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Suicidal thoughts and depressive feelings amongst Estonian schoolchildren: effect of family relationship and family structure

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Abstract Depressive feelings and suicidal ideation in a non-clinical sample of adolescents in Estonia were analysed in the context of family structure, mutual relationships amongst family members and schoolchildren's preferences regarding intimate personal contacts with particular family members. Data from the WHO collaborative study 'Health Behaviour in School-aged Children 2005/2006' (HBSC) were used. A representative sample of schoolchildren aged 11, 13 and 15 years completed the semi-structured questionnaire. The analyses included only adolescents living in households with at least one birth parent. The subjects were 4,389 schoolchildren (2,178 boys and 2,211 girls), who were divided into three groups based on: (1) suicidal thoughts, with or without depressive feelings; (2) depressive feelings; and (3) neither suicidal thoughts nor depressive feelings. Multinomial logistic regression was used. The proportion of depressive feelings increased with age for both boys and girls. Girls expressed depressive feelings more frequently than boys from ages 13

and 15 years, and suicidal thoughts from age 15 years. Self-reported satisfaction with relationships in the family reduced the likelihood of depressive feelings and suicidal thoughts. Good communication with the parents reduced the likelihood of suicidal thoughts in all age groups. Adolescents who were satisfied with their family relationships suffered less frequently from depressive feelings and suicidal thoughts. The best environment for an adolescent was a family with both birth parents. Of the adolescents in 'non-intact' families, those with a step-parent in the family showed suicidal thoughts more frequently than those in single-parent families. Associations between family-related variables and suicidal thoughts were significant even after adjusting for family economic deprivation score.

Keywords Depressive feelings · Suicidal thoughts · Adolescent · Relationships in family · Economic deprivation

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Introduction

Most of the authors describe suicide as a process gradually increasing from weariness of life to a desire to die, suicidal thoughts, suicide attempts and suicide. Suicidal behaviour is frequently associated with depression [1–3]. Descriptive epidemiology of children's and adolescents' suicidal behaviour shows, in a non-clinical sample of schoolchildren, self-reported suicidal ideation in approximately 1–14%, and depressive symptoms in 18–44% of cases [4–7]. The risk of developing suicidal behaviour is thought to be associated with cumulative exposure to a range of factors: social and family circumstances, personality, traumatic life experiences and mental health [3, 8–15].

Depression impacts negatively growth and development, school performance, peer or family relationship and may lead to suicide [16]. Cognitive distortions are associated with depression. Depressed individuals have been shown to have a negative view of self, their current environment and the future [17]. Symptom expression may vary depending on the stage of development, and some adolescents may have difficulty identifying and describing internal mood stages [16]. To differentiate depression from normal variance in the mood of adolescents, clinical depression is associated with functional impairment. It is mediated through intensity, duration and lack of responsiveness of depressed mood and associated symptoms, and it is described as a change from prior behaviour [17].

To explain characterising depression, Wasserman indicated the importance of the complicated interplay between the individual, his unique personal history, inherited biological determinants and how these factors are modified by the psychosocial environment [18]. A thorough review by Zalsman et al. on topics of depressive disorder in children and adolescents shows that developmental factors contributing to an increased risk of depression include family discord, parental psychopathology, mental illness, experimentation with tobacco, drugs and alcohol, and decreased adult supervision and communication [17]. Social support serves as a buffer against the negative impact of life stress.

Children's vulnerability to suicidal behaviour depends heavily on the interactive effects within the family [19]. Children and adolescents who are dissatisfied with their social support tend to suffer from depressive symptoms [20, 21], and low family support is a predictor of adolescents' suicide attempts [22]. Family resources are often seen in terms of relationships between parents and children, but the importance of other supportive relationships (grandparents, siblings) has also been described [23, 24].

Previous studies have documented the adverse effects of changes in family structure on children's well-being, and pointed out that, compared with children brought up in intact families with two birth parents, children whose family structure is weaker are more likely to have emotional and psychological problems [25]. The prevalence of behavioural and emotional symptoms is lowest in children living with both their birth parents and highest amongst children living away from their biological parents [26]. Suicidality emerges as a result of complex interaction amongst social factors, childhood care and the influence of living in a single-parent home [27]. Children in lone-parent families and stepfamilies are at a disadvantage, in cognitive, emotional and behavioural terms, compared with those in two-parent families [12, 25]. Previous findings indicated to mechanisms that connected mental health to the economic status of an adolescent [9, 28]. Poor self-

rated mental health and multiple health complaints are more common in lower socio-economic groups [29].

Sabbath indicates that the voluntary act of taking one's own life represents a failure in the communication between an individual and his meaningful relations, together with an inability to cope with the stresses of life [30].

Our study relates to the onset of adolescence and the challenge of its physical and emotional changes [29]. The search for contributing factors is important, especially in Estonia, a country with a high overall suicide rate and, in particular, an elevated youth suicide rate [31].

