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Health care contacts before and after attempted suicide among adolescent and young adult *versus* older suicide attempters

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ABSTRACT

Background. The pattern of all health care contacts among young people before and after attempted suicide is not well documented. Neither is it known if the health care contacts of young suicide attempters differ from those of older suicide attempters. This study investigated the age-related clinical characteristics of suicide attempters and the pattern of their contacts with health care before and after attempted suicide in different age groups, particularly adolescence and young adulthood.

Method. All consecutive 1198 suicide attempters treated in hospital emergency rooms in Helsinki between January 1997 and January 1998 were identified and divided into three age groups (15–24 years, 25–39 years, 40 years and over). Data were gathered on all health care contacts 1 year before and after the index attempt.

Results. Although adolescent and young adult suicide attempters suffered from severe mental disorders, a remarkable proportion of them were left without psychiatric consultation and aftercare recommendation following the attempt. Two-thirds of 15–19-year-old male suicide attempters had no treatment contact during the month before the attempt, while a quarter of them were referred to psychiatric consultation and a half had no healthcare contact in the month following the attempt.

Conclusions. These findings indicate considerable scope for improvement in the assessment of young suicide attempters and their referral to aftercare.

INTRODUCTION

Suicidal behaviour is a major health problem and increasingly a phenomenon associated with young people (Hawton *et al.* 1998). Both repetition of suicidal behaviour and eventual suicide are common among suicide attempters of all age groups. Among the factors found to predict completed suicide a previous attempt is one of the most important, along with a diagnosed mental disorder (Harris & Barraclough, 1997). Furthermore, the majority of both young (Andrews & Lewinsohn, 1992; Fergusson & Lynskey, 1995; Beautrais *et al.* 1996*a*, 1998*a*) and adult (Beautrais *et al.* 1996*b*; Suominen *et al.* 1996; Haw *et al.* 2001) suicide attempters have been found to suffer from diagnosable mental disorders. Thus, suicide prevention efforts might be more effective if they were targeted at people already identified as being at high risk for suicidal behaviour.

Although the association of suicidal behaviour and psychiatric disorders is nowadays well established, only a few studies (Beautrais *et al.* 1998*b*; Suominen *et al.* 2002) appear to have comprehensively investigated the treatment contacts of suicide attempters both before and after the attempt. It is known that up to two-thirds of all suicide attempters contact their general

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practitioner (GP) shortly before the act (Morgan *et al.* 1975; Hawton & Blackstock, 1976; Bancroft *et al.* 1977; Diekstra & van Egmond, 1989; Van Casteren *et al.* 1993; Stenager & Jensen, 1994; Michel *et al.* 1997), and that the majority are referred to aftercare (Morgan *et al.* 1976; Schmidtke *et al.* 1996). However, despite elevated rates of contacts to health care among suicide attempters both before and after parasuicide, far fewer seem to have a treatment contact at the time of the attempt (Suominen *et al.* 2002). There is some evidence that suicide attempters who have not received psychiatric assessment after their suicide attempt may be at greater risk of further suicidal behaviour than those who have received psychiatric assessment (Hickey *et al.* 2001). Specifically, young people making serious suicide attempts have been found to have elevated rates of psychiatric contacts overall (Beautrais *et al.* 1998*b*), but the detailed pattern of all health care contacts among young people before and after the suicide attempt is not known. As psychiatric services in many countries (including Finland) are partly separate for adolescents and adults, it would be important to know whether this results in disparities in treatment provision between age groups. However, differences in the pattern of health care contacts between adolescent and young adult suicide attempters have not been investigated. As only 16% of young adults with a current mental disorder have been found to have an ongoing treatment contact (Aalto-Setälä *et al.* 2001), shortcomings in treatment provision for adolescent and young adult suicide attempters appear likely.

The aims of the present study were to investigate comprehensively the age-related clinical characteristics of suicide attempters, and to determine whether the pattern of contacts with health services both before and after attempted suicide differs across age groups, particularly between adolescent and young adult suicide attempters.

