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## Deliberate self-harm in adolescents: Comparison between those who receive help following self-harm and those who do not

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### Abstract

This international comparative study addresses differences between adolescents who engage in deliberate self-harm (DSH) and who receive help following the DSH episode versus those who do not. A standardised self-report questionnaire was completed by pupils aged 14–17 in Australia, Belgium, England, Hungary, Ireland, The Netherlands, and Norway ( $n = 30\,532$ ). An act of DSH in the year prior to the study was reported by 1660 participants. Nearly half (48.4%) had not received any help following DSH, 32.8% had received help from their social network only and 18.8% from health services. Except for Hungary, cross-national comparisons revealed remarkably similar findings.

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Adolescents who had been in contact with health services following DSH reported more often a wish to die, lethal methods, alcohol/drug problems and DSH in the family compared to those who had not. However, those who received no help or help from their social network only were also heavily burdened. © 2008 The Association for Professionals in Services for Adolescents. Published by Elsevier Ltd. All rights reserved.

*Keywords:* Deliberate self-harm; Adolescence; Community survey; Health service; Social network

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## Introduction

In several countries the rates of deliberate self-harm among adolescents who attend A&E Departments have increased (Corcoran, Keeley, O'Sullivan, & Perry, 2003; Hawton et al., 2003). A similar trend has been observed in recent population-based follow-up studies (Pages, Arvers, Hassler, & Choquet, 2004; Rossow, Groholt, & Wichstrøm, 2005). Moreover, these studies show that the rates of deliberate self-harm among adolescents who do not come to the attention of health care services are much higher than the rates derived from hospital registrations (Hawton, Rodham, Evans, & Weatherall, 2002; Pages et al., 2004; de Wilde, 2000; Ystgaard, Reinholdt, Husby, & Mehlum, 2003), supporting the notion that medically referred cases of deliberate self-harm represent the 'tip of an iceberg'.

Findings from population-based studies indicate that some 10–20% of teenagers who engage in deliberate self-harm present to hospital as a result of this act (Hawton et al., 2002; Pages et al., 2004; Ystgaard et al., 2003). These findings indicate that there is a 'hidden population' of distressed adolescents, including some who may have serious mental health problems.

So far, few efforts have been made to examine specific characteristics of adolescents who come into contact with health services following deliberate self-harm compared to those who do not. In a French study an association was found between being hospitalised following deliberate self-harm and problem behaviour (e.g. running away), use of illegal drugs other than cannabis and attending private school among girls, and physical violence and offences among boys (Pages et al., 2004). A study conducted in Norway revealed that low self-esteem, low socio-economic status and little social support were significantly associated with hospitalisation following deliberate self-harm (Groholt, Ekeberg, Wichstrøm, & Haldorsen, 2000). However, no gender differences were taken into account. A further limitation of previous studies is that no comparison was made between hospitalised and non-hospitalised adolescents with regard to both the methods involved in their acts of deliberate self-harm and what motivated the act.

Little is known about what sort of help the teenagers who engage in deliberate self-harm and who have not been hospitalised may have received. One study indicates that a small proportion of those engaging in deliberate self-harm had been in contact with general practitioners or other mental health services and a larger proportion received help only from their social network, especially from friends. Approximately half of the young people had not received help from anyone (Rossow & Wichstrøm, 1997).

In order to facilitate assessment and treatment as well as effective outreach and preventive programmes for adolescents who engage in deliberate self-harm, detailed information on the

characteristics of those who are currently not coming to the attention of the health services is required. The Child and Adolescent Self-harm in Europe (CASE) Study is a large-scale parallel survey conducted in seven countries which addresses the prevalence of deliberate self-harm among adolescents, associated mental health problems and contact with a broad range of health services and other helping sources. Using international comparative data, we have investigated differences between 1) adolescents who engaged in deliberate self-harm and who came to the attention of health services compared to those who did not, and 2) adolescents who engaged in deliberate self-harm and who only received help from their social network compared to those who did not receive any help, with regard to demographic characteristics, type of self-harming behaviour, suicidal intent, mental health problems and negative life events. Considering the comparative data, cross-national comparisons were made, in particular similarities and differences with regard to help-seeking behaviour following deliberate self-harm and associated factors.

## Methods

The CASE study is a school-based survey, conducted in six European regions in Belgium, England, Hungary, Ireland, The Netherlands, Norway, and one region in Australia. A standard methodological approach was adopted across all participating countries. In each country the study was approved by a research ethics committee and school authorities as appropriate.

### Sample

The school-based survey was conducted using a cross-sectional design to include at least 4000 adolescents, with a majority aged 15 and 16 years in each country to provide sufficient power to conduct analyses separately by gender (Madge et al., 2008). The samples were chosen to ensure a representative range of school types for gender, size and school status. The sample characteristics for each country are shown in Table 1. A total of 30 532 young people were included in the international CASE survey dataset. Response rates were generally high ranging from 81% in England to 96% in The Netherlands. Non-responders were either absent, opted out or returned unreliable questionnaires. The primary reason for absenteeism was because of out-of-school activities such as day trips and tours. Percentages of males and female were very similar within

Table 1  
Characteristics of the study sample, response rate and prevalence of DSH by country.