The aim of our study was to examine schoolchildren's depressive feelings and suicidal thoughts based on gender and age in relation to (1) subjective estimation of satisfaction with relationships in the family, (2) family structure, (3) perceived ease of talking about worries to family members, and (4) family economic deprivation. The following hypotheses are tested: H1, adolescents with suicidal thoughts and depressive feelings are less satisfied with their family relationships; H2, adolescents with suicidal thoughts and depressive feelings find it harder to talk to their family members about their worries; H3, adolescents living with both birth parents have less suicidal thoughts and depressive feelings in comparison to adolescents living in non-intact families; H4, adolescents with suicidal thoughts and depressive feelings live in economically more deprived families.

Methods

'Health Behaviour in School-aged Children' (HBSC), a WHO Collaborative Cross-national Study, is an international research study that aims to gain new insight into, and increase our understanding of, health behaviour, health, well-being, lifestyles and social contexts amongst schoolchildren [32].

Subjects

The study was carried out amongst a random sample of Estonian schoolchildren in the context of the WHO collaborative HBSC study. Cross-sectional, school-based, anonymous questioning was conducted during the 2005/2006 academic year, with the standard methodology used in the HBSC study [32]. In accordance with the HBSC guidelines, a two-stage random sampling procedure was used [33]. This yielded a sample of 5,707 students. From this sample, 4,791 remained (908 students were absent on the day of the survey due to the very low outdoor temperature, 8 students refused to complete the questionnaires) and 90 questionnaires were completed incorrectly. The initial national data file was therefore composed of 4,701

subjects. Following the data-cleansing process at the International HBSC databank in Bergen, Norway, the Estonian national data set included data on 4,477 subjects within the prescribed age limits.

Our analysis was performed only on children living in households with at least one birth parent, mother or father ($n = 4,389$; 2,178 boys and 2,211 girls). Schoolchildren aged 11 ($n = 1,404$; 683 boys and 721 girls), 13 ($n = 1,434$; 712 boys and 722 girls) and 15 ($n = 1,544$; 779 boys and 765 girls) years old were the targets for the study. Seven subjects did not indicate their age. Mean ages were 11.8 (SD = 0.3), 13.8 (SD = 0.4) and 15.8 years (SD = 0.4), respectively.

Data were collected by means of self-completed, standardised questionnaires in the classroom. To guarantee anonymity and confidentiality, the questionnaires were administered by a person from outside the school. The survey was approved by the Ethics Review Committee on Human Research of the University of Tartu. The study was voluntary, based on a written agreement with the representative of parents on each school council.

Instrument

The HBSC international standard questionnaire has been translated into Estonian, then (for checking translation) back-translated (blind translation) into English and compared against the original in the international coordinating centre. We chose self-reported mental health indicators (such as suicidal ideation and feeling depressed) and the following variables regarding schoolchildren's family environment, classified by gender and age group (11, 13 and 15 years):

- (a) the respondents' subjective satisfaction with relationships amongst members of the family that the children were living with;
- (b) perceived ease of talking about worries to family members;
- (c) family structure;
- (d) family economic deprivation.

Self-assessed depressiveness in schoolchildren was measured by the frequency of 'yes' and 'no' responses to the following question: 'Over the past 12 months, have you sometimes, daily for 2 weeks or more at a time, felt so sad that you have given up your usual activities?' The presence of suicidal ideation was explored variously, according to age. The 11-year-olds were asked: 'Over the past 12 months, have you ever had a serious thought that it would be better if you weren't alive any more?' The 13- and 15-year-olds were asked: 'Over the past 12 months, have you ever had a serious thought of killing yourself (suicide)?'

For validation of one-item questions about suicidal thoughts and depressive feelings, subjective health complaints were measured by the HBSC symptom checklist scale from responses to the question "How often during the last 6 months have you had the following complaints (headache, stomachache, backache, feeling low, irritable, nervousness, sleeping difficulties, dizziness)?" The five options were 'almost every day', 'more than once a week', 'almost every week', 'almost every month' and 'rarely or never'. Qualitative validations of the scale have suggested that each negative complaint impacts daily life and well-being [28, 34]. The responses were recoded to the following categories: (1) 'yes', if the answers were 'almost every day', 'more than once a week' and 'almost every week'; (2) 'no', if the answers were 'almost every month', 'rarely or never'.

The logistic regression method was used to compare items of suicidal thoughts and depressive feelings with items of subjective health complaints. Recurrent subjective health complaints were significantly associated with higher likelihood of suicidal thoughts ('no', 'yes') and depressive feelings ('no', 'yes'). The odds ratios with 95% confidence intervals (CI) were statistically significant ($p < 0.001$) for all health complaints in all age groups, except backache at age 11 years ($p < 0.05$).

The odds ratio for suicidal thoughts ranged between 1.6 (back ache) and 3.8 (nervousness) at age 11 years, between 2.3 (back ache) and 4.9 (nervousness) at age 13 years, and between 2.1 (back ache) and 5.1 (feeling low) at age 15 years. The odds ratio for depressive feelings ranged between 2.1 (stomach ache) and 3.4 (feeling low) at age 11 years, between 2.0 (head ache) and 5.0 (feeling low) at age 13 years, and between 1.9 (back ache) and 4.7 (feeling low) at age 15 years.

