



The Prevalence and Predictors of Suicidal Ideation Among Slovene Adolescents

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Abstract

We set out to investigate the prevalence of suicidal ideation among Slovene adolescents and to examine the predictive value of gender, depression, loneliness, multiple health complaints, bullying and degree of family support for the presence of suicidal thoughts. Our sample consisted out of 1547 15-year-old high-school students which took part in the Health Behaviour in School-Aged Children (HBSC) in 2014. Suicidal ideation was more present in girls, in adolescents with depressive feelings, and in those reporting higher levels of loneliness and multiple health complaints. Being a bully, loneliness and depression were important risk factors, while family support acted as a protective factor.

Keywords Suicidal ideation · Adolescents · Slovenia

Introduction

Suicide is a preventable public health problem and the act of suicide is rarely an isolated event. It is usually preceded by ‘mild’ (e.g., suicidal thoughts) or more severe forms (e.g., various forms of self-harm and attempted suicide) of suicidality, spanning a continuum that is usually referred to as the suicidal process (Cole et al. 1992; Runeson et al. 1996). According to Retterstøl (1993) the further in the development of the suicidal process an individual, the more difficult to intervene successfully. Hence, it is crucial to identify “at risk” individuals at earlier stages of their suicidality (Bertolote and Wasserman 2001).

In this regard, suicidal ideation deserves special attention. Namely, as posed by Kral (1994), suicide is caused by the *idea* of suicide and not solely by the presence of severe psychological trauma. It is the very *idea* of suicide that has to be present and readily accessible in order for a person to act in a suicidal manner. Suicidal ideation reaches its most dangerous point when suicide is thought to be the only possible

solution to the mental crisis an individual is experiencing (Hawton et al. 2006; de Wilde 2000).

Suicidal ideation usually starts occurring in adolescence and it is noted in both clinical and community populations. Based on their findings from a 15-year long longitudinal study, Reinherz et al. (2006) conclude that suicidal ideation is a strong predictor of psychopathology, suicidal behaviour, problem behaviour and overall adult functioning. Adolescents, who reported having experienced suicidal thoughts at the age of 15, were more likely by the time they reach 30 years, to suffer from anxiety, depression and other axis I disorders as well as functioning significantly less well as young adults (general social and occupational functioning). They were 12 times more likely to have attempted suicide by the age of 30, regardless of gender (Reinherz et al. 2006).

Similarly, to reported gender differences in suicidal process in adults (Neeleman et al. 2004), Reinherz et al. (1995) found gender specific pathways of suicidal ideation. For instance, girls who experience family discord, early behavioural problems and poor perception of family roles are more often at a higher risk of developing suicidal thoughts, while in boys it is hopelessness, dependence and poor social/emotional adjustment that constitute important predictors. A Finnish study (Kaltiala-Heino et al. 1999) investigated the association between bullying, depression and severe suicidal ideation among 14–16-year-old adolescents. Their findings show that depression and suicidal thoughts were more likely to be present among those boys

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and girls who are being bullied or are themselves bullies. Furthermore, the combination of both (being a bully and being bullied) was found to be a very important risk factor for suicidal ideation. Victims of bullying were even more likely to develop suicidal thoughts when they were lacking appropriate social support (Rigby and Slee 1999). Even younger children who are victims of bullying (8 years old)—Brunstein Klomek and associates (2008) report—have increased risk for suicidal ideation and depression in their late teens.

Smith and Wilburn (2005) sought to identify the relationship between stress, self-esteem and suicidal ideation in late adolescents. Expectedly, negative aspects of stress and lower self-esteem proved to have an impact on the emergence of suicidal ideation. Regarding risk factors associated with wider social context, Samm et al. (2010) reported that family relationships and family structure play an important role in suicidal ideation and depressive feelings. Mark et al. (2013) found that suicidal ideation is often present in families where communication is difficult and mutual support lacking. The absence of psychological well-being may also show in the form of multiple health complaints. Nakao et al. (2002) evidenced that adolescents who experience suicidal thoughts often report having had multiple health complaints (for instance: loss of sleep, headaches, sickness etc.).