METHOD

In order to construct a comprehensive picture of health care contacts of suicide attempters in different age groups, data were gathered on all consecutive suicide attempters during a period of 1 year in Helsinki, and on all their health care contacts in the 12 months both before and after the index attempt.

Subjects

In Helsinki, all suicide attempters referred to health care are treated in general hospitals: two university clinics and two municipal hospitals. Data gathering included all suicide attempts of Helsinki residents aged 15 years or more who were treated medically in these general hospital emergency rooms during the study period 15 January 1997–14 January 1998. The medical staff registered the suicide attempt cases, while the research group checked the daily lists and added any missing cases. The Ministry of Social Affairs and Health gave permission to use this information. In this study, attempted suicide and parasuicide are used as synonyms. All 1210 consecutive suicide attempters treated for 1636 attempts in general hospitals in Helsinki during the study period were identified. We have previously reported the sociodemographic and clinical characteristics of all these individuals, along with the methodological details (Suominen *et al.* 2002).

The subjects were first divided into three age groups: adolescents and young adults (15–24 years); mid-age group (25–39 years); and older age group (40 years and over). The youngest age group was further divided into two subgroups: adolescents (15–19 years); and young adults (20–24 years).

Contacts with health care

After identifying the subjects we gathered record data covering their health care contacts during the 12 months both before and after the index attempt. The Helsinki City municipal hospitals and the Helsinki University Central Hospital (HUCH) offer health services to the city's residents. The data systematically gathered from the records of these hospitals and other health facilities covered in-patient treatment in psychiatric and somatic hospitals, treatment contacts at health centres, mental health clinics and other psychiatric out-patient care, and somatic out-patient treatment contacts. Data on contacts with private health care providers and occupational health services were not available. In 12 cases the data on treatment received were incomplete because of wrong identity numbers and were excluded from the analyses.

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Table 1. *Sociodemographic and clinical characteristics of* 1198 *adolescent and young adult, middle-aged and older suicide attempters*

	15–24 years ($N=188$)		25–39 years ($N=503$)		⩾40 years ($N=507$)		Total ($N=1198$)		
Variable	*N*	%	*N*	%	*N*	%	*N*	%	χ^2
Gender									
Male	91	48	252	50	224	44	567	47	
Female	97	52	251	50	283	56	631	53	
ICD-10 diagnoses									
Schizophrenia spectrum disorders (F20–29)	43	23	114	23	86	17	243	20	6·0*
Mood disorders (F30–39)	79	42	258	51	323	64	660	55	31·1***
Substance use disorders (F10–19)	74	39	294	57	288	57	656	55	21·6***
Neurotic disorders (F40–48)	56	30	154	31	115	23	325	27	8·8**
No Axis I diagnosis	46	24	65	13	52	10	163	14	23·9**
Personality disorders (F60–61)	52	28	190	38	124	24	366	31	22·0***
Method of index attempt									
Self-poisoning	149	79	456	91	474	93	1079	90	34·8***
Violent	38	20	45	9	29	6	112	9	
Other, non-violent	1	1	2	0	4	1	7	1	
Used alcohol before the attempt									
Yes	103	55	345	69	335	66	783	65	15·1***
No	57	30	90	18	97	19	244	20	
Missing information	28	15	68	13	75	15	171	14	
Previous parasuicide									
Yes	60	32	246	49	220	43	526	43	15·1***
No	79	42	150	30	170	34	399	34	
Missing information	49	26	107	21	117	23	273	23	
Suicide attempt									
Weekend (Fri–Sun)	103	55	233	46	203	40	539	45	12·7**
Weekday (Mon–Thurs)	85	45	270	54	304	60	659	55	
Psychiatric consultation									
Yes	81	43	260	52	290	57	631	53	15·3***
No	99	53	219	43	181	36	499	42	
Missing information	8	4	24	5	36	7	68	6	
Recommended aftercare									
Nothing	52	28	127	25	110	22	289	24	10·1*
Out-patient	85	45	234	47	210	41	529	44	
In-patient	39	21	108	21	144	28	291	24	
Missing information	12	6	34	7	43	8	89	7	
Compliance with recommended aftercare	93	75	262	77	277	78	632	77	

* $P<0·05$; ** $P<0·01$; *** $P<0·001$.

