 (6.7)
Male	70 (23.9)	38 (11.8)	22 (6.8)
Age distribution			
17 or less	3 (13.0)	4 (16.7)	2 (8.3)
18	12 (13.5)	8 (8.3)	5 (5.2)
19	26 (20.2)	23 (16.9)	9 (6.5)
20 or more	68 (17.7)	45 (11.0)	30 (7.3)
Location			
Rural area (Tokat)	96 (18.7)*	69 (12.6)	43 (7.8)*
Metropolitan area (Istanbul)	13 (10.5)	11 (8.4)	3 (2.3)
Maternal education			
Did not complete high school	94 (17.6)	67 (11.8)	38 (6.6)
Completed high school	9 (11.1)	9 (10.3)	4 (4.7)
Completed university	5 (25.0)	4 (19.0)	3 (14.3)
Paternal education			
Did not complete high school	69 (16.7)	52 (11.8)	30 (6.7)
Completed high school	18 (15.4)	10 (7.9)	8 (6.4)
Completed university	20 (19.4)	17 (16.0)	6 (5.7)

* $p<0.05$.

Table 2
Risk of self-harm. Suicide ideation and suicide attempt associated with family and social relationships. School performance and neighbourhood characteristics (univariate analysis).

	Self-harm	Suicide ideation	Suicide attempt
	OR (95% CI)	*OR* (95% CI)	*OR* (95% CI)
Income (low/high)	2.12* (1.31–3.44)	0.69 (0.39–1.23)	2.22* (1.13–4.34)
Good family relationships (yes/no)	0.38* (0.21–0.69)	0.67 (0.34–1.35)	0.43* (0.20–0.95)
Paternal education (more than 8 years/less than 8 years)	1.03 (0.67–1.60)	0.98 (0.60–1.62)	0.89 (0.46–1.73)
Maternal education (more than 8 years/less than 8 years)	0.75 (0.41–1.38)	1.02 (0.54–1.93)	0.98 (0.42–2.26)
Truancy (yes/no)	1.54 (0.97–2.46)	1.60 (0.93–2.76)	1.22 (0.63–2.38)
Good school performance (yes/no)	0.51* (0.27–0.96)	0.62 (0.30–1.28)	0.77 (0.29–2.05)
Having friends (yes/no)	1.22 (0.66–2.25)	0.86 (0.45–1.64)	1.41 (0.54–3.68)
Having friends from both genders (yes/no)	1.57 (0.86–2.87)	0.92 (0.50–1.68)	0.99 (0.44–2.18)
Having girlfriend/boyfriend (yes/no)	1.52 (0.94–2.46)	1.33 (0.78–2.28)	1.77 (0.84–3.76)
Living in a safe neighborhood (no/yes)	1.35 (0.74–2.46)	1.04 (0.51–2.11)	1.55 (0.69–3.45)

* $p<0.05$.

4. Discussion

The purpose of this study was to determine the prevalence and correlates of self-harm, suicidal ideation, and suicide attempts among a sample of Turkish college students. We found that the lifetime prevalence of self-harm was 15.4%, suicidal ideation was 11.4%, and suicide attempt was 7.1%.

4.1. Self-harm

We found similar prevalence rates for self-harm in studies performed among college students in developed countries and an intermediate value for previous Turkish studies. In 2005 Oksuz and Malhan, whose study's participants were very similar to our sample, found that the self-mutilation rate among Turkish college students was 8%. The main difference between this study and our own was the location of chosen universities. In contrast, Zoroglu et al. (2003) found that the self-mutilation rate among Turkish high school students was 21.4%; however, their participants were slightly younger than our sample.

According to a recently published systematic review concerning self-harm, 6 studies on adolescents found a higher prevalence in females (2:1 to 4:1) and 1 study on adolescents found no sex differences (Fliege et al., 2009). Also, studies from developing countries showed self-harm to be more common among females than males (Hutchinson et al., 2008; Shahid et al., 2009). In contrast to other countries, previous studies performed in Turkey showed a different picture, while a study performed on Turkish High school students showed no gender difference in terms of self-mutilative behaviour (Zoroglu et al., 2003). Yet another study stated that self-mutilation was more common among male college students (Oksuz and Malhan, 2005). We also found self-harm to be more common among males in our sample. One possible explanation of male predominance in self-harm in Turkish adolescents will be that self-harm is traditionally acceptable among some subgroups in society, especially in low income and less educated males. It is also consistent that our results demonstrated that self-harm is more common in low income adolescents. Given the difference in gender roles and socialization patterns between developed and developing countries genders may demonstrate different self-harm patterns in different cultures, therefore further studies on gender-sensitive self-harm are needed (Izutsu et al., 2006).