According to international data, huge variability between countries exists regarding the prevalence of suicide mortality in adolescents, as well as the prevalence of suicidal ideation (Nock et al. 2008; Kolves and De Leo 2016). Kim et al. (2018) have identified important risk factors on a South Korean sample of adolescents, which include hopelessness, school-related stress and perceived burdensomeness. Bullying victimization is also very frequently considered to play a role in the development of suicidal process and was as such confirmed in several European countries (Barzilay et al. 2017), as well as in Australia (Roeger et al. 2010). Slovenia is among countries with high suicide mortality. In Slovenia, in the age group 15–19 years, suicide is often reported as the second cause of death, usually after automobile accidents (National Mortality Database). While fairly good data exist regarding the suicide mortality and related risk factors (e.g. National mortality database, NIJZ 2016), data on suicide ideation and associated factors in Slovene adolescents is sparse and needs to be further examined.

Accordingly, our aim was to: (i) investigate the prevalence of suicidal ideation among Slovenian 15-year olds; and, (ii) to study the concurrence and prediction of suicidal ideation in relation to gender, depression, loneliness, multiple health complaints, bullying, and family support respectively. The selected factors are those most widely presented in relation to suicidal ideation in adolescence.

Methods

Participants

Data were collected within the framework of the World Health Organization collaborative international study on Health Behaviour in School-Aged Children (HBSC) in 2014. The study was conducted on 11, 13 and 15 year-old adolescents from Slovenia, forming a national and representative sample. For the purposes of our study, we focused only on data gathered on the 15-year-old adolescents, because they were the only ones who were asked to report on the presence of suicidal thoughts in the last 12 months. Altogether, 1615 15-year-old high-school students took part in the study (46.1% boys and 53.9% girls), but our final sample included 1547 individuals who answered the question on suicidal ideation.

Procedure

The two-stage stratified sampling included a number of Slovene high-schools, further divided into class units. The procedure took place during school-time. Written informed consent was obtained from parents of participating students prior to participating in the study. Students were asked to complete on-line questionnaires. Teachers oversaw questionnaire completion and were responsible for securing appropriate environment for uninterrupted participation. Anonymity was ensured for all the students involved (Jeriček Klanšček et al. 2015).

Measures

The standardized HBSC self-reporting questionnaire encompasses an international base section (mandatory part) and an optional part with a series of questions for every local coordinating team to choose from, covering a variety of health-related topics (e.g. demographic data, eating behaviour, body image, physical activity, risk taking behaviour ...). Variables of interest to us were derived from both sections. Data on demographics (including gender), bullying, family support and multiple health complaints were drawn from the base section, while data on loneliness, depression and suicidal ideation were from the optional part. All parts of the questionnaire were in Slovene.

The presence of suicidal ideation was defined through a 'yes' response on the following item: "I have had thoughts about suicide in the last 12 months".

Depressive feelings were considered present if adolescents answered positively to: "In the last 12 months have you

ever been so sad or desperate that, for a week or more, you could not participate in your usual activities?”

Loneliness was measured with the following question: “Think about your last week ... Have you felt lonely?”. Possible answers were: *never*; *seldom*; *often*; *very often*; *always*. Due to unequal distribution among different categories, we decided to categorize the answers with *never*; *seldom*; *often*; *and, very often or always*.

Health complaints were measured answering the question: “In the last 6 months, how often have you experienced headaches, stomach pain, back pain ...?”. Specific health complaints were presented as answer-categories along with varying levels of frequency: *seldom or never*; *almost every month*; *almost every week*; *almost every day*. According to International Report (Jeriček Klanšček et al. 2015), multiple health complaints were considered present if the respondents reported having two or more complaints more than once a week in the last 6 months.