Treatment settings were divided hierarchically into four categories: psychiatric in-patient care; psychiatric out-patient care; primary health care; and no contact. Recommended aftercare after attempted suicide was here defined as any reported recommendation for aftercare (including referral, fixed appointment, voluntary and involuntary psychiatric hospitalization, and verbal advice for aftercare). Compliance with recommended aftercare was defined as starting the aftercare treatment.

The ICD-10 diagnoses in the medical records were included and classified as follows: schizophrenia spectrum disorders (schizophrenia, schizotypal and delusional disorders, F20–29); mood disorders (mood (affective) disorders, F30–39); substance use disorders (mental and behavioural disorders due to psychoactive substance use, F10–19); neurotic disorders (neurotic, stress-related and somatoform disorders, F40–48); and personality disorders (F60–61). Multiple diagnoses were allowed. The diagnosis was assigned if it had been received within 12 months before or after the suicide attempt.

The subjects of this study were all 1198 suicide attempters treated for an index suicide attempt in general hospitals in Helsinki during the study

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Table 2. *Health care contacts of* 1198 *adolescent and young adult, middle-aged and older suicide attempters both before and after attempted suicide*

	15–24 years ($N=188$)		25–39 years ($N=503$)		⩾40 years ($N=507$)		Total ($N=1198$)	
Variable	*N*	%	*N*	%	*N*	%	*N*	%
Treatment setting 12 months before the index attempt*								
Psychiatric in-patient	49	26	135	27	115	23	299	25
Psychiatric out-patient	36	19	149	30	133	26	318	26
Health centre	74	39	168	33	198	39	440	37
No contact	29	15	51	10	61	12	141	12
Treatment setting 12 months after the index attempt								
Psychiatric in-patient	65	35	201	40	202	40	468	39
Psychiatric out-patient	52	28	157	31	160	32	369	31
Health centre	49	26	109	22	113	22	271	23
No contact	22	12	36	7	32	6	90	8
Treatment setting 30 days before the index attempt								
Psychiatric in-patient	24	13	48	10	37	7	109	9
Psychiatric out-patient	26	14	89	18	97	19	212	18
Health centre	42	22	103	21	122	24	267	22
No contact	96	51	263	52	251	50	610	51
Treatment setting 30 days after the index attempt								
Psychiatric in-patient	50	27	139	28	143	28	332	28
Psychiatric out-patient	46	24	136	27	130	26	312	26
Health centre	24	13	60	12	69	14	153	13
No contact	68	36	168	33	165	32	401	34

* $\chi^2=13{\cdot}5$, df = 6, $P=0{\cdot}04$.

period and whose psychiatric and medical records were available.

Statistical analysis

The two-tailed chi-square test with Yates' correction, Fisher's exact test and the two-tailed *t* test were used in comparisons. In order to investigate whether factors predicting treatment soon after the attempt differed between age groups, three logistic regression models were created predicting treatment contact during the 30 days following the index attempt among suicide attempters in three different age groups, with sex, use of alcohol before the attempt, method of index attempt, recommended aftercare, suicide attempt during weekend, psychotic disorder, mood disorder, substance use disorder and personality disorders as explanatory variables.

RESULTS

Adolescent and young adult suicide attempters used more violent methods, used alcohol less often before the attempt, made their attempt during a weekend more often, and were less likely to be referred to psychiatric consultation after the attempt than older suicide attempters (Table 1).