	Number of students	Resp. rate (%)	Girls %	Age				DSH		
				14yrs	15yrs	16yrs	17yrs	Number	Total %	Girls %
Australia	3737	92	48.1	297	1359	1789	292	236	6.6	11.8
Belgium	4406	93	48.8	311	1641	1857	597	311	7.3	10.4
England	5994	81	46.3	147	2510	3301	36	388	6.7	10.8
Hungary	4370	93	45.7	92	1845	2127	306	145	3.7	5.9
Ireland	3810	85	50.8	6	1682	1467	655	216	5.9	9.1
The Netherlands	4377	96	52.6	169	1771	2221	216	118	2.7	3.7
Norway	3838	91	49.9	10	1691	1942	195	246	6.6	10.8

each country. Based on the international pooled dataset, 51.3% were male and 48.7% female. The age ranged from 14 to 17 years. In all participating countries the majority of the adolescents were 15 and 16 years.

### *Procedure*

The questionnaire was administered in the classroom setting by research workers who received special training in order to obtain the same procedures in all countries. Parents were informed of the survey by letter and were able to return an opt-out form in case they objected to their child participating. Students and teachers were informed about the survey at least one week beforehand. The students who chose not to participate were given alternative activities. Those who consented to participate completed the questionnaire independently during a single lesson within 30–45 min, and confidentiality and anonymity were guaranteed. After participants had completed the questionnaire there was a general discussion about the help and support available for young people in their local communities and each participant received a resource pack which included a list of services in their local area. Time was made available immediately after the session for individuals who wished to ask further questions.

### *Variables and measurement*

A standard questionnaire - the Lifestyle and Coping questionnaire - was developed in English. Translations and back-translations of the questionnaire were prepared for the four non-English speaking countries. When uncertainty about a countries' interpretation of certain items emerged, this was addressed at international CASE meetings and agreement was reached on the basis of consensus in order to ensure that the questions were interpreted in similar ways in different countries. Prior to the start of the international CASE study, a pilot study was conducted in the English region.

Based on the methodology developed by the international CASE group, standard guidelines were used to determine episodes of deliberate self-harm (Hawton et al., 2002; Madge et al., 2008): Episodes of deliberate self-harm were first identified by means of two questions as part of the Lifestyle and Coping questionnaire. The participants were asked "Have you ever deliberately taken an overdose (e.g. pills or other medications) or tried to harm yourself in some other way (such as cutting yourself)?" The potential responses were "yes, once", "yes, more than once", "no". In the event of a positive response the participants were asked to describe the act (the most recent one for multiple episodes): "Describe what you did to yourself on that occasion. Please give as much detail as you can - for example the name of the drug taken in an overdose". Identification and classification of episodes (e.g. self-cutting, overdose, hanging, jumping) of deliberate self-harm were then assessed by the researchers based on agreed definitions and standard criteria (Hawton et al., 2002). They were also asked if the last deliberate self-harm episode occurred "less than a month ago", "between a month and a year ago" or "more than a year ago". The analyses in this study are based on past year episodes meeting the study criteria for self-harm.

Contact with helping sources as a result of the last episode of deliberate self-harm was asked about through nine items: "Did you go to hospital because of this episode or attempt to harm

yourself?” “Did you receive help from any of the following people or sources? Someone in your family, a friend, a teacher, a GP (family doctor), a psychologist/psychiatrist, a social worker, a drop-in advice centre?” All items were given the response categories “yes” and “no”. Based on their answers, the subjects were grouped into three categories: 1) ‘health services’ including all those who received help from hospital, psychologist/psychiatrist, GP, social worker and drop-in centre, 2) ‘social network’ including those who *only* received help from their family, friends and teachers, and not from health services 3) ‘no help’ including those who answered “no” to all the sources of help that were listed.

The following variables and instruments were used for comparison between the three groups described above. The deliberate self-harm methods used at the time of the last self-harm episode were recorded based on the classification of the respondents descriptions as: overdose, self-cutting, hanging or strangulation, suffocating, jumping or throwing self, electrocution, self-battery, burning, sniffing or inhaling, starvation, shooting, drowning, consuming recreational drug and dangerous driving. It should be noted that an episode involving recreational drugs or alcohol was only included as an episode of deliberate self-harm when this was reported as an episode of deliberate self-harm by the participant. For the purpose of the analyses, deliberate self-harm methods were recoded into three categories: ‘overdose’, ‘self-cutting’ and ‘other methods’. If both overdose and self-cutting were reported as methods for the last deliberate self-harm episode, the category overdose was used. The ‘other method’ category comprised other single and multiple methods.

Whether or not the participant who had engaged in deliberate self-harm wanted to die at the time was identified by their answer to the statement “I wanted to die” with the response categories “yes” and “no”. Adolescents were classified as repeaters of deliberate self-harm if they reported at least one deliberate self-harm act prior to the most recent episode.

The questionnaire included questions about whether they had experienced any of a range of negative life events and problems. There were three response categories for each one: “yes, in the past 12 months”, “yes, more than a year ago” and “no”. These following negative events were selected for inclusion in the analyses of this study, because they had previously shown to be associated with increased risk for deliberate self-harm, both in epidemiological and clinical studies (Arensman & Kerkhof, 2004; Evans, Hawton, & Rodham, 2004; Hawton et al., 2002; Ystgaard et al., 2003): bullying at school, being forced to engage in sexual activities against ones will, seriously physically abused, being in trouble with the police, and experience of deliberate self-harm among family members or among friends.