The level of being bullied was assessed by the following question: “In the last few months, how often were you bullied in school?”. The original answering categories were: *I have not been bullied in school*; *it happened only once or twice*; *it happened two or three times in a month*; *it happens once per week*; *it happens several times in a week*. The answers were later dichotomized with *yes* and *no*.

The level of taking part in bullying was measured with: “In the last few months, how often did you take part in bullying a fellow classmate in school?”. The original answering categories were: *I have not taken part in bullying in the last few months*; *it happened only once or twice*; *it happened two or three times in a month*; *it happens once per week*; *it happens several times in a week*. The answers were later dichotomized with *yes* and *no*.

Loneliness was split into three response categories because the original response category *always* contained very few answers. Health complaints were [according to international consideration (Jeriček Klanšček et al. 2015)] dichotomized into a group with multiple health complaints (two or more complaints more than once a week) and a group with one or fewer health complaints.

Statistical Analyses

First, univariate analyses were performed to examine the association of each independent variable with the presence of suicidal ideation. The relationship of dichotomous variables, such as gender, depression, health complaints, and bullying, was examined using χ^2 tests. Where there were more than two ordered categories (loneliness), Mann–Whitney *U*-test was employed to determine the difference between adolescents with and without suicidal ideation. For continuous data (family support), a *t*-test was conducted to examine

a difference between the two groups. The significance level was set at 0.05.

In the next step, logistic regression model was used to examine independent effects of gender, depressive feelings, loneliness, multiple health complaints, bullying, and family support on suicidal ideation. Except from family support, all predictors were treated as categorical.

Ethics

The study has been approved by the ethics committee – Slovenian ethical committee.

Results

Overall, 15.5% ($n=240$) [95% CI 13.8–17.4%] of 15-year-old students reported having had suicidal thoughts in the past 12 months.

Table 1 summarizes cross-tabulation of suicidal thoughts with gender, depressive feelings, health complaints, being a victim of bullying and taking part in bullying. Significantly more girls than boys reported having had suicidal thoughts in the past year. Suicidal ideation was more frequently reported among adolescents who suffered from symptoms of depression in the past year and who reported multiple health complaints in the last 6 months. Furthermore, suicidal ideation was more frequent among adolescents who confirmed taking part in bullying and who were victims of bullying themselves (over the span of a couple of months).

Table 2 presents the results of binary logistic regression model identifying independent effects of various independent variables on the presence of suicidal ideation in the past year. The logistic regression model was statistically significant, $\chi^2(9)=381.065$, $p<0.001$. The model explained 39.4% of the variance in the presence of suicidal ideation in the past year and correctly classified 87.5% of the individuals.

Depressive feelings and loneliness were the most important predictors of suicidal ideation. Adolescents who reported being lonely often or very often were more than five times more likely to experience suicidal ideation as compared with those who reported never being lonely. Similarly, those who reported symptoms of depression were almost five times more likely to experience suicidal thoughts. Multiple health complaints and taking part in bullying were also significant predictors of suicidal ideation in the past year. Specifically, adolescents who reported having two or more health complaints and participating in bullying behaviours were more likely to have suicidal thoughts compared with those with one or no health complaints and no experience in bullying. Finally, results indicated a protective role of family support against suicidal ideation. The independent effects of

Table 1 Cross tabulation of suicidal thoughts with gender, depressive feelings, health complaints, being a victim of bullying, and taking part in bullying of another

	Total	Suicidal thoughts		95% CI		Chi square	p
		n	(%)	Min (%)	Max (%)		
Gender							
Boys	708	62	8.8	6.9	11.1	45.47	<0.001
Girls	839	178	21.2	18.6	24.1		
Depressive feelings							
Not present	1077	57	5.3	4.1	6.8	282.29	<0.001
Present	464	181	39.0	34.7	43.5		
Health complaints							
One or less	1003	65	6.5	5.1	8.2	178.09	<0.001
Two or more	543	175	32.2	28.4	36.3		
Victim of bullying							
Yes	250	76	30.4	25.0	36.4	50.31	<0.001
No	1282	162	12.6	10.9	14.6		
Took part in bullying							
Yes	381	84	22.0	18.2	26.5	16.23	<0.001
No	1155	155	13.4	11.6	15.5		

