PUBLICATIONS OF THE NATIONAL PUBLIC HEALTH INSTITUTE
KTL A2/1994

ADOLESCENT SUICIDE IN FINLAND

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HELSINKI 1994

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by

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ACADEMIC DISSERTATION
To be presented with the permission of the Medical Faculty of the University of Helsinki for public examination in the Auditorium of the Department of Psychiatry, on May 13, 1994, at 12 noon.

HELSINKI 1994

Julkaisija - Utgivare - Publisher

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ISBN 951-47-9000-6
ISSN 0359-3584

T-Print Ky
Hyvinkää, 1994

To Mikko and Markus

CONTENTS

1 LIST OF ORIGINAL PUBLICATIONS

The thesis is based on the following original publications, which are referred in the text by Roman numerals I - V.

I Marttunen M, Aro H, Lönnqvist J. Adolescent suicide: Endpoint of long-term difficulties. J Am Acad Child Adolesc Psychiatry 1992;31:649-654.

II Marttunen M, Aro H, Henriksson M, Lönnqvist J. Mental disorders in adolescent suicide. DSM-III-R axes I and II diagnoses in suicides among 13- to 19-year olds in Finland. Arch Gen Psychiatry 1991;48:834-839.

III Marttunen M, Aro H, Henriksson M, Lönnqvist J. Antisocial behaviour in adolescent suicide. Acta Psychiatr Scand. 1994;89:167-173.

IV Marttunen M, Aro H, Lönnqvist J. Precipitant stressors in adolescent suicide. J Am Acad Child Adolesc Psychiatry 1993;32:1178-1183.

V Marttunen M, Aro H, Henriksson M, Lönnqvist J. Psychosocial stressors more common in adolescent suicides with alcohol abuse compared with depressive adolescent suicides. J Am Acad Child Adolesc Psychiatry. In press.

In addition, unpublished data have been included in this thesis.

2 INTRODUCTION

2.1 Epidemiology of adolescent suicides

Adolescent suicide has been recognised as a major public health problem in Finland. Compared with other nations the suicide rate in Finland is high. A notable feature of the Finnish suicide mortality is the high suicide rate in young age groups (Lönnqvist et al., 1988). During the last few decades, an increase of youth suicides has been reported in many European and other Western countries (Barraclough, 1988). In Finland, among 15 - 24 year old males, there was a marked increase in suicide from late 1960's till the mid 1970's, since when the rates have stayed at a high level (Aro et al., 1992). Among females, no similar increase in suicide occurred. During the last two years (1991 - 1992), a slight decrease has occurred in the suicide rates among 15-24 years old males in Finland. However, according to the latest World Health Statistics Annual (WHO, 1992), the suicide rate in Finland among 15 to 24 year old males is the highest in Europe. Finland also belongs to the countries which have high suicide rates among young females. In Finland, as also in other Western countries, the suicide rates are remarkably higher among young males than among young females.

2.2 Adolescent development and suicidal behaviour

Suicide and suicide attempts are rare events in childhood, whereas the frequency of these suicidal behaviours increase sharply during the adolescent years (Aro et al., 1993; McClure, 1984; Rutter, 1986). According to Rutter (1986), within psychiatric clinic samples, also suicidal ideation increases during adolescence. In a recent study in Finland (Laukkanen, 1993), 15 % of adolescents drawn from general adolescent population had had suicidal thoughts. It has been suggested that small children are protected from suicide due to the lack of cognitive maturity that is required to plan a successful suicidal act and to develop such feelings as despair or hopelessness. During childhood, the family provides social and emotional support and reduces social isolation and thereby protects children from suicidal behaviour (Shaffer & Fisher, 1981).

Adolescence begins at the time of onset of physical sexual maturity. It can be viewed as an adjustment process to puberty. During the adolescent development, rapid biological and

psychological changes, and an increase in social pressures take place. Adolescence is a period the individual is confronted with a new set of inner and outer conditions. Blos, (1979) described adolescence as the "second individuation process", when childhood dependency from parents gradually will be given up, and the adolescent gains more and more psychological independence and maturity. With the advent of sexual maturation, cognitive development to higher levels, and new physical capabilities, a thrust away from infantile family dependencies into the wider social milieu becomes not only feasible but mandatory. During the adolescent development, regressive processes offer the individual an opportunity to modify childhood traumatic experiences which otherwise would be a threat to the progressive development. These regressive periods occurring alternately with progression towards greater maturity and independence are considered to be an essential part of adolescence. During adolescence the personality organization of the individual is highly vulnerable. According to Blos (1979), regressive ego states during adolescence can also be recognized in a return to "action language" as distinguished from verbal, symbolic communication as well as a return to "body language", to somatization of affects, conflicts and drives. By the end of adolescence consolidation of the personality takes place.