Self-esteem was measured by an eight item version of the Self-Concept Scale, (Robson, 1989). Findings in relation to reliability and validity are satisfactory (Addeo, Greene, & Geisser, 1994; Robson, 1989) as well as the validity of this instrument for use among young people (Addeo et al., 1994). Impulsivity was assessed by a shortened version of Plutchik Impulsivity Scale (six items) (Hawton et al., 2002; Plutchik, van Praag, Picard, & Conte, 1989). Both the reliability and validity have been found to be satisfactory (Fu & Yip, 2007; Hawton et al., 2002; Plutchik et al., 1989). The six-item version of the Impulsivity scale has been found valid for the use among young people (Hawton et al., 2002). Symptoms of anxiety and depression were measured by the Hospital Anxiety and Depression Scale (HADS), which has shown good reliability and validity when used among adolescents (White, Leach, Sims, Atkinson, & Cottrell, 1999). Consumption of alcohol was assessed by the question “How often, in the past year, have you had so much to drink that

you were really drunk?” The participants were also asked about use of specific types of illicit drugs. For the purpose of this study a variable “heavy drugs use” was computed by including all types of illicit drugs except hashish/marijuana.

### *Statistical analyses*

In each country datasets were prepared by the national centres and verified by the coordinating centre. The datasets from the different countries were merged into one international pooled dataset. Datasets were weighted by age for 14 and 15 and 16 and 17 year olds to take account for different age profiles in national samples. The age profile for each country prior to and after the weighting estimation is described elsewhere (Madge et al., 2008).

The three subgroups of adolescents who had engaged in deliberate self-harm (the ‘health services’ ‘social network’ and ‘no help’ groups) were compared on all selected variables. The differences were tested by  $\chi^2$  or *F*-tests. The comparisons were first examined separately for the data in each country. Logistic regression analyses were conducted on the pooled data from all participating centres. In order to compare those who came to attention of health services and those who did not the ‘social network’ and ‘no help’ groups were combined. In order to compare those who received help from their social network and those who received no help at the time of their last episode of deliberate self-harm, the ‘health service’ group was excluded from the analyses. Differences between groups are shown as odds ratios (OR) and 95% confidence intervals. Finally, multiple logistic regression models were estimated to identify the adjusted odd ratios (OR adj.). All explanatory variables with significant bi-variate effects were entered in forward stepwise logistic regression analyses. Country was entered in the first block. Probability criteria for the model were set to  $p < 0.05$  for inclusion and  $p > 0.10$  for removal. Because of well-known differences in prevalence of deliberate self-harm and associated factors between genders, the analyses were conducted separately for boys and girls.

## **Results**

A total of 30 532 participants completed the questionnaire (ranging between 3737 in Australia and 5994 in England). The prevalence of deliberate self-harm in the past year varied considerably between the countries, from 2.7% to 7.3% (Table 1). Girls showed a higher prevalence of deliberate self-harm than boys, which was consistent across all countries. The results presented below are based on the number of respondents who reported an act of deliberate self-harm in the year prior to the study meeting the study criteria, in all seven countries (Table 1), amounting to a total of 1660 pupils, 1262 girls and 396 boys (missing gender identification for two cases). The most commonly reported methods of deliberate self-harm were self-cutting (1040; 62.6%) and overdose (495; 29.9%), 76 (4.6%) reported both self-cutting and overdose. Other methods include consumption of alcohol (74; 4.4%), consumption of recreational drugs (67; 4.1%), self-battery (56; 3.4), jumping (39; 2.4), hanging (31; 1.8), burning (18; 1.1%), suffocation (14; 0.9%), starvation (10; 0.6%), sniffing (9; 0.5%), ingestion of non-ingestible substances or objects (8; 0.5%), shooting (5; 0.3%), drowning (4; 0.2%), electrocution (2; 0.1%), and stopping medication (2; 0.1%).

### Contact with health services and other sources of help

Among those who had engaged in deliberate self-harm, 312 (18.8%) had received help from one or more health services, 203 (12.2%) of whom had presented to hospital. One third ( $n = 545$ , 32.8%) had *not* been in contact with health care services but received help from their social network following the most recent deliberate self-harm episode. Nearly half ( $n = 803$ , 48.4%) had not received help from anyone at all. A significantly higher proportion of boys (17.4%) compared to girls (10.5%) had presented to hospital following their most recent deliberate self-harm episode ( $\chi^2 = 13.31$ ,  $df = 1$ ,  $p < 0.001$ ).

A number of international differences were found when sources of help were examined ( $\chi^2 = 38.61$ ,  $df = 12$ ,  $p < 0.001$ ) (Fig. 1). The proportion that came to attention of health services varied from 13.6% in Australia to 22.8% in Hungary. Close examination of country differences revealed that those presenting to hospital following deliberate self-harm varied from 8.3% in Belgium to 17.9% in Hungary. In Belgium, The Netherlands, England and Norway the help-seeking behaviour did not vary significantly, both with regard to those coming to the attention of health services, those receiving help from their social network and those not receiving any help at all. Australia and Ireland had the highest proportion of adolescents who did not receive any help following deliberate self-harm, 57% and 59%, respectively. A different pattern was found for Hungary, where only 35% of the adolescents reported not having received any help following deliberate self-harm and where a larger proportion (42%) had received help from their social network. Also, Hungary was the only country where significant gender differences emerged: A smaller proportion of girls (19.1%) than boys (34.3%) had been in contact with health services following deliberate self-harm. A smaller proportion of boys (20.0%) than girls (49.1%) received help from their social network, and a larger proportion of boys (45.7%) than girls (31.8%) did not receive any help ( $\chi^2 = 9.49$ ,  $df = 2$ ,  $p < 0.005$ ).