One or more current psychiatric diagnoses were assigned to 76% of adolescent and young adult suicide attempters. At least two current psychiatric diagnoses were made in 45% of adolescent and young adult suicide attempters, in 55% of mid-age group and in 54% of older suicide attempters ($\chi^2=6{\cdot}0$, df = 2, $P=0{\cdot}05$). No psychiatric co-morbidity was found in 51%, 37% and 43% in different age groups, respectively ($\chi^2=12{\cdot}3$, df = 2, $P=0{\cdot}002$). Among subjects with mood disorders co-morbid substance use disorder was found in 38% of adolescent and young adult suicide attempters, in 58% of middle-aged and in 58% of older suicide attempters ($\chi^2=11{\cdot}5$, df = 2, $P=0{\cdot}03$). Among subjects with schizophrenia spectrum disorders co-morbid substance use disorder was found in 60% of adolescent and young adult suicide attempters, in 62% of middle-aged and in 41%

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Table 3. *Sociodemographic and clinical characteristics of* 188 *male* (*M*) *and female* (*F*) *adolescent and young adult suicide attempters*

	15–19 years ($N=64$)				20–24 years ($N=124$)			
	Male ($N=30$)		Female ($N=34$)		Male ($N=61$)		Female ($N=63$)	
Variable	*N*	%	*N*	%	*N*	%	*N*	%
ICD-10 diagnoses								
Schizophrenia spectrum disorders (F20–29)[a]	11	37	2	6	14	23	16	25
Mood disorders (F30–39)[b]	9	30	17	50	19	31	34	54
Substance use disorders (F10–19)[c]	15	50	10	29	32	52	17	27
Neurotic disorders (F40–48)	7	23	10	29	16	26	23	36
Personality disorders (F60–61)	4	13	6	18	19	31	23	36
Method of index attempt[d]								
Self-poisoning	23	77	25	74	45	74	56	89
Violent	7	23	8	24	16	26	7	11
Other, non-violent	—	—	1	3	—	—	—	—
Used alcohol before the attempt[e]								
Yes	15	50	23	68	34	56	31	49
No	11	37	4	12	17	28	25	40
Missing information	4	13	7	20	10	16	7	11
Suicide attempt								
Weekend (Fri–Sun)	13	43	20	59	37	61	33	52
Weekday (Mon–Thurs)	17	57	14	41	24	39	30	48
Psychiatric consultation[f]								
Yes	8	27	15	44	22	36	36	57
No	18	60	18	53	38	62	25	40
Missing information	4	13	1	3	1	2	2	3
Recommended aftercare								
Nothing	9	30	8	24	22	36	13	21
Out-patient	8	27	19	56	26	43	32	51
In-patient	9	30	6	18	9	15	15	24
Missing information	4	13	1	3	4	6	3	5
Compliance[g]	11	65	18	72	22	63	42	89

[a] 15–19 y. M *v.* F $\chi^2=7{\cdot}5$**; 15–19 y. F *v.* 20–24 y. F $\chi^2=4{\cdot}3$*.
[b] 20–24 y. M *v.* F $\chi^2=5{\cdot}7$*; 15–24 y. M *v.* F $\chi^2=8{\cdot}3$**.
[c] 20–24 y. M *v.* F $\chi^2=7{\cdot}4$**; 15–24 y. M *v.* F $\chi^2=10{\cdot}2$***.
[d] 20–24 y. M *v.* F $\chi^2=3{\cdot}7$*.
[e] 15–19 y. M *v.* F $\chi^2=3{\cdot}7$*; 15–19 y. F *v.* 20–24 y. F $\chi^2=5{\cdot}9$**.
[f] 20–24 y. M *v.* F $\chi^2=5{\cdot}2$*; 15–24 y. M *v.* F $\chi^2=6{\cdot}0$**.
[g] 20–24 y. M *v.* F $\chi^2=6{\cdot}8$**; 15–24 y. M *v.* F $\chi^2=5{\cdot}3$*.
* $P<0{\cdot}05$; ** $P<0{\cdot}01$; *** $P<0{\cdot}001$.

of older suicide attempters ($\chi^2=10{\cdot}0$, df = 2, $P=0{\cdot}007$).