Suicidal thoughts and depressive feelings associated significantly with subjective health complaints, which allowed us to create a suicidality–depressiveness index with the following categories: (1) presence of suicidal thoughts, with or without depressive feelings; (2) presence of depressive feelings without suicidal thoughts; and (3) without suicidal thoughts or depressive feelings, a reference group referred to in our study as 'others'.

The question showing satisfaction with mutual relationships in the family was formulated as follows: 'How satisfied are you with the relationships amongst members of your family?' Assessment ranged from 0 to 10, with 0 denoting very poor and 10 very good relationships.

Regarding quality of communication with family members, the following question was asked: 'How easy is it for you to talk about your worries to the following people: mother, father, stepmother, stepfather, elder sister, elder brother, grandmother and grandfather?' The five options were 'very easy', 'easy' (both recoded to 'easy'),

‘difficult’, ‘very difficult’ (both recoded to ‘difficult’) and ‘I do not have or met such a person’. The ‘family structure’ section included questions about the respondent’s permanent home (or the one they live in most of the time) and the other people living there (parents, step-parents, grandparents or others). The schoolchildren’s families were therefore assigned to three categories according to family type: (1) birth father and birth mother in the family, (2) lone birth parent (mother or father) and (3) one birth parent and one step-parent (stepfather or stepmother).

The adolescents’ material living conditions were measured in the HBSC study by Family Affluence Scale (FAS). FAS is a validated alternative evaluation of self-reported socio-economic status of adolescents for measuring family affluence and economic deprivation [35–37]. We used items from the FAS questionnaire to construct our family

economic deprivation index. The questions were: ‘Does your family own a car, van or truck?’ (‘no’, ‘yes, one’ and ‘yes, two or more’). ‘Do you have your own bedroom for yourself?’ (‘no’, ‘yes’). ‘During the past 12 months, how many times did you travel away on holiday with your family?’ (‘not at all’, ‘once’, ‘twice’, ‘more than twice’). ‘How many computers does your family own?’ (‘none’, ‘one’, ‘two’, ‘more than two’). The number of ‘no’ responses to these four items was counted, whereby higher score (range from 0 to 4) denotes deeper deprivation.

Statistical procedures

Data analyses were performed with SPSS 15.0. The impact of family factors on suicidal thoughts and depressive feelings was evaluated using multinomial logistic regression and summarised by means of odds ratios (OR) at a 95% confidence interval (CI). The suicidality–depressiveness index described above was used as the dependent variable, and family-related factors and family economic deprivation index were used as independent variables in logistic regression analyses.

Table 1 Presence of family members with whom adolescents could talk about worries

Family Members	Age 11 years		Age 13 years		Age 15 years		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Mother	1,346	95.9	1,381	96.3	1,502	97.3	4,229	96.4
Father	1,212	86.3	1,206	84.1	1,285	83.2	3,703	84.4
Stepmother	178	12.7	161	11.2	140	9.1	479	10.9
Stepfather	280	19.9	295	20.6	264	17.1	839	19.1
Grandmother	1,272	90.6	1,242	86.6	1,334	86.4	3,848	87.7
Grandfather	992	70.7	952	66.4	942	61.0	2,886	65.8
Elder sister	620	44.2	644	44.9	734	47.5	1,998	45.5
Elder brother	682	48.6	706	49.2	760	49.2	2,148	48.9

Results

Descriptive analyses

Of all the subjects ($n = 4,389$), 97.3% ($n = 4,271$) lived with their birth mothers and 68.5% ($n = 3,006$) with their birth fathers; 65.9% ($n = 2,889$) lived with both birth parents; 18.7% ($n = 820$) lived with a lone birth parent;

Table 2 Distribution of depressive feelings and suicidal thoughts based on age and gender

	Age 11 years			Age 13 years			Age 15 years		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Suicidal									
<i>N</i>	159	172	331	81	82	163	82	126	208
%	23.6	24.1	23.8	11.4	11.4	11.4	10.6	16.5	13.5
Depressed									
<i>N</i>	102	117	219	135	194	329	193	252	445
%	15.1	16.4	15.8	19.1	27.0	23.1	24.9	33.1	29.0
Others									
<i>N</i>	413	426	839	492	442	934	500	384	884
%	61.3	59.6	60.4	69.5	61.6	65.5	64.5	50.4	57.5
Total									
<i>N</i>	674	715	1,389	708	718	1,426	775	762	1,537
%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Suicidal the child has suicidal thoughts, with or without depressive feelings

Depressed the child has depressive feelings without suicidal thoughts

Others the child has neither suicidal thoughts nor depressive feelings

and 15.5% ($n = 680$) lived with one birth parent and one step-parent. Table 1 shows the presence of family members with whom adolescents could talk about their worries.

The distribution of depressive feelings and suicidal thoughts by age and gender is presented in Table 2. The 30 non-responders did not answer the question on suicidal thoughts or depressive feelings. The prevalence of depressive feelings rose with age for both boys and girls ranging between 15.8 and 29.0%. Suicidal ideation was more prevalent in 11-year-olds (23.8%) compared to 13- and 15-year-olds (11.4 and 13.5%, respectively).