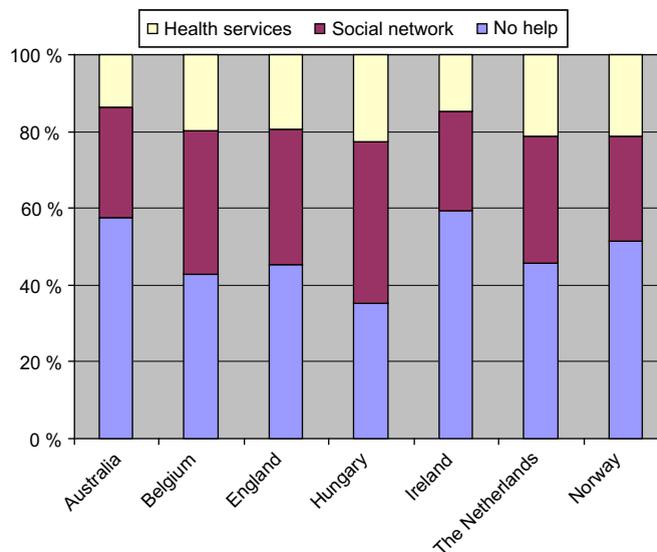


Fig. 1. The proportion of adolescents with deliberate self-harm who receive help from health services, social network only or no help by country.

*Comparison between adolescents in the 'health service', 'social network' and 'no help' groups*

The results from the comparison between the 'health service', 'social network' and 'no help' groups on all selected variables, are shown in Table 2 for each country separately.

With the exception of Hungary, in all countries 'wanted to die' was significantly associated with receiving help from health care services. In four countries (Australia, Belgium, England and Norway) a significantly smaller proportion of adolescents who engaged in deliberate self-harm and who presented to health care services had used cutting compared to overdose or other self-harm methods. Only Hungary showed an opposite pattern with a higher proportion of adolescents reporting self-cutting as a DSH method among those who presented to health care services. In four countries (England, Hungary, Ireland, Norway) using hard drugs was associated with receiving help from help care services. Except for Australia and Hungary, in all countries either physical or sexual abuse, or both were significantly associated with having received help from health care services following deliberate self-harm. Having a friend who had self-harmed during the past year did not show any association with help-seeking behaviour in any country.

With regard to the influence of self-esteem, impulsivity and symptoms of depression and anxiety, in most countries only small and non-significant differences were found between receiving help from the 'health service', 'social network' and 'no help' following deliberate self-harm.

Table 3 shows the outcomes of a further comparison between those who had been in contact with the health services and those who had not ('social network' and 'no help' groups combined) following deliberate self-harm, based on the pooled data. In addition, a comparison was made between those who received help from their social network only and those who received no help, including comparison by gender.

The results of the bi-variate analyses show that all factors except having friends who have experienced deliberate self-harm were associated with help from health services as a result of their last episode of deliberate self-harm among girls. Among boys, the factors associated with receiving help from health services following deliberate self-harm were other types of methods than self-cutting and overdose, a wish to die, use of hard drugs, trouble with the police, sexual and physical abuse, and suicidal behaviour among family members. They also had a higher level of anxiety. No difference was found between boys who had received help from health services and those who had not with regard to levels of depression, self-esteem and impulsivity.

A comparison between the 'no help' and 'social network' groups revealed that girls in the 'social network' group showed higher levels of self-esteem compared to those who did not receive any help following their act of deliberate self-harm. The boys in the 'social network' group had more often used other deliberate self-harm methods, been in trouble with the police and experienced self-harm among friends and they had less often been a victim of bullying.

Multivariate analysis comparing those who received help from health services and those who did not, including all significant bi-variate factors, showed that the following variables were independently associated with 'health services' among girls: overdose and use of other types of methods for deliberate self-harm (with self-cutting as reference group), a wish to die, alcohol misuse, being a victim of bullying at school, physical abuse, deliberate self-harm among family members and parents separated or divorced. Among boys only a wish to die, use of hard drugs and deliberate self-harm among family members were independently associated with receiving help from health services. The multivariate analysis comparing the adolescents in the 'social

Table 2

Comparison between DSH adolescents who receive help from health services, their social network only and no help at all on DSH methods, intention to die, alcohol and drug use, negative life events and mental health by countries.