Adolescent and young adult suicide attempters using violent methods had used alcohol before the attempt more often (90 % *v.* 59 %, $\chi^2=8{\cdot}6$, df = 1, $P=0{\cdot}003$), had a diagnosed mood disorder less often (18 % *v.* 48 %, $\chi^2=9{\cdot}7$, df = 1, $P=0{\cdot}002$), were less often referred to psychiatric consultation (16 % *v.* 52 %, $\chi^2=14{\cdot}2$, df = 1, $P<0{\cdot}001$), complied less often with recommended aftercare (52 % *v.* 80 %, $\chi^2=6{\cdot}4$, df = 1, $P=0{\cdot}01$), and less often had psychiatric aftercare contact during the month following the attempt (29 % *v.* 57 %, $\chi^2=8{\cdot}2$, df = 1, $P=0{\cdot}004$) than those using non-violent methods.

The health care contacts of suicide attempters before and after the attempt did not differ significantly in the three different age groups (Table 2).

More than one-third of male adolescent suicide attempters had received a schizophrenia spectrum disorder diagnosis, and a fourth of them had received psychiatric consultation after their suicide attempt (Table 3). The prevalence of mood disorders was higher among female adolescent and young adult suicide attempters and substance use disorders were more common

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Table 4. *Health care contacts of* 188 *male* (*M*) *and female* (*F*) *adolescent and young adult suicide attempters both before and after attempted suicide*

	15–19 years ($N=64$)				20–24 years ($N=124$)			
	Male		Female		Male		Female	
Variable	*N*	%	*N*	%	*N*	%	*N*	%
Treatment setting 12 months before the index attempt								
Psychiatric in-patient	9	30	8	24	13	21	19	30
Psychiatric out-patient	4	13	7	21	11	18	14	22
Health centre	9	30	15	44	27	44	23	36
No contact	8	27	4	12	10	16	7	11
Treatment setting 12 months after the index attempt								
Psychiatric in-patient	10	33	9	26	17	28	29	46
Psychiatric out-patient	9	30	12	35	17	28	14	22
Health centre	5	17	10	29	20	33	14	22
No contact	6	20	3	9	7	12	6	10
Treatment setting 30 days before the index attempt[a]								
Psychiatric in-patient	5	17	2	6	6	10	11	18
Psychiatric out-patient	3	10	7	21	6	10	10	16
Health centre	2	7	13	38	12	20	15	24
No contact	20	67	12	35	37	61	27	43
Treatment setting 30 days after the index attempt[b]								
Psychiatric in-patient	8	27	8	24	11	18	23	36
Psychiatric out-patient	7	23	12	35	12	20	15	24
Health centre	1	3	—	—	12	20	11	18
No contact	14	47	14	41	26	43	14	22

[a] 15–19 y. M *v.* F $\chi^2=12{\cdot}7$**.
[b] 20–24 y. M *v.* F $\chi^2=8{\cdot}2$*; 15–24 y. M *v.* F $\chi^2=10{\cdot}5$**; 15–19 y. F *v.* 20–24 y. F $\chi^2=10{\cdot}9$, df = 3**.
* $P<0{\cdot}05$; ** $P<0{\cdot}01$.

among male adolescent and young adult suicide attempters. Two-thirds of female adolescent suicide attempters had used alcohol before the attempt. Female adolescent and young adult attempters complied somewhat more often with recommended aftercare than male adolescent and young adult attempters.

Male suicide attempters aged 20–24 years were more likely to be without any treatment contact in the 30 days following the attempt than female suicide attempters (43% *v.* 22%, $\chi^2=5{\cdot}0$, df = 1, $P=0{\cdot}02$) (Table 4).

Factors predicting health care contact during the 30 days following attempted suicide differed somewhat between different age groups (Table 5). A diagnosis of psychotic disorder or mood disorder and recommendation for aftercare predicted contact with health care 1 month after the suicide attempt in all age groups. In addition, a diagnosis of personality disorder, suicide attempt made during weekend and lack of alcohol use before the attempt predicted treatment contact soon after the attempt in the middle-aged group. Violent suicide attempt method predicted a contact to health care only in the older age group.