Family relationships: risk and protective factors amongst boys

In our study, we examined the influence of perceived satisfaction with the quality of family relationships. Amongst the boys, those who were more satisfied with their family relationships had a lower risk of depressive feelings (odds ratio for unit increase on a ten-point scale: OR = 0.8 and CI = 0.71–0.90 at age 11 years; OR = 0.8 and CI = 0.73–0.89 at age 13 years; OR = 0.9 and CI = 0.81–0.96 at age 15 years). Similar results were found for suicidal thoughts in all age groups (OR = 0.7 and CI = 0.62–0.76 at age 11 years; OR = 0.7 and CI = 0.62–0.78 at age 13 years; and OR = 0.7 and CI = 0.61–0.96 at age 15 years).

Table 3 shows that boys who reported easier communication with their mother had lower risk of depressive feelings at age 11 years and lower risk of suicidal thoughts in all age groups, in comparison to boys who found it difficult to communicate with their mother. Boys who had good communication with their father had lower risk of depressive feelings and suicidal thoughts in all age groups. Ease of communication with their stepfather was negatively associated with a higher risk of depressive feelings at age 13 years (Table 3).

Boys who reported easy communication with an elder sister were less likely to have suicidal thoughts at ages 11 and 15 years, compared to boys who had poor communications with their elder sister. Good communication with an elder brother was negatively associated with a higher risk of suicidal thoughts at ages 11 and 15 years, and of depressive feelings at ages 13 and 15 years. Ease of communication with the grandparents was negatively associated with a higher risk of suicidal thoughts and depressive feelings at age 11 years (Table 3).

In the section on family structure, the presence of a step-parent in the family was associated with an increased risk of suicidal thoughts at ages 11 and 13 years (Table 3), in comparison to those living with both of their birth parents. Boys living in materially more deprived families were more likely to have suicidal thoughts at the age of 11 years

(odds ratio for unit increase on a four-point scale: OR = 1.2 and CI = 1.01–1.49).

Family relationships: risk and protective factors amongst girls

Depressiveness and suicidal thoughts were less frequent in respondents who were more satisfied with their family relationships. Those girls who were more satisfied with their family relationships had a lower risk of depressive feelings at ages 13 (odds ratio for unit increase on a ten-point scale: OR = 0.8 and CI = 0.76–0.91) and 15 years (OR = 0.9 and CI = 0.84–0.99), and of suicidal thoughts in all age groups (OR = 0.8 and CI = 0.69–0.83 at age 11; OR = 0.7 and CI = 0.61–0.76 at age 13; and OR = 0.7 and CI = 0.63–0.76 at age 15 years).

Table 4 shows that in girls, ease of communication with their mother was associated with a lower risk of depressive feelings at age 13 years and reduced risk of suicidal thoughts in all age groups. Ease of communication with the father was negatively associated with a higher risk of depressive feelings at ages 13 and 15 years and of suicidal thoughts in all age groups. Good communication with the stepmother was negatively associated with a higher risk of depressive feelings at age 15 years. Good communication with the stepfather was negatively associated with higher risk of suicidal thoughts at age 11 years (Table 4).

Girls who could communicate easily with their elder sister had a lower risk of suicidal thoughts at age 11 years, compared to girls who had poor communications with their elder sister. Good communication with an elder brother was negatively associated with a higher risk of suicidal thoughts at age 15 years. Ease of communication with the grandparents was negatively associated with a higher risk of suicidal thoughts at ages 11 and 15 years (Table 4).

In the section on family structure, the presence of a step-parent in the family was associated with an increased risk of suicidal thoughts in all age groups and for depressive feelings at age 13 years. Fifteen-year-olds who lived with a single parent were more likely to have suicidal thoughts (Table 4) than those who lived with two birth parents.

Girls living in materially more deprived families were more likely to have suicidal thoughts at ages 11 (odds ratio for unit increase on four-point scale: OR = 1.2 and CI = 1.02–1.46) and 15 years (OR = 1.5 and CI = 1.20–1.76).

Multinomial logistic regression model

A multinomial logistic regression model was used to examine the relationship between family structure variables and suicidal thoughts and depressive feelings. Table 5 shows the logistic regression model by age groups

Table 3 Odds ratios for suicidal thoughts and depressive feelings in relation to family-related factors (ease of talking about worries and family structure variables), logistic regression for boys, based on age group