	Health services		Social network		No help		$\chi^2$
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
<b>Australia</b>							
Method							
Cutting	13	43.3	35	50.7	84	62.2	
Overdose	14	46.7	19	27.5	38	28.1	
Other DSH methods	3	10.0	15	21.7	13	9.6	10.47*
Wanted to die	24	72.7	35	50.7	68	50.4	5.65*
DSH episode > 1	19	59.4	37	54.4	74	54.8	ns
Alcohol >10 times drunk	11	34.4	22	31.9	44	32.6	ns
Hard drugs	11	34.4	19	27.9	36	26.7	ns
Trouble with police (past year)	12	37.5	16	23.9	28	20.7	ns
Bullied (past year)	8	25.0	15	22.4	31	23.0	ns
Sexual abuse (life prevalence)	10	32.3	15	21.7	46	34.6	ns
Physical abuse (life prevalence)	13	40.6	18	26.5	35	26.1	ns
DSH in family (life prevalence)	22	68.8	32	47.8	72	53.7	ns
DSH among friends (past year)	22	68.8	42	61.8	81	59.6	ns
Parents divorce	19	59.4	30	44.1	67	50.0	ns
		Mean (SD)		Mean (SD)		Mean (SD)	
Anxiety	32	10.8 (3.8)	68	9.8 (4.0)	135	10.0 (3.8)	ns
Depression	32	8.0 (4.7)	68	7.1 (3.6)	134	7.9 (3.7)	ns
Impulsivity	32	16.7 (4.3)	68	15.9 (3.2)	135	15.8 (3.2)	ns
Self-esteem	32	18.3 (4.1)	68	19.7 (4.1)	133	19.4 (4.7)	ns
<b>Belgium</b>							
Method							
Cutting	26	41.9	71	62.3	75	59.1	
Overdose	22	35.5	17	14.9	27	21.3	
Other DSH methods	14	22.6	26	22.8	25	19.7	11.3*
Wanted to die	49	79.0	53	45.7	72	54.5	18.5***
DSH episode > 1	41	66.1	50	43.5	69	51.9	8.2*
Alcohol >10 times drunk	15	24.6	19	16.4	20	15.0	ns
Hard drugs	13	21.0	14	12.1	19	14.4	ns
Trouble with police (past year)	14	23.3	26	22.4	20	15.0	ns
Bullied (past year)	13	21.0	12	10.3	15	11.5	ns
Sexual abuse (life prevalence)	13	21.0	27	23.9	27	20.3	ns
Physical abuse (life prevalence)	26	41.9	27	23.3	32	24.4	8.1*
DSH in family (life prevalence)	31	50.0	34	30.1	40	30.5	8.5**
DSH among friends (past year)	23	37.1	46	40.4	51	38.6	ns
Parents divorce	24	39.3	32	28.1	41	31.3	ns
		Mean (SD)		Mean (SD)		Mean (SD)	<i>F</i>
Anxiety	61	10.3 (4.0)	116	8.4 (4.0)	132	9.0 (3.9)	4.2*
Depression	61	7.8 (3.9)	116	7.3 (3.6)	133	7.4 (3.6)	ns
Impulsivity	61	15.0 (2.9)	116	14.7 (3.1)	132	15.1 (3.2)	ns
Self-esteem	61	18.7 (4.6)	116	19.4 (4.4)	131	19.0 (4.3)	ns

(continued on next page)

Table 2 (continued)

	Health services		Social network		No help		$\chi^2$
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
<b>England</b>							
Method							
Cutting	21	27.3	82	59.9	109	62.3	
Overdose	31	40.3	34	24.8	41	23.4	
Other DSH methods	25	32.5	21	15.3	25	14.3	29.8***
Wanted to die	50	64.9	64	47.1	66	37.7	16.0***
DSH episode > 1	43	56.6	74	54.8	92	52.9	ns
Alcohol >10 times drunk	25	32.9	40	29.2	45	25.7	ns
Hard drugs	29	38.2	49	36.0	43	24.4	6.9*
Trouble with police (past year)	24	31.2	22	16.4	29	16.5	8.6**
Bullied (past year)	15	19.7	17	12.5	33	19.1	ns
Sexual abuse (life prevalence)	25	33.8	21	15.3	34	19.5	10.2**
Physical abuse (life prevalence)	22	30.1	25	18.9	34	19.5	ns
DSH in family (life prevalence)	43	58.9	53	39.6	65	37.1	10.6**
DSH among friends (past year)	26	35.6	69	50.4	81	46.3	ns
Parents divorce	33	44.6	50	38.5	58	33.0	ns
		Mean (SD)		Mean (SD)		Mean (SD)	
Anxiety	75	11.6 (3.8)	134	10.4 (3.6)	172	10.3 (4.0)	3.3*
Depression	73	8.2 (4.4)	134	7.5 (3.4)	172	8.0 (4.1)	ns
Impulsivity	75	15.5 (2.7)	132	15.3 (2.7)	168	15.2 (3.0)	ns
Self-esteem	72	18.3 (4.5)	130	19.4 (3.7)	168	19.2 (4.0)	ns
<b>Hungary</b>							
Method							
Cutting	14	43.8	11	18.3	9	17.6	
Overdose	11	34.4	40	66.7	24	47.1	
Other DSH methods	7	21.9	9	15.0	18	35.3	16.3**
Wanted to die	25	73.5	37	60.7	29	56.9	ns
DSH episode > 1	13	39.4	22	36.1	29	56.9	ns
Alcohol >10 times drunk	9	26.5	10	16.4	9	18.4	ns
Hard drugs	22	66.7	22	36.1	18	35.3	10.0**
Trouble with police (past year)	8	24.2	8	13.3	7	13.7	ns
Bullied (past year)	9	28.1	13	21.7	11	21.6	ns
Sexual abuse (life prevalence)	7	20.6	11	18.3	4	7.8	ns
Physical abuse (life prevalence)	12	37.5	24	41.4	7	13.7	10.8**
DSH in family (life prevalence)	15	45.5	16	26.7	18	35.3	ns
DSH among friends (past year)	10	29.4	20	34.5	9	17.6	ns
Parents divorce	12	36.4	25	42.4	5	10.0	14.6***
		Mean (SD)		Mean (SD)		Mean (SD)	<i>F</i>
Anxiety	33	11.0 (4.3)	60	10.7 (3.9)	48	9.6 (3.6)	ns
Depression	33	10.6 (4.5)	60	9.2 (3.4)	48	8.9 (2.9)	ns
Impulsivity	33	18.0 (3.1)	61	17.0 (3.0)	48	16.6 (3.2)	ns
Self-esteem	32	18.5 (3.1)	61	18.9 (2.9)	49	19.6 (2.2)	ns
<b>Ireland</b>							
Method							
Cutting	12	48.0	32	62.7	76	62.8	