DISCUSSION

The main findings of the present Finnish study were that although adolescent and young adult suicide attempters suffer from severe mental disorders, a remarkable proportion of them are left without psychiatric consultation and aftercare recommendation following the attempt, and that many 15–19-year-old male suicide attempters do not have a treatment contact either before or after the suicide attempt, despite their diagnosed mental disorders.

This appears to be the first study comparing health care contacts of suicide attempters in different age groups before and after attempted suicide. The careful data gathering process of this study ensured complete coverage of all suicide attempters in the Helsinki catchment area. The large study sample accurately represents all suicide attempters treated in health care after the attempt during the study period. The information about contacts with health care was based on Finnish register data, the accuracy of which compared with medical records is generally excellent (Keskimäki & Aro, 1991). A possible limitation of this study is that the information on contacts with private health care providers was not available. However, this is an unlikely treatment-setting for suicide attempters in the Helsinki area, where suicide attempters are referred to aftercare in the public health care sector. Another limitation is that the diagnoses were not based on structured, standardized diagnostic interviews. Furthermore, the generalizability of these findings to treatment settings in other countries remains to be investigated.

We found that adolescent and young adult suicide attempters used violent methods

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Table 5. *Logistic regression models predicting health care contact during the* 30 *days following attempted suicide among* 1198 *suicide attempters in different age groups*

	15–24 years ($N=188$)		25–39 years ($N=503$)		⩾40 years ($N=507$)	
Variable	OR	95% CI	OR	95% CI	OR	95% CI
Gender	0·48	0·19–1·19	0·66	0·40–1·08	0·84	0·50–1·40
Used alcohol before the attempt (yes/no)	0·94	0·37–2·37	0·40	0·19–0·84**	0·54	0·26–1·14
Method of index attempt (violent/non-violent)	1·56	0·47–5·16	1·49	0·58–3·82	10·67	1·28–88·65*
Recommended aftercare (inpatient/outpatient/nothing)	2·00	0·97–4·12	2·76	1·82–4·17***	2·34	1·61–3·40***
Psychotic disorder (yes/no)	16·00	1·92–133·41**	3·04	1·44–6·40**	3·71	1·44–9·55**
Mood disorder (yes/no)	3·94	1·42–10·91**	2·00	1·19–3·35**	3·70	2·19–6·22***
Substance use disorder (yes/no)	2·24	0·83–6·04	1·31	0·76–2·24	0·96	0·54–1·73
Personality disorder (yes/no)	4·11	1·04–16·20*	2·43	1·39–4·23**	1·54	0·82–2·89
Weekend/weekday	0·55	0·22–1·37	1·68	1·03–2·72*	0·72	0·44–1·19

* $P<0·05$; ** $P<0·01$; *** $P<0·001$.

significantly more often than middle-aged or older attempters, particularly male and female adolescents and male young adults. Previously, self-poisoning has been found the most commonly used method among adolescent suicide attempters (Hawton & Fagg, 1992). However, there seem to be differences in parasuicide methods between different countries and also between age groups (Michel *et al*. 2000). In the present study, the young suicide attempters who used violent methods had used alcohol more often, had received a diagnosis of mood disorder less often, were less often referred to psychiatric consultation, less compliant with recommended aftercare, and less likely to have received psychiatric treatment after the attempt than those who used non-violent methods.

Previously, middle-aged suicide attempters have been found to have taken alcohol prior to parasuicide more often than younger or older suicide attempters (Kreitman, 1976). In the present study, although adolescent and young adult suicide attempters overall had used alcohol less often before the parasuicide than older attempters, it was somewhat surprising to find that adolescent female attempters had used alcohol more often before the attempt than male adolescent or young adult female attempters. However, male adolescent and young adult suicide attempters were more likely to have received a substance use disorder diagnosis than female attempters of the same age group. A previous study of adolescent suicide attempters in Finland found that adolescent boys (15–19 years) had consumed alcohol more often than girls when making the suicide attempt (Kotila & Lönnqvist, 1988). Adolescents and young adults attempted suicide during weekends more often than mid-aged or older people. This may be explained by findings of relationship difficulties among adolescent suicide attempters (Hawton & Fagg, 1992; Hawton *et al*. 2000).