Adolescents with and without suicidal ideation also differed in the level of self-reported loneliness and family support. Loneliness was more frequently experienced among those who reported the presence of suicidal thoughts (*Mdn*=3/often) as compared with those who did not (*Mdn*=2/seldom); $U=75936.5$, $z=-13.12$, $p<0.001$. Conversely, adolescents with suicidal ideation reported lower average family support ($M=4.53$, $SD=1.86$) as compared to those without suicidal ideation ($M=5.62$, $SD=1.73$); $t(315.48)=8.40$, $p<0.001$. The assumption of equality of variances was violated (Leven’s $F=13.17$, $p=0.000$), so degrees of freedom were adjusted from 1522 to 315.48

Table 2 Results of the logistic regression model predicting the presence of suicidal thoughts in the past year

	B	SE	OR	95% CI		p
				Lower	Upper	
Constant	-2.94	0.34	0.05			
Gender						
Female (Ref = male)	0.32	0.20	1.38	0.94	2.04	0.101
Depressive feelings						
Present (Ref = not present)	1.60	0.19	4.96	3.39	7.27	< 0.000
Loneliness						
Very often or always	1.67	0.29	5.33	3.00	9.48	< 0.000
Often	0.87	0.29	2.38	1.35	4.20	0.003
Seldom (Ref = never)	0.60	0.25	1.82	1.11	2.97	0.017
Multiple health complaints						
Two or more (Ref = one or less)	0.80	0.19	2.22	1.51	3.24	< 0.000
Victim of bullying						
Yes (Ref = no)	0.25	0.21	1.28	0.85	1.93	0.234
Took part in bullying						
Yes (Ref = no)	0.60	0.20	1.82	1.24	2.67	0.002
Family support	-0.20	0.05	0.82	0.75	0.89	< 0.000

gender and experience with bullying as a victim were low and non-significant.

Discussion

Our aim was firstly to explore the prevalence of suicidal ideation and secondly to investigate the prediction of suicidal ideation with regard to gender, depressive feelings, loneliness, multiple health complaints, bullying and family support. The presence of suicidal ideation was higher in girls and adolescents who experienced multiple health complaints and depressive feelings, in adolescents who have had experience with bullying (both as bullies and victims) and in adolescents who reported lower family support and feelings of loneliness. The strongest predictors of suicidal ideation in our sample were loneliness and depressive feelings. The share of adolescents in our sample who reported the presence of suicidal ideation was 15.5%. This is comparable with some other studies (e.g., van Heeringen and Vincke 2000); however, studies previously conducted on Slovenian samples reported a much higher share of suicidal ideation in adolescents. Tomori (1999), for example, found that suicidal ideation was present in 31.1% of boys and 45.1% of girls. The prevalence of self-reported suicidal thoughts in that study is in accord with the findings of Marušič et al. (2004), who reported about nearly half of adolescent girls and one-third of adolescent boys having had suicide ideation. A higher share of adolescents reporting self-harm ideation was also found in other studies (e.g., Stergar et al. 2010) where it is reported that as much as 30% of adolescents in European countries already had experienced self-harm ideation.

The difference in percentages may on one hand arise from different timeframes within which the studies were conducted. The study by Tomori (1999) and that of Marušič et al. (2004) date back almost two or one decade respectively, when the suicide rate in adolescents in Slovenia was much higher than it is currently (for details, see Roškar et al. 2015). The latter could account for higher prevalence of suicidal ideation. Furthermore, the studies by Tomori (1999) and Marušič et al. (2004) encompassed adolescents up to 19 years of age, while our study focused on 15-year-olds.