Table 2 (continued)

	Health services		Social network		No help		$\chi^2$
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Overdose	12	48.0	13	25.5	33	27.3	
Other DSH methods	1	4.0	6	11.8	12	9.9	ns
Wanted to die	23	71.9	27	48.2	63	49.6	5.7*
DSH episode > 1	25	78.1	37	64.9	68	53.5	7.2*
Alcohol >10 times drunk	16	50.0	23	41.1	40	31.7	ns
Hard drugs	13	40.6	22	38.6	28	21.9	7.8*
Trouble with police (past year)	11	36.7	17	30.4	18	14.3	10.5**
Bullied (past year)	5	15.6	6	10.7	10	7.9	ns
Sexual abuse (life prevalence)	13	40.6	16	28.6	25	20.0	6.1*
Physical abuse (life prevalence)	15	50.0	15	26.8	22	17.9	13.5***
DSH in family (life prevalence)	15	50.0	34	59.6	49	39.5	6.5*
DSH among friends (past year)	16	53.3	28	49.1	57	44.9	ns
Parents divorce	11	34.4	11	20.0	21	17.1	ns
		Mean (SD)		Mean (SD)		Mean (SD)	
Anxiety	32	10.7 (4.1)	56	9.3 (3.7)	127	9.8 (4.1)	ns
Depression	32	8.8 (3.9)	56	7.0 (4.1)	127	7.7 (4.4)	ns
Impulsivity	32	17.0 (3.5)	56	16.6 (3.3)	127	15.8 (3.2)	ns
Self-esteem	31	18.2 (4.1)	56	19.0 (3.7)	124	18.5 (4.6)	ns
<b>The Netherlands</b>							
Method							
Cutting	10	40.0	21	53.8	33	62.3	
Overdose	6	24.0	8	20.5	7	13.2	
Other DSH methods	9	36.0	10	25.6	13	24.5	ns
Wanted to die	20	83.3	21	53.8	30	55.6	6.5*
DSH episode > 1	17	68.0	23	59.0	22	40.7	6.1*
Alcohol >10 times drunk	6	25.0	6	15.4	5	9.3	ns
Hard drugs	8	33.3	9	23.1	10	18.5	ns
Trouble with police (past year)	4	16.7	6	15.4	9	17.0	ns
Bullied (past year)	4	16.0	2	5.1	7	13.0	ns
Sexual abuse (life prevalence)	10	40.0	11	28.2	7	13.0	7.6*
Physical abuse (life prevalence)	10	40.0	11	28.9	13	24.1	ns
DSH in family (life prevalence)	11	44.0	12	30.8	19	36.5	ns
DSH among friends (past year)	10	40.0	16	41.0	16	29.6	ns
Parents divorce	6	25.0	14	35.9	18	33.3	ns
		Mean (SD)		Mean (SD)		Mean (SD)	<i>F</i>
Anxiety	25	11.2 (4.9)	39	8.3 (4.3)	52	8.2 (4.1)	4.4*
Depression	25	9.6 (4.5)	39	7.7 (3.8)	52	8.0 (3.9)	ns
Impulsivity	25	15.9 (3.2)	39	15.3 (2.8)	53	14.6 (3.0)	ns
Self-esteem	25	18.9 (4.3)	39	20.4 (3.7)	54	19.6 (3.7)	ns
<b>Norway</b>							
Method							
Cutting	27	50.9	51	76.1	98	77.2	
Overdose	7	13.2	2	3.0	18	14.2	
Other DSH methods	19	35.8	14	20.9	11	8.7	25.3***
Wanted to die	40	75.5	32	47.8	55	43.7	15.7***

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Table 2 (continued)

	Health services		Social network		No help		$\chi^2$
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
DSH episode > 1	37	72.5	44	65.7	71	56.3	ns
Alcohol >10 times drunk	35	67.3	27	40.3	61	48.4	8.9*
Hard drugs	12	23.1	5	7.5	14	11.1	7.0*
Trouble with police (past year)	19	36.5	11	16.4	24	19.0	8.2*
Bullied (past year)	19	38.0	9	13.6	16	13.0	16.1***
Sexual abuse (life prevalence)	19	37.3	16	24.2	28	23.0	ns
Physical abuse (life prevalence)	19	36.5	9	13.6	16	12.8	15.1***
DSH in family (life prevalence)	20	37.7	14	21.2	31	25.0	ns
DSH among friends (past year)	33	64.7	34	51.5	54	44.6	ns
Parents divorce	26	52.0	22	34.4	45	36.6	ns
		Mean (SD)		Mean (SD)		Mean (SD)	
Anxiety	52	9.1 (4.6)	66	8.1 (3.1)	126	8.5 (3.1)	
Depression	52	8.6 (5.1)	67	6.2 (3.2)	126	7.6 (4.5)	4.9**
Impulsivity	52	16.4 (3.2)	66	15.4 (2.9)	126	15.9 (3.3)	
Self-esteem	51	18.6 (6.5)	66	22.5 (4.4)	121	18.4 (3.7)	17.5***

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

network' and 'no help' groups on all variables with significant bi-variate effects showed that the boys in the 'social network' group more often used other methods of deliberate self-harm (with self-cutting as a reference group), had more often been in trouble with the police, had more often experienced deliberate self-harm among friends, and they had less often been bullied at school compared to the boys in the 'no help group'. Again, only a higher level of self-esteem was independently associated with help from the social network in girls.