Erikson (1968) described adolescence as a moratorium for identity formation, identity in relation to self, parents, peers, and society. In order to achieve a sense of inner identity, the adolescent must experience continuity between that which one has come to be during childhood and that one promises to become in the anticipated future; between that which one conceives himself to be and which one perceives other to see in him and to expect of him. According to Erikson, only a firm sense of inner identity marks the end of the adolescent process and is a condition for further individual maturation. Laufer (1975) considered adolescence as a period of adaptation when new perceptions of self and others are experienced as part of the pressure to proceed towards adulthood and relinquish the safety and dependency of childhood. During adolescence the individual needs to find appropriate ways to deal with inner pressures arising from the physical and sexual maturation. Adolescent development is considered of great significance to the individual's future mental health and social functioning.

Coleman and Hendry (1990) point out that the young person's maturation produces changes in the family, and at the same time alteration in family functioning and structure have effects upon the young person's development. The authors emphasize that in the process of achieving independence during adolescence the role of adults involved is especially important. Parents

fulfill many different functions for the developing adolescent. Parents are essential role models, and the family offers the adolescent a basis for a personal identity. The adolescent transition from dependence to independence is almost certain to involve some conflict. The adolescents need to have the opportunity to test out the boundaries of authority as well as the possibility to test their beliefs against the beliefs of others. Adolescents need to have the opportunity of observing and living with "good enough" parents who share power and influence in a caring but firm fashion, as well as the possibility of learning to play a part as a responsible member in the family decision-making process.

The risk of suicide is greatly increased with the onset of puberty. While children and early adolescents commit suicide only rarely, those who do tend to be physically and cognitively precocious (Shaffer, 1986). The frequency of suicide attempts also rises with age during adolescence (Otto, 1972; Rutter, 1986). Adolescence is considered as a period of unique 'developmental stress' that accompanies rapid physical and psychological growth. It is possible that the rapid physical and psychological changes make youngsters especially vulnerable to environmental stress and to the increasing social pressures (Aro, 1987). Psychological and social development, including increasing self-consciousness and the drive for individuation, may weaken support from the family, school and other support systems (Garfinkel & Golombek, 1983; Shaffer, 1986). In addition, increase of major psychiatric illnesses (e.g. depressive disorders) having significance in the development of suicidal behaviour, takes place during adolescence (Rutter, 1988).

3 RESEARCH ON SUICIDE

Research on child and adolescent suicide has largely focused on living suicidal subjects. Lack of standardized definitions of different suicidal behaviours, bias in sample selection, and ignoring control groups have led to inconsistent findings (Berman & Cohen-Sandler, 1982). In order to avoid misinterpretations, Smith and Maris (1986) recommend that specific life-threatening behaviours studied should be clearly defined, and that different forms of self-destructive behaviours - suicide ideation, suicide attempts, and completed suicide - should be studied separately.

According to Gould et al., (1992), two basic prospective strategies can be used to explore the correlates of suicide: the follow-up of a general population or of a high-risk population. For rare outcomes, such as adolescent suicide, the sample size needed from the general population to yield enough cases to be useful for studying risk factors is daunting. Thus, follow-up studies have been largely confined to psychiatric patients or suicide attempters. Follow-up studies of populations at high risk for suicide provide reliable baseline information about suicide victims, but their findings cannot be generalised to groups not included in the follow-up. Less than half of the suicide completers have made previous suicide attempts, and not all of them have been in psychiatric care. When the outcome is rare, as in the case of adolescent suicide, it is preferable to derive descriptive information by retrospective methods (Clark & Horton-Deutsch, 1992; Gould et al., 1992).

3.1 Definition of suicide

Suicidal behaviour arises from complicated motives, and the intention is not necessarily death. As an individual process, suicidal behaviour can be conceptualized as a continuum ranging from suicidal ideas and threats to suicide attempts and completed suicide (Brent et al., 1988a; Paykel, 1974).

The definition of suicide has been a subject of controversy. The least ambiguous element in different definitions of suicide is that the outcome of the act is death. On the other hand, a wide range of behaviours can be called suicidal or life-threatening with no assumptions about intention or outcome (Lönnqvist, 1977). Lack of unambiguous definitions of concepts has been

a source of inconsistent results in studies dealing with suicidal behaviour. According to Farmer (1988), the ascertainment of suicide involves three principal stages: the death must be recognised as unnatural, the initiator of the course of action that led to the death has to be recognised as the deceased himself, and the motive of self-destruction has to be established. Stengel (1973) defined suicide as "the fatal, act of self-injury undertaken with more or less concious self-destructive intent, however vague and ambiguous". The post mortem estimation of the person's intent to die is a difficult task, and represents one of the difficulties in the theoretical definitions of suicide.

Completed suicide can be defined operationally as those deaths that are officially registered as suicidal deaths (Beskow, 1979). The use of this definition may lead to underestimation since some suicidal deaths may be registered as accidental or undetermined deaths. In Finland, determination of causes of deaths is considered reliable (Lönnqvist et al., 1988). According to a recent estimate about 90 % of suicides committed in Finland in 1986 were correctly classified (Karkola, 1990).