Although univariate analysis showed that living in a rural area is a correlate for self-harm (Table 1), multivariate analysis demonstrated that neither living in a rural nor in a metropolitan area is a significant correlate (Table 4).

In our sample, smoking was a significant correlate for self-harm. Another study showed that girls who self-harmed were more likely to report smoking (Laye-Gindhu and Schonert-Reichl, 2005). Additionally, a study performed on adolescent psychiatric patients in Finland demonstrated daily smoking to be correlated with suicide attempts and self-harm (Mäkikyrö et al., 2004). This finding may indicate that smoking has a different meaning for adolescents and may also be a sign of having other problems (Brunner et al., 2007) We found self-harm to be almost 5 times more common in low income adolescents. However, some studies have reported no difference in socio-economic status amongst self-mutilating adolescents (Ross and Heath, 2002). Moreover, other studies have reported self-harm to be more common in the middle to upper–middle class socio-economic background (Messer and Fremouw, 2008). However, the effect of socio-economic status on suicide or self-harm may vary. In a recently published United States study, in contrast to African American suicide victims Caucasian suicide victims tended to live in lower income areas (Purselle et al., 2009).

Gratz (2003) reported a significant relationship between self-harm and insecure paternal attachment. Similarly, Laukkanen et al. (2008) reported poor familial relationships as a correlative factor for history of self-cutting and other self-harm, as well as current self-cutting. We found similar results as the studies mentioned previously, including the finding that adolescents who do not have good family relationship are nearly 13 times more prone to self-harm. As Gratz (2003) pointed out, there is a limited amount of literature addressing the association between self-harm and perceived quality and security in familial relationships. This lack warrants further investigation.

The association between self-harm and drug and alcohol abuse has been reported in several studies. The drug induced state may trigger

Table 3
Substance abuse. Drinking and smoking habits (univariate analysis).

	Self-harm	Suicide ideation	Suicide attempt
	OR (95% CI)	*OR* (95% CI)	*OR* (95% CI)
Frequent alcohol consumption (yes/no)	4.99* (2.13–11.67)	2.52 (0.97–6.53)	2.55 (0.84–7.77)
Daily smoking (yes/no)	3.19* (1.99–5.11)	1.75* (1.00–3.06)	1.75 (0.89–3.44)
Cannabis abuse (yes/no)	6.65* (2.54–17.38)	0.84 (0.19–3.73)	1.60 (0.35–7.20)
Inhalant abuse (yes/no)	8.05* (3.32–19.51)	0.64 (0.14–2.82)	0.53 (0.07–4.09)
Tranquilizer abuse (yes/no)	7.53* (3.32–17.07)	4.60* (2.09–10.14)	5.43* (2.24–13.17)

* $p<0.05$.

Table 4
Multivariate analysis.

	Wald	*P*	*OR*	95% CI
Self-harm				
Income (low/high)	4.76	0.02	2.10	1.07–4.12
Good family relationships (no/yes)	12.94	0.0001	0.23	0.10–0.51
Frequent alcohol consumption (yes/no)	4.17	0.04	2.97	1.04–8.45
Daily smoking (yes/no)	9.95	0.002	2.72	1.46–5.06
Inhalant abuse (yes/no)	7.10	0.008	4.51	1.49–13.66
Tranquilizer abuse (yes/no)	11.10	0.001	5.51	2.02–15.05
Suicide ideation				
Tranquilizer abuse (yes/no)	12.34	0.000	4.79	2.00–11.49
Suicide attempt				
Tranquilizer abuse (yes/no)	14.03	0.000	6.03	2.35–15.46
Having a girlfriend/boyfriend (yes/no)	3.55	0.05	0.35	0.12–1.04

self-harm due to impaired judgement, reduced pain perception, fantasy stimulation, and the disinhibitory role of drugs (Evren and Evren, 2005; Rossow et al., 2007; Laukkanen et al., 2008). Also, the act of abusing alcohol and drugs can alone be considered a self-mutilating behaviour (Ross and McKay, 1979; Laukkanen et al., 2008). In our study, after adjusting for age and gender in the multivariate model, there was a statistically significant relationship between self-harm and alcohol, inhalant, and tranquilizer abuse (Table 4).

4.2. Suicide ideation and attempts

Suicide ideation and attempts are more common among psychiatric outpatient clinics. A study performed on adolescent outpatients with depressive mood disorders and comorbid axis-I disorders demonstrated that 19% expressed suicidal ideation and 16% had attempted suicide (Tuisku et al., 2006). However, suicide ideation and attempts are less common in non-psychiatric groups. A meta-analysis recorded that the mean proportion of adolescents reporting attempted suicide at some point in their lives was 9.7% (95% CI, 8.5–10.9), with 29.9% (95% CI, 26.1–33.8) of adolescents saying that they had thought about suicide at some point (Evans et al., 2005). A study performed on Turkish high school students, showed that 2.5% had attempted suicide and 23% had thought of suicide at some point during their lives (Eskin et al., 2007).