Family member		Age 11 years		Age 13 years		Age 15 years	
		OR	95% CI	OR	95% CI	OR	95% CI
Suicidal versus others							
Mother	Easy	0.3***	0.17–0.54	0.3***	0.18–0.63	0.1***	0.08–0.23
	Difficult	1.0		1.0		1.0	
Father	Easy	0.5***	0.29–0.73	0.3***	0.17–0.53	0.4***	0.21–0.59
	Difficult	1.0		1.0		1.0	
Stepmother	Easy	0.8	0.29–2.29	0.6	0.17–2.26	2.1	0.41–10.63
	Difficult	1.0		1.0		1.0	
Stepfather	Easy	0.9	0.41–2.05	1.2	0.48–3.18	0.4	0.09–1.48
	Difficult	1.0		1.0		1.0	
Elder sister	Easy	0.4**	0.22–0.72	0.7	0.32–1.32	0.3***	0.16–0.62
	Difficult	1.0		1.0		1.0	
Elder brother	Easy	0.3***	0.15–0.46	1.5	0.60–3.79	0.4*	0.21–0.87
	Difficult	1.0		1.0		1.0	
Grandmother	Easy	0.3***	0.19–0.49	0.9	0.50–1.63	0.6	0.38–1.06
	Difficult	1.0		1.0		1.0	
Grandfather	Easy	0.3***	0.20–0.54	0.8	0.41–1.41	0.7	0.37–1.19
	Difficult	1.0		1.0		1.0	
Lone birth parent		0.9	0.52–1.58	1.3	0.66–2.51	0.9	0.52–1.72
1 birth parent, 1 step-parent		1.9**	1.17–3.09	3.4***	1.93–5.96	0.8	0.40–1.79
Both birth parents		1.0		1.0		1.0	
Depressed versus others							
Mother	Easy	0.3***	0.16–0.58	0.6	0.33–1.03	0.7	0.45–1.15
	Difficult	1.0		1.0		1.0	
Father	Easy	0.4***	0.24–0.69	0.5**	0.31–0.78	0.5***	0.30–0.66
	Difficult	1.0		1.0		1.0	
Stepmother	Easy	2.6	0.67–9.88	1.0	0.25–3.83	1.3	0.43–3.89
	Difficult	1.0		1.0		1.0	
Stepfather	Easy	3.1	0.77–12.35	0.4*	0.13–0.93	0.7	0.31–1.54
	Difficult	1.0		1.0		1.0	
Elder sister	Easy	0.5	0.23–1.10	0.8	0.41–1.45	0.9	0.49–1.58
	Difficult	1.0		1.0		1.0	
Elder brother	Easy	0.5	0.22–1.08	0.6*	0.31–0.98	0.5*	0.32–0.86
	Difficult	1.0		1.0		1.0	
Grandmother	Easy	0.6	0.33–1.09	0.9	0.57–1.41	0.8	0.56–1.19
	Difficult	1.0		1.0		1.0	
Grandfather	Easy	0.5**	0.25–0.82	1.0	0.60–1.55	0.9	0.56–1.31
	Difficult	1.0		1.0		1.0	
Lone birth parent		1.3	0.75–2.36	1.2	0.71–1.92	1.0	0.65–1.53
1 birth parent, 1 step-parent		0.9	0.45–1.82	0.9	0.46–1.61	1.1	0.69–1.85
Both birth parents		1.0		1.0		1.0	

OR odds ratio, 95% CI confidence interval at 95% confidence level

Suicidal the child has suicidal thoughts, with or without depressive feelings

Depressed the child has depressive feelings without suicidal thoughts

Others children with neither suicidal thoughts nor depressive feelings

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

Table 4 Odds ratios for suicidal thoughts and depressive feelings in relation to family-related factors (ease of talking about worries and family structure variables), logistic regression for girls, based on age group

Family member		Age 11 years		Age 13 years		Age 15 years	
		OR	95% CI	OR	95% CI	OR	95% CI
Suicidal versus others							
Mother	Easy	0.3***	0.13–0.49	0.3***	0.16–0.59	0.2***	0.14–0.38
	Difficult	1.0		1.0		1.0	
Father	Easy	0.5***	0.31–0.73	0.4***	0.21–0.63	0.4***	0.25–0.65
	Difficult	1.0		1.0		1.0	
Stepmother	Easy	1.2	0.48–3.17	2.0	0.60–6.43	0.3	0.09–1.17
	Difficult	1.0		1.0		1.0	
Stepfather	Easy	0.5*	0.22–0.95	0.4	0.15–1.29	1.7	1.70–4.15
	Difficult	1.0		1.0		1.0	
Elder sister	Easy	0.4**	0.18–0.69	0.6	0.22–1.33	1.1	0.48–2.63
	Difficult	1.0		1.0		1.0	
Elder brother	Easy	0.6	0.37–1.02	0.6	0.30–1.28	0.5*	0.29–0.99
	Difficult	1.0		1.0		1.0	
Grandmother	Easy	0.5**	0.31–0.78	0.6	0.35–1.01	0.4***	0.27–0.66
	Difficult	1.0		1.0		1.0	
Grandfather	Easy	0.4***	0.28–0.67	0.7	0.37–1.23	0.5*	0.28–0.93
	Difficult	1.0		1.0		1.0	
Lone birth parent		1.3	0.84–2.06	1.1	0.59–2.17	2.3***	1.43–3.76
1 birth parent, 1 step-parent		1.6*	1.01–2.66	2.1**	1.19–3.69	1.8*	1.03–2.99
Both birth parents		1.0		1.0		1.0	
Depressed versus others							
Mother	Easy	1.1	0.37–3.40	0.5**	0.27–0.77	0.7	0.46–1.18
	Difficult	1.0		1.0		1.0	
Father	Easy	0.7	0.39–1.08	0.6**	0.41–0.87	0.6*	0.45–0.91
	Difficult	1.0		1.0		1.0	
Stepmother	Easy	3.0	0.76–11.40	0.7	0.26–1.88	0.2*	0.03–0.71
	Difficult	1.0		1.0		1.0	
Stepfather	Easy	0.6	0.25–1.47	1.1	0.57–2.32	1.0	0.48–2.21
	Difficult	1.0		1.0		1.0	
Elder sister	Easy	2.8	0.63–12.31	0.9	0.46–1.69	0.6	0.31–1.13
	Difficult	1.0		1.0		1.0	
Elder brother	Easy	1.0	0.50–1.80	1.3	0.73–2.15	0.8	0.49–1.31
	Difficult	1.0		1.0		1.0	
Grandmother	Easy	1.0	0.52–1.73	0.9	0.60–1.13	0.8	0.57–1.17
	Difficult	1.0		1.0		1.0	
Grandfather	Easy	0.7	0.39–1.09	0.9	0.64–1.47	0.7	0.47–1.13
	Difficult	1.0		1.0		1.0	
Lone birth parent		1.1	0.67–1.93	1.4	0.90–2.16	1.2	0.82–1.87
1 birth parent, 1 step-parent		1.5	0.83–2.56	1.8**	1.14–2.71	1.1	0.70–1.68
Both birth parents		1.0		1.0		1.0	