In the present study three quarters of adolescent and young adult suicide attempters received a diagnosis of a current psychiatric disorder. The most prevalent disorders were mood disorders and substance use disorders in all age groups, in accordance with previous studies (Beautrais *et al*. 1996*a*, *b*; Suominen *et al*. 1996; Haw *et al*. 2001). Furthermore, a half of suicide attempters suffered from co-morbid disorders. We assume that the prevalences of mental disorders in the present study are underestimated, since the diagnoses are made by attending doctors and we have previously found that important mental disorders, including depressive syndromes and alcohol dependence and abuse, are often not diagnosed in psychiatric consultations (Suominen *et al*. 1999).

We have previously reported increased health care contacts in the year prior to a suicide attempt. However, as many as half of the suicide attempters had not sought help from health care in the month before the attempt (Suominen *et al*. 2002). In the present study we found no major differences between the three age-groups in treatment contacts before the attempt. However, the fact that two-thirds of male adolescent

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suicide attempters had no contact with health care before the attempt means that the opportunities for health care professionals to intervene and prevent suicidal behaviour in this group are slight.

According to the Finnish National Suicide Prevention Programme's recommendations (National Research and Development Centre for Welfare and Health, 1993), every suicide attempter should receive a psychiatric consultation and be actively referred to aftercare. We found, however, that over half of young suicide attempters did not receive a psychiatric consultation, and almost a third of them were without any recommendation for aftercare. In particular, male adolescent suicide attempters were left without a psychiatric consultation and aftercare recommendation despite more than a third of them suffering from schizophrenia spectrum disorders, a third from mood disorders and half from substance use disorders. Furthermore, it is well known that male gender and previous suicide attempt increase the risk of subsequent suicide (Suokas *et al.* 2001). Clearly, knowledge on suicide risk factors, as well as consultation and aftercare practices, need to be improved. Furthermore, the majority of male adolescent suicide attempters had no contact with health care during the month preceding the attempt, and only half of them had any health care contact during the 30 days after it.

There seem to be large disparities between different countries in recommended care after attempted suicide (Hulten *et al.* 2000). Our findings from Helsinki differ from those of some reports from the UK, according to which over 80% of adolescent suicide attempters in Oxford are referred to emergency psychiatric services (Hawton & Fagg, 1992; Hawton *et al.* 2000). According to a recent review (Owens *et al.* 2002), the incidence of repetition of self-harm is not different in the UK compared with other countries, although completion of suicide has a substantially lower incidence in the UK than in other countries, consistent with the lower reported overall national suicide mortality in the UK.

Non-compliance with recommended aftercare is common among suicide attempters (Van Heeringen, 1992), particularly adolescents (Spirito, 1996). Surprisingly, we found no difference in compliance with recommended aftercare between the three age groups. A recognized major mental disorder predicted a contact with health care after the attempt in all three age groups. In addition, active referral to aftercare increased the likelihood of aftercare contact among older age groups. Furthermore, among 25–39-year-old suicide attempters use of alcohol and weekday suicide attempt, and among older suicide attempters ($\geqslant$40 years) non-violent method, predicted lack of aftercare contact.

It seems that decrease in suicide attempts or improvement in suicidal ideation are somewhat attributable to unspecific elements in the treatment received (Pelkonen & Marttunen, 2003). Although there is uncertainty about which forms of psychosocial and biological treatment for suicidal youth are most effective, the limited evidence suggests that several treatment modalities are useful (Pelkonen & Marttunen, 2003).

Among young suicide attempters, recognition and adequate treatment of mental disorders, as well as continuity of care, are important in the prevention of youth suicides. The findings of the present study indicate considerable scope for improvement in the assessment of young suicide attempters and their referral to aftercare.

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