However, we found the prevalence of suicide attempts (7.1%) to be lower than those reported in developed countries and the prevalence of suicidal ideation (11.4%) to be lower than those reported anywhere else.

A vast number of studies showed females to be significantly more likely than males to report most suicidal phenomena (Evans et al., 2005). Moreover, Turkish studies on completed suicides showed that males were more at risk in terms of suicide (Yenilmez et al., 2005; Oner et al., 2007). However, gender differences were more blurred when it comes to suicide attempts, as in a Turkish study that revealed suicide attempts were 2.3 times more common among females (Devrimci-Ozguven and Sayil, 2003). Another Turkish study found that while suicidal ideation was more common among females, no gender difference in suicidal attempts among adolescents existed (Eskin et al., 2007). Also, we found that there was no gender difference in terms of suicidal ideation and attempts.

While depressive disorders are among the most powerful predictors of suicidal ideation and suicide attempts in adolescents, the risk of suicidal ideation and suicide attempts further increases when depression is comorbid with substance abuse and other risk factors (Tuisku et al., 2006). According to our univariate analysis, living in rural areas, low socio-economic status, unsatifying familial relationship, and tranquilizer abuse were significant factors for suicide attempt. Also, smoking and tranquilizer abuse were significant factors for suicide ideation. In the multivariate analysis tranquilizer abuse poses a significant correlate for both suicide ideation and attempt. Also, the multivariate analysis showed that lack of a significant other is correlative to suicide attempt.

Previous research consistently showed that self-mutilators are more at risk for suicide attempts, as studies have reported past attempts and suicidal ideation among self-mutilators (Messer and Fremouw, 2008). Also, Turkish studies, consistent with international research, found a correlation between self-harm and history of suicide attempts (Baral et al., 1998; Evren and Evren, 2005). Similarly, we found the relationship between self-mutilating behaviour, suicide ideation, and suicide attempt to be statistically significant in both univariate and multivariate analyses of our study.

There were also some similarities between the correlates we found in our study and in other Turkish studies. Oner et al. (2007) and Yenilmez et al. (2005) found that economic stressors and unsatisfactory relationships were common reasons for suicide. Yenilmez et al. also found alcohol abuse to be a reason for suicide. Similarly, we found that low income and frequent alcohol consumption were contributory factors for self-harm and that having a girlfriend/boyfriend was a protective factor.

The cross-sectional nature of this study was its main limitation; hence, we were only able to report associations rather than definitive temporal or causal relationships. Another important limitation is that the analyses were based on self-reported data, which may yield conservative estimates as a result of underreporting (Rossow et al., 2007). Finally, our sample consists of students from two public universities, which may limit the generalizability of our results. Similar studies need to be performed in diverse samples, including young adults and adolescents who are not attending college, to assess the generality of the findings. Methodology is the strongest point of the study, as it employs adequate sample size and proper sampling method.

Conclusion

Our study showed three points: In our sample

1. The correlates of self-harm our study revealed and the correlates of self-harm found in previous studies share some important similarities, such as prevalence rates.
2. Self-harm and suicidal ideation are significant correlates for suicide attempts.
3. Drug abuse, especially tranquilizer abuse, is a common correlate for self-harm, suicide ideation, and suicide attempts.

Thus, self-harm patients and drug abusers should be carefully monitored for subsequent suicide risk. As drug abuse, including smoking, is a common correlate for all kinds of self-harm, struggle with drug addiction is needed. Both groups, self-harm patients and drug abusers, need support and as well as some therapeutic interventions for healthy development. Lastly, we found self-harm to be more common among males in our sample. Further longitudinal and prospective research is necessary in order to understand gender differences in developed and developing countries.

Appendix 1. The following items were used to define self-harm and suicidal experiences

Self-harm questions:

1. Do you harm yourself intentionally? (never/only once/sometimes/always)
2. Have you ever cut your body or your arms?(never/only once/2–3 times/4–5 times/more than 5)
3. Have you ever intentionally extinguished a smoking cigarette on any site of your body? (never/only once/2–3 times/4–5 times/more than 5)

Suicidal ideation question:

Do you think of committing suicide? (never/only once/sometimes/often/always)

Suicide attempt questions:

1. Have you ever tried committing suicide? (never/only once/2–3 times/4–5 times/more than 5)
2. If you tried committing suicide, have you received any medical intervention? (I have not tried committing suicide/needn't medical intervention/medical intervention needed/I was hospitalized 1 or more day/I was hospitalized in a reanimation unit)

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