OR odds ratio, 95% CI confidence interval at 95% confidence level

Suicidal the child has suicidal thoughts, with or without depressive feelings

Depressed the child has depressive feelings without suicidal thoughts

Others children with neither suicidal thoughts nor depressive feeling

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

Table 5 Predictors of suicidal thoughts and depressive feelings in the context of family-related factors (ease of talking about worries with mother or father, family structure variables and family economic deprivation) and gender, multinomial logistic regression model based on age group

Family-related variables and gender		Age 11 years		Age 13 years		Age 15 years	
		OR	95% CI	OR	95% CI	OR	95% CI
Suicidal versus others							
Family economic deprivation		1.1	0.97–1.30	1.1	0.89–1.30	1.3**	1.08–1.51
Gender	Boys	1.0	0.73–1.25	1.0	0.70–1.44	0.5***	0.39–0.76
	Girls	1.0		1.0		1.0	
Mother	Easy	0.3***	0.20–0.52	0.4***	0.28–0.71	0.2***	0.15–0.31
	Don't have mother	0.3*	0.10–0.82	2.3	0.87–5.95	0.2**	0.05–0.66
	Difficult	1.0		1.0		1.0	
Father	Easy	0.6**	0.43–0.84	0.4***	0.26–0.58	0.5***	0.36–0.76
	Don't have father	0.8	0.46–1.32	0.6	0.34–1.10	0.8	0.45–1.30
	Difficult	1.0		1.0		1.0	
Family Structure	Lone birth parent	1.0	0.63–1.47	1.1	0.61–1.82	1.1	0.71–1.79
	1 birth parent, 1 step-parent	1.7**	1.13–2.51	2.2***	1.37–3.55	1.2	0.75–2.02
	Both birth parents	1.0		1.0		1.0	
Depressed versus others							
Family economic deprivation		1.0	0.86–1.21	1.0	0.84–1.11	1.0	0.84–1.10
Gender	Boys	0.9	0.68–1.26	0.7**	0.52–0.89	0.6***	0.50–0.80
	Girls	1.0		1.0		1.0	
Mother	Easy	0.5*	0.29–0.89	0.6**	0.38–0.84	0.8	0.56–1.11
	Don't have mother	0.3	0.08–1.16	0.4	0.10–1.37	0.6	0.23–1.54
	Difficult	1.0		1.0		1.0	
Father	Easy	0.6**	0.41–0.87	0.6**	0.46–0.85	0.6***	0.43–0.73
	Don't have father	0.7	0.40–1.37	0.7	0.41–1.09	0.7	0.48–1.10
	Difficult	1.0		1.0		1.0	
Family Structure	Lone birth parent	1.2	0.74–1.86	1.2	0.83–1.83	1.1	0.76–1.55
	1 birth parent, 1 step-parent	1.2	0.73–1.94	1.2	0.84–1.86	1.1	0.72–1.54
	Both birth parents	1.0		1.0		1.0	

OR odds ratio, 95% CI confidence interval at 95% confidence level

Suicidal the child has suicidal thoughts, with or without depressive feelings

Depressed the child has depressive feelings without suicidal thoughts

Others children with neither suicidal thoughts nor depressive feelings

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

to predict suicidal thoughts and depressive feelings in the context of family-related factors (ease of talking about worries separately with their mother or father, and family structure variables) and gender. The suicidality–depressive index was the dependent variable and the three family-related factors were the independent variables. A variable characterising economic deprivation in the family was included in the regression analysis to statistically control it. Adolescents with depressive feelings and suicidal thoughts were compared to adolescents with neither depressive feelings nor suicidal thoughts.

Gender differences emerged for depressive feelings at ages 13 and 15 years, and for suicidal thoughts at age 15 years. Girls aged 13 and 15 years had a higher risk of

depressive feelings than boys of the same age, and 15-year-old girls had higher risk of suicidal thoughts when compared to 15-year-old boys.