Because Hungary showed a different pattern with regard to most variables, all analyses were conducted including and excluding the data from Hungary. However, the results remained unchanged.

## Discussion

This international comparative study is one of the first to investigate among adolescents who deliberately harm themselves whether there are differences between those who receive help from health services and those who do not. Also, this is the first study among adolescents who engage in deliberate self-harm, in which a comparison is made between those who receive help *only* from their social network and those who receive no help.

In line with earlier findings (Hawton et al., 2002; Pages et al., 2004) only a small proportion (12.2%) of the adolescents who engage in deliberate self-harm had presented to a general hospital following their act. When also other sources of health services are considered, the proportion of those who come to the attention of health services is still less than one fifth, which is consistent with earlier findings (Groholt et al., 2000; Rossow & Wichstrøm, 1997). One third of the adolescents receive help from their social network without any attention from the health services and nearly half of the adolescents who engage in deliberate self-harm do not receive any help.

Table 3

Comparison between female and male adolescents with deliberate self-harm who receive help from health services and those who do not, and between those who receive help from their social network only and those who receive no help.

	Health service/no health service			Social network/no help					
	OR	(CI 95%)	p-Value	OR	(CI 95%)	p-Value	OR	(CI 95%)	p-Value
<b>Girls</b>									
<b>DSH method</b>									
Cutting	1.00						1.00		
Overdose	2.08	1.50–2.88	0.000	2.18	1.49–3.20	0.000	1.04	0.78–1.40	ns
Other methods	2.30	1.52–3.47	0.000	2.02	1.27–3.22	0.003	1.24	0.84–1.83	ns
Wanted to die	2.93	2.12–4.04	0.000	2.38	1.66–3.42	0.000	1.05	0.82–1.45	ns
DSH episode > 1	1.61	1.20–2.17	0.002				1.11	0.87–1.42	ns
Alcohol >10 times drunk	1.69	1.24–2.29	0.001	1.48	1.02–2.16	0.042	0.82	0.61–1.10	ns
Hard drugs	1.66	1.21–2.28	0.002				1.32	0.98–1.79	ns
Trouble with police (past year)	1.75	1.23–2.49	0.002				1.02	0.72–1.44	ns
Bullied (past year)	1.98	1.39–2.81	0.000	1.71	1.15–2.55	0.009	1.06	0.74–1.52	ns
Sexual abuse (life prevalence)	1.57	1.15–2.13	0.004				1.01	0.75–1.32	ns
Physical abuse (life prevalence)	2.14	1.57–2.91	0.000	1.71	1.20–2.43	0.003	1.23	0.91–1.66	ns
DSH in family (life prevalence)	1.50	1.11–2.00	0.007	1.51	1.07–2.12	0.019	0.97	0.75–1.25	ns
DSH among friends (p. year)	1.12	0.84–1.50	ns				1.00	0.78–1.28	ns
Parent divorce (life prev.)	1.60	1.20–2.15	0.002	1.45	1.03–2.04	0.032	1.17	0.90–1.53	ns
Anxiety	1.08	1.04–1.12	0.000				1.00	0.97–1.03	ns
Depression	1.06	1.02–1.10	0.001				0.97	0.94–1.01	ns
Self-esteem	0.96	0.93–0.99	0.023				1.05	1.02–1.09	0.002
Impulsivity	1.07	1.02–1.12	0.005				1.00	0.96–1.04	ns
<b>Boys</b>									
<b>DSH method</b>									
Cutting	1.00						1.00		
Overdose	1.83	0.95–3.54	ns				1.60	0.87–2.93	ns
Other methods	2.14	1.21–3.78	0.009				1.88	1.11–3.19	0.019
Wanted to die	3.16	1.88–5.31	0.000	2.30	1.29–4.11	0.005	1.10	0.70–1.74	ns
DSH episode > 1	1.21	0.74–1.98	ns				0.70	0.45–1.11	ns
Alcohol >10 times drunk	1.28	0.79–2.09	ns				1.33	0.84–2.11	ns
Hard drugs	1.96	1.19–3.21	0.008	2.30	1.31–4.07	0.004	1.30	0.80–2.12	ns
Trouble with police (past year)	2.34	1.42–3.85	0.001				1.80	1.09–2.98	0.022
Bullied (past year)	1.35	0.76–2.44	ns				0.44	0.23–0.84	0.013
Sexual abuse (life prevalence)	2.70	1.43–5.13	0.002				0.96	0.44–2.08	ns

(continued on next page)

Table 3 (continued)

	Health service/no health service			Social network/no help		
	OR	(CI 95%)	<i>p</i> -Value	OR	(CI 95%)	<i>p</i> -Value
Physical abuse (life prevalence)	2.48	1.48–4.14	0.001			
DSH in family (life prevalence)	2.96	1.80–4.86	0.000	2.17	1.24–3.80	0.007
DSH among friends (p. year)	0.82	0.49–1.37	ns			
Parent divorce	1.17	0.71–1.94	ns			
Anxiety	1.09	1.03–1.15	0.002			
Depression	1.05	0.99–1.11	ns			
Self-esteem	0.95	0.90–1.01	ns			
Impulsivity	1.03	0.95–1.11	ns			

Bi-variate analysis for all selected variables. Only significant associated factors (bi-variate analysis) were included in the multiple logistic regression.