On the other hand, the difference may also arise from methodological issues. Namely, in some studies (also in our sample, HBSC) the respondents are being asked about “suicidal ideation” whereas in others (e.g. Strgar et al. 2007) about “self-harm”. Even though some authors (Brunner et al. 2014; Kapur et al. 2013) do not differentiate between self-harm and suicidal ideation (as self-harm is one of the most important predictors of future suicidal behaviour), we must bear in mind that asking adolescents about suicide or self-harm ideation may represent very different things (as explicit in the concept of non-suicidal self injury). Hence,

in order to get valid and cross-comparable data on the prevalence of suicidal ideation, it would be helpful if studies investigating this phenomenon would define what exactly suicidal ideation (or self-harm ideation) is or is not, which is both, a conceptual and methodological challenge. The former needs to take into account the ways and capacities in which clinical categorization takes place, while the latter should consider the significance of subtle linguistic categories when posing questions about different types of suicidal behaviour. Operationalization of the used constructs should also be taken into consideration; in order to obtain valid measures of suicidal ideation, we should make sure whether categorically formulated questions correctly distinguish between people that either experience suicidal thoughts or not and that the phenomenon itself is naturally dichotomous. Furthermore, reporting suicidal ideation in the categorical “present vs. non-present” form may also be difficult for respondents. One option is to expand the categories, making an inquiry into the level of severity or frequency of suicidal thoughts. This concept was similarly proposed by Marušič et al. (2011), when they argued in favour of differentiation between “passive” and “active” forms of suicidal ideation.

Among adolescents who reported having experienced suicidal ideation in the past year, there were significantly more girls than boys, which is similar to previous studies (Tomori 1999; Marušič et al. 2004). Despite the higher prevalence of suicidal ideation in girls, boys are four times more likely to die of suicide (this ratio applies to Slovenia) [e.g. NIJZ - national mortality database (Slovene National Institute of Public Health, 2016); WHO mortality database]. Surprisingly, sex did not turn out to be an important predictor of suicidal ideation. It may be that gender loses on its predictive strength or influence on suicidal ideation in the presence of other more powerful predictors. However, as Neeleman et al. (2004) explain, the path to suicide is qualitatively different—more aggressive and impulsive—with boys (and males in general) than with girls. Hence, in the presence of our data and also those of other studies, researchers should also focus on the gender-specificity of the suicidal process and try to determine what makes boys more often act upon their suicidal ideation in comparison with girls.

Having good mental health is one of the protective factors against suicidal ideation (Brent et al. 1999). An important facet of good mental health is, among others, the absence of depression. We found that almost 40% of adolescents who reported feelings of depression in the past 12 months also admitted to having thoughts about suicide. Only 5.3% of those who did not experience depressive feelings in the last year reported suicidal ideation. Similar findings of concurrence of depression and suicidal ideation were also reported by Samm et al. (2010) on a sample of Estonian schoolchildren. A close link between depression and suicidality emanates from reports of MacLeod (2004): in more than 50% of

those who suffered from depression the presence of suicidal ideation could also be established. Not surprisingly, depression is also one of the most common diagnoses in people that die by suicide (Malone et al. 2000).

Our results show that loneliness also proves to be a risk factor in suicidal ideation. The more often a person describes having feelings of loneliness, the more likely is it that he or she will have had experience of suicidal ideation. Having a strong social network works as a protective factor and safety net in many areas of a person's life (Brent et al. 1999). For example, Lasgaard et al. (2011) found that loneliness was a correlate of depressive symptoms but did not predict suicide ideation in adolescents. On the other hand, it is well known that depression is associated with suicidality (e.g., Samm et al. 2010; Malone et al. 2000). Studying loneliness in relation to suicidality is therefore important; however, loneliness is not only assessed by a person's access to other people and their support (although this is of crucial importance), but more likely by their perception of his or her social standing. It is a subjective measure and thus not so easily accessible to professionals working with adolescence in communal settings. Last but not least, loneliness and depression were the strongest predictors of suicidal ideation in our logistic regression model.