Adolescents who reported easy communication with the mother were less likely to have suicidal thoughts in all age groups and depressive feelings at ages 11 and 13 years, compared to adolescents who had poor communications with their mother. Adolescents aged 11 and 15 years who reported poor communication with their birth mother had an increased risk of suicidal thoughts, when compared to those adolescents who did not have a mother in the family. Good communication with the father was negatively associated with a higher risk of depressive feelings and of suicidal thoughts in all age groups.

The presence of a step-parent in the family was associated with an increased risk of suicidal thoughts at ages 11 and 13 years, in comparison to those living with both of their birth parents. Economic deprivation of the adolescent's family was associated with an increased risk of suicidal thoughts at age 15 years (Table 5).

Discussion

The WHO Collaborative Cross-national Study 'Health Behaviour in School-aged Children' (HBSC) was used as an instrument to analyse the risk for suicidal ideation and depressive feelings in the family context, in a non-clinical sample of Estonian schoolchildren. Family-related variables included family structure, subjective evaluation of satisfaction with the relationships amongst family members and perceived ease of talking about worries to different family members.

Suicidal thoughts and depressive feelings

In total, approximately 40% of schoolchildren reported suicidal ideation and/or depressive feelings. Although this is not a clinical diagnosis but a self-report based on a single question, the finding suggests that a surprisingly high proportion of schoolchildren in Estonia lack psychological well-being in their everyday life.

The prevalence of suicidal thoughts and depressive feelings varied amongst the age groups. The proportion of respondents experiencing depressive feelings rose with age for both boys and girls. In contrast, the highest proportion of respondents reporting suicidal ideation, almost a quarter of the schoolchildren, was found amongst the 11-year-olds, while the proportions of 13- and 15-year-olds with suicidal thoughts were considerably lower. However, the reason for the high rate of suicidal ideation in the youngest group is probably a technical issue, rather than being 'meaningful', since the questions for the assessment of this group's suicidal ideation were worded differently. The 11-year-olds were asked whether they had any serious thoughts that it might be better if they were not alive any more, while the 13- and 15-year-olds were asked directly whether they had ever had any serious thought about killing themselves. The wording of the question the 11-year-olds were asked may reflect on aspects of their relationships, rather than on a suicidal process [3].

Gender differences for depressive feelings started to emerge from the age of 13 years and for suicidal ideation from 15 years, with girls having higher risk in both. This pattern of gender divergence may have both biological and sociological explanations. Biologically, the younger children did not develop to the stage where mental health risk

factors were differentiated; sociologically, the social and family status of the younger age group was not gender-specific [38–40]. Additionally, the higher rate of depression in girls compared with boys after the onset of puberty may be caused by different coping styles or hormonal changes during puberty [17].

Almost half of the 15-year-old girls reported suicidal ideation and/or depressive feelings. This was a significantly higher proportion than amongst the boys. As a previous study has shown, girls tend to manifest internally focused characteristics of depressive symptoms, while boys tend to show more behavioural components [38]. In most countries, suicide rates are considerably higher amongst boys than girls [31].

Family structure

In Estonia, the proportion of families with both birth parents is decreasing, while the proportion of families with single parents and step-parents is rising [29]. Given both this fact and the high prevalence of suicidal ideation and depressive feelings in Estonian schoolchildren, the idea of evaluating associations between children's mental health status and family structure arose.

One tendency that emerged was that living in a single-parent family did not increase the likelihood of boys having suicidal thoughts and/or depressive feelings. The same applied to girls aged 11 and 13 years. The only significant association was found in 15-year-old girls, who had a higher probability of experiencing suicidal thoughts if they had only one parent in the family. From the psychodynamic perspective, one possible implication of the features of a suicidal child's family system may be a symbiotic parent-child relationship: because of particularly intense and rigid interaction with (usually) the mother, the child may not be able to develop autonomous functioning successfully [19]. This could be one possible explanation for the exceptional finding regarding 15-year-old girls' suicidal ideation, although the authors admit that this is sheer speculation and the results of the current study provide no direct indications of such conclusions.

Having a step-parent in the family, compared with living with both birth parents, meant an elevated risk for suicidal thoughts at ages 11 and 13 years. The association between having a step-parent in the family and the adolescent's depressive feelings was less clear. Unfortunately, the current study does not provide any information about the timing of the step-parent's entry into the family. However, one possible explanation for the increased risk of child's suicidal ideation may be that parental attention must now be divided between the child and another family member, the new partner, who may be perceived by the child as an invader. Dilution and deterioration of parental resources in

the family are not conducive to children's mental health and may be important in explaining the effects on the children's emotional and behavioural outcomes [1].

Garniefski and Diekstra have reported an association with an elevated rate of attempted suicide for boys living with a step-parent [41]. In our study, the presence of a step-parent in the family structure was found to increase the probability of adolescent reporting suicidal thoughts. However, good communication quality between the adolescent and the step-parent reduced the depressive feelings in 15-year-old girls with their stepmother and in 13-year-old boys with their stepfather.