Higher scores indicate higher depression, anxiety or impulsivity. Odds ratio for 1 point increase in scores.

Lower scores indicate poorer self-esteem. Odds ratio for 1 point increase in scores.

Cross-national comparison revealed remarkably similar findings. However, Hungary stands out as a country with a higher proportion of adolescents presenting to general hospital and receiving help from their social network following deliberate self-harm. This may be due to the fact that in Hungary young people who engage in DSH more often use highly lethal DSH methods and report more often a wish to die than in the other six countries (Madge et al., 2008).

So far, motives underlying deliberate self-harm acts as well as the method used when self-harming have not been addressed in studies comparing hospitalised and non-hospitalised adolescents following deliberate self-harm. It is therefore interesting to note that a wish to die and self-harm methods that are considered more lethal, such as overdose and other violent methods were associated with receiving help from health services in all participating countries, except for Hungary. These findings indicate that adolescents who receive medical care and those who do not, represent different points on a continuum of suicidal behaviour, as suggested previously by Groholt et al. (2000).

Problems in the relationship with parents are considered one of the strongest risk factors for suicide behaviour (Evans et al., 2004). In the present study, the family situation of those receiving help from health services was characterised by parents who were separated or divorced (only significant for girls) and suicidal behaviour among family members. Divorce and suicidal behaviour among family members may be indicators of families in strain, with less energy for supporting their children. This is in keeping with findings by Groholt et al. (2000) that documented that adolescents who had harmed themselves and who presented to general hospital reported receiving less social support from the family.

As shown earlier by Pages et al. (2004), we found on the basis of the pooled data that use of illicit drugs other than cannabis increased the likelihood of getting medical help, although the association only reached statistical significance for boys. In girls, misuse of alcohol was more strongly associated with getting help from health services.

However, other risk factors, strongly associated with suicidal behaviour, such as sexual abuse and problems with the police, were not associated with help from health services when other associated factors were controlled for. Moreover, in line with the findings from earlier studies (Groholt et al., 2000; Pages et al., 2004) the two groups did not differ with regard to depressive symptoms and anxiety, suggesting that many adolescents who engage in deliberate self-harm may be in need of help without receiving any. Consistent with findings of Pages et al. (2004) we found no difference in level of self-esteem between those who received medical help and those who did not, whereas Groholt et al. (2000) found lower levels of self-esteem among those who presented to hospital as a result of the deliberate self-harm act.

It is of interest to note that boys and girls who engaged in deliberate self-harm differed with regard to their characteristics associated with receiving help from their social network compared to those receiving no help at all. Boys were characterised by using more violent deliberate self-harm methods, had been more often in trouble with the police, knew of friends who had similar problems and reported less often being bullied. Except for the finding that girls who received help from their social network had higher levels of self-esteem, no differences were found among girls in the two groups.

These central findings are not likely to be substantially affected by the limitations inherent in the collection of self-report data within a cross-sectional, multi-country study, although we must bear in mind that the differences in service provision between the countries may have contributed to some of the findings. Also it should be noticed that the measurement of mental health and self-esteem is not contemporaneous with the self-harm episodes. This might reduce the strength of the association between these variables and help seeking behaviour. Due to the cross-sectional design, no conclusions can be drawn concerning causal links between the risk factors and the type of help received following deliberate self-harm. A further limitation to be considered is that absentees may represent a group that is likely to have more problems compared to those included. As a consequence, the prevalence of deliberate self-harm as well as related mental health problems may have been somewhat underestimated. However, the primary reason for absenteeism was because of out-of-school activities. Pupils in out-of-school activities or day trips would not be likely to have a higher prevalence of deliberate self-harm than those participating in the survey. Moreover, there are no reasons to suggest that the absentees who may have engaged in DSH are essentially different from the adolescents who engaged in DSH and who participated in the survey with respect to factors associated with DSH and the type of help they received. Considering that the overall response rate in the participating countries was high, there are no reasons to assume that the absentees who may have engaged in deliberate self-harm would have an impact on the results of this study in any particular direction.

A policy implication of the findings from this study is that every adolescent who engages in deliberate self-harm, whether they receive help or not, has to be taken seriously. Adolescents who engage in deliberate self-harm and who have been in contact with health care services report more problems than those who do not receive any help. However, the remaining adolescents who do not receive any medical help also appear to be heavily burdened, although the lethality of their deliberate self-harm acts appears to be less severe. The importance of taking all adolescence who engage in self-harm seriously is further supported by the finding that more than half of the adolescents with deliberate self-harm had a history of one or more previous deliberate self-harm episodes.

Studies show that adolescents themselves usually do not contact help services when they engage in deliberate self-harm. They are mostly referred for help by adults who recognise that the adolescent is in trouble (Angold et al., 1998). In order to develop adequate outreach and preventive programmes, efforts to increase the awareness of deliberate self-harm and related mental health problems among professionals in medical and social services and in the school should be prioritised. Increased understanding of deliberate self-harm, how to identify adolescents at risk of deliberate self-harm and how to arrange appropriate support and treatment are likely to reduce the rates of deliberate self-harm and suicide (Mann et al., 2005).

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