As reported by Nakao et al. (2002), the number of somatic symptoms predicted suicidal ideation. Our findings show that adolescents with two or more health complaints were more likely to report the presence of suicidal thoughts than those with fewer than two. Not all health complaints are equally important warning signs of reduced well-being. Their specific relatedness to different psychological states may vary greatly (Nakao et al. 2002). Health complaints can be very different from one another and may have their respective causes. However, regardless of the nature of these complaints, it remains important to note that feelings of pain or other types of bodily discomfort, is a risk factor to personal and psychological well-being. It is possible that suicidal thoughts stem from a common source or that the health complaints are the manifestation of already present suicidal ideation.

Similar to findings of Mark et al. (2013), we too found that family support is a good protective factor against suicidal ideation. Namely, suicidal ideation was more present in adolescents who reported lower family support, which is in line with findings by Samm et al. (2010). Family support can be represented by a number of examples ranging from emotional to instrumental and also financial. It may offer a counterbalance to feelings of loneliness and lowered self-esteem (and subsequently potential depressive feelings which are linked to suicidality), and also crucial support in school-related areas. The latter seem to be more and more important in youth culture and continue to represent important aspects of a person's resilience (Ferguson et al. 2003).

Not surprisingly bullying, whether being the victim or the bully, increases the adolescents' probability of experiencing suicidal ideation. However, in our logistic regression model we found only the participation in bullying to be a significant predictor of suicidal behaviour. This finding could be explained with a relatively strong relationship between the two variables, with 53.2% of the victims of bullying also participating in bullying and 34.9% of bullies also being victims of bullying. Perpetration of bullying, as proposed by others (e. g. Prinstein et al. 2000; Kaltiala-Heino et al. 1999) is strongly connected with the often-present social exclusion of perpetrators and high possibility of disadvantaged family backgrounds. Bonanno and Hymel (2010) pointed to the important role of good social standing as a buffer when it comes to bullying. Adolescents who have the opportunity to gather support from their peers are less likely to develop depressive feelings as a result of bullying. In the recent international study with 11,110 participants with the mean age of 14.9 years (Klomek et al. 2016) victimization by bullying was found to be a strong predictor of direct self-injurious behaviour, regardless of the type of victimization (relational, verbal, and physical) and victim's gender. Screening of bullied children for self-injurious behaviour is recommended, as well as screening children who harm themselves, to identify victimization.

Our study has drawbacks that should be mentioned. Possibly the major limitation derives from the quality of data; presence of suicidal ideation and depressive feelings were measured categorically by only one question. Accordingly, the participants had to choose between two options that may not fully represent their self-assessment. This has implications on the methodology itself, since it limits the analysis and consequentially the interpretation of the obtained results. Furthermore, the data were gathered by the means of an anonymous questionnaire. We were, therefore, only able to gather information on the prevalence of suicidal ideation (and other related factors) but were not able to identify, and possibly offer help to, individuals at risk. In order to ensure a minimum of intervention, contacts of help sources were listed after the question of suicidal ideation. Furthermore, our data took into account only traditional aspects of bullying, ignoring cyberbullying as one of the emergent forms that is no less harmful (Hinduja and Patchin 2010).

Despite the mentioned limitations our results contribute new information to research on suicide ideation and related factors on Slovenian samples of adolescents and add to the state of the art in this area in general. Taking the percentage of explained variance into account, we should investigate other interpersonal factors and personality traits that may play a role in experiencing suicidal ideation in adolescence. Knowing about the risk factors of suicidal ideation in adolescence gives us the opportunity to establish a system for monitoring problem behaviours in children and young

adolescents in order to act early against the development of suicidal process (e.g., Kim et al. 2005.)

Conclusion

The findings of our study show that suicidal ideation is more prevalent in girls, in those with depressive feelings, in adolescents who report higher level of loneliness and multiple health complaints and those who report of lower family support. Suicidal ideation was more frequent in adolescents involved in bullying, either as the victim or the bully. The most important predictors of suicidal ideations proved to be loneliness and depressive feelings. Being able to identify adolescents with heightened risk of suicidal ideation is an important step toward early suicide ideation detection and management and deserves more attention in the future.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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