Family relationships and communication

Relationships between the members of a family are reflected in an adolescents' mental health [20, 22, 42, 43]. In our study, perceived satisfaction with relationships in the family markedly reduced the likelihood of reporting suicidal ideation and depressive feelings. The quality of the adolescent's family relationships, as part of their psychosocial environment, has an impact not only on their current mental health status, but also on their prospects of developing mental health problems, such as major depression, in later life [44]. However, there have also been research findings showing that depressed children perceive their family environment to be relatively more distressed [45].

Good communication with the mother or father reduces the risk of suicidal ideation in both genders and in all age groups. The same pattern emerges for depressive feelings with one exception only: in 15-year-olds, the ease of talking about worries with their mother has no effect. The results of the present study highlight the importance of close and trusting parent–adolescent relationships. Evidently, if schoolchildren can talk about their worries with their parents, they are less likely to report both suicidal ideation and depressive feelings.

The multinomial regression model revealed that the adolescents who had difficulties in communicating with their mother had a higher probability for suicidal thoughts than those who did not have their mother. Further to the children's social context, we also found relationships with the children's material context. Economic deprivation in the family may contribute to an increased risk for suicidal thoughts at the age of 15 years. Ease of communication with the mother or father is independently associated with decreased risk of suicidal ideation, and living with a step-parent independently is associated with increased risk for suicidal ideation even after adjusting for the presence of economic deprivation variables.

A previous study showed that children from a higher socio-economic background found it easier to communicate with their father, but there were no differences in the

case of the mother [15]. Low familial affluence was associated with poor general health perception and multiple recurrent subjective health complaints [46]. In a longitudinal study, the childhood profile of those at greatest risk of suicidal behaviour included being raised in socio-economic adversity, marital disruption and poor parent–child attachment [9].

Adams et al. [47] indicated that perceived family functioning and mother–adolescent or parent–adolescent dyadic relationships were significantly correlated with levels of depression, hopelessness and self-esteem. Suicidal psychiatric inpatients and suicidal high school students showed no difference in their perceptions of family functioning and mother–adolescent relationships. Both groups reported more distress and family dysfunction than the non-suicidal high school students.

Our study pinpointed the extended family as one possible protective factor against suicidal thoughts and brought out grandparents as significant others, especially for schoolchildren of younger ages. Grandparents had less influence on depressive feelings. Apparently, there are benefits in cross-generational family relationships. One previous study has singled out grandparents as a special resource for children in stepfamilies [48].

Family resources are often seen in terms of relationships with adults, but sibling structure, with the emphasis on the impact of group configuration on social interaction, is another family resource. Our study brought out the possible influence of good communication with an elder sister or elder brother on the child's mental health. In line with previous findings, our study supports the importance of group configuration for siblings' social interaction [49] and of protection against the onset of depression [24].

The boundaries between suicidal thoughts and suicide attempts are not distinct, but fluid, and the outcome is influenced by risk and protective factors [3]. Wasserman indicated that suicidality could be regarded not as an illness, but as an act stemming from the interplay between cognitive, affective and communication factors. The process of engaging in dialogue requires the conversion of abstract thoughts into concrete language. This process may help suicidal people make better sense of their elusive experiences. Moreover, dialogue enables the adolescent to see the issue from another perspective, which can correct previously maladaptive perspectives. To prevent suicidal people from resorting to suicide, it is important to take their every reference to suicide seriously [3].

Conclusion

Adolescents who are more satisfied with their family relationships have less depressive feelings and suicidal thoughts.

The ease of talking about their worries with parents has a protective effect, but grandparents and siblings may also be considered a valuable protective resource. Family structure can have an important role and adolescents who live with both birth parents have fewer depressive feelings and suicidal thoughts. Adolescents who live with a stepparent have more suicidal thoughts than those in single-parent families. Family economic deprivation is a risk factor for suicidal thoughts, but the aforementioned associations between family-related variables and suicidal thoughts remained significant even after adjusting for family economic deprivation. Familial resources should be addressed as protective factors when implementing mental health promotion and suicide prevention programmes.

Limitations

The proportion of schoolchildren not included in our study was 24% of the total sample: for technical reasons (incompleteness of the form), because some were absent from school (mainly because of the low temperature) and other pupils declined to fill in the questionnaire.

The limitation with respect to the methodology was a difference in the wording of the question about suicidality presented to 11-year-olds and to the older age groups (13 and 15 years) that limit direct comparisons between age groups.

The research was limited to schoolchildren's self-reported perceived quality of relationships and ease of communication with family members, and these variables reflect only the emotional side of relationships. As previous studies have indicated, family circumstances afford only a limited understanding of adolescent risk behaviour [50]. There are other environmental-related factors, such as vulnerability through parental psychopathology and substance use, presence of major life events, medical illness, peer relationships, etc., which probably have a major impact on schoolchildren's mental health. Further research is needed to explore the consequences of combinations of several dysfunctional variables.

The HBSC study had a cross-sectional design, which made it impossible to infer causal relationship between cognitions and depressive mood/suicidal ideation. Therefore, the interpretation of these findings needs to be considered in the context of several limitations. For example, dysfunctional family relationships can lead to depressiveness and suicidal ideation, or pre-existing depression can distort the child's perception of his family relationships. Longitudinal studies are needed to draw conclusions about causality.

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