3.2 Psychological autopsy

A combination of epidemiological and case study methods, namely the psychological autopsy technique of sizeable groups of unselected consecutive adolescent suicides has been recommended for the research of adolescent completed suicide (Fisher & Shaffer, 1984). According to Brent (1989), since the study subjects are identified by presence or absence of suicide, risk factors are assessed retrospectively, after the fact of the suicide. It is in this study design that the psychological autopsy is absolutely necessary. Psychological autopsies are biographies of suicide victims based on interviews with surviviors and on other available information. In a psychological autopsy the life history, behaviour, and symptoms of the deceased, and the events preceding the suicide is reconstructed by interviews with the suicide completers' next of kin retrospectively (Curphey, 1961). The aim is to better understand the personal logic of the events and the psychological circumstances contributing to a death. Usually also supplementary information is collected from various sources, such as supplementary interviews and different records (Shneidman, 1981; Clark & Horton-Deutsch., 1992). The psychological autopsy is probably particularly useful in the study of adolescent suicides since the opportunities to interview the entire family, friends, teachers, and health care professionals are usually better than with adult suicides (Pardes & Blumenthal, 1990).

4 REVIEW OF PREVIOUS RESEARCH

4.1 Characteristics of adult suicides

Psychological autopsy studies of adult suicides from different countries during recent decades have consistently shown that the vast majority of suicide victims has suffered from mental disorders. Adult suicide victims have often made previous suicide attempts or verbally communicated suicidal thoughts. Approximately half of the suicides have previously been in psychiatric care, and during the month preceding suicide about 60 % of the victims have been in contact with health care professionals (Robins et al., 1959; Dorpat & Ripley, 1960, Barraclough et al., 1974; Beskow, 1979; Chynoweth et al., 1980; Rich et al., 1986; Arato et al., 1988; Henriksson et al., 1993).

Recent stressful life events have been reported in the majority of adult suicides. The most commonly reported events have been interpersonal conflicts, losses, health and economic problems (Dorpat & Ripley, 1960; Hagnell & Rorsman, 1980; Rich et al., 1986; Heikkinen et al., 1992). Compared with victims with depressive disorders, those with alcohol abuse or dependence have more often had recent interpersonal losses and conflicts, family discord, financial trouble, and unemployment prior to suicide (Murphy & Robins, 1967; Rich et al., 1988).

4.2 Characteristics of adolescent suicide victims

Compared with studies on adults, fewer studies have addressed the characteristics of adolescents who end their lives by suicide. There are previous population-based studies of adolescent suicides by psychological autopsy from England and Wales (Shaffer, 1974), from Austria (Leblhuber et al., 1983), and from the U.S.A. (Sanborn et al., 1973; Shafii et al., 1985; Eisele et al., 1987; Brent et al., 1988a; Brent et al., 1993; Nelson et al., 1988; Shaffer et al., 1988; Shafii et al., 1988; Rich et al., 1990). In addition, reports including interviews with informants have been published from selected populations, such as public school students (Jan-Tausch, 1964), and suicides at an indian reservation (Dizmang et al., 1974). Previous studies have had relatively small and geographically selected study samples.

4.2.1 Previous suicidal behaviour

A previous suicide attempt increases the risk of subsequent completed suicide as well among adolescents as adults. In a 10 to 15-year follow-up study of adolescent suicide attempters Otto (1972) reported that 2.9 % of females and 10 % of males went on to commit suicide. In the study by Kotila and Lönnqvist (1989), 1.2 % of female and 8.7 % of male adolescent suicide attempters had died of suicide or violent death during a 5-year follow-up. In previous studies, approximately one third of adolescent suicide completers has previously attempted suicide, girls more often than boys (Cosand et al., 1982; Leblhuber et al., 1983; Eisele et al., 1987). Previous suicide attempts have been reported 20 times more often among male and five times more often among female suicide completers compared with the general adolescent population (Shaffer et al., 1988).

The frequency of earlier verbal communication of suicidal thoughts or suicide threats before suicide has varied in previous studies between 28 % and 77 % (Sanborn et al., 1973; Eisele et al., 1987; Brent et al., 1993). In comparison with a matched-pair control group of peers, Shafii and coworkers (1985) found that adolescent suicide completers had higher prevalences of both suicidal ideation and suicide threats.

4.2.2 Mental disorders and psychiatric care preceding adolescent suicide

Studies of suicides using the psychological autopsy method and defined diagnostic criteria have reported mental disorders in the majority of as well adult as adolescent and young adult suicides. The most common disorders have been affective disorders and substance abuse or dependence (Dorpat & Ripley, 1960; Barraclough et al., 1974; Rich et al., 1986; Brent et al., 1988a; Shaffer et al., 1988; Shafii et al., 1988; Runeson, 1989; Henriksson et al., 1993).

Compared with peers, suicide completers have more commonly had dual diagnoses (Shafii et al., 1988). Brent and coworkers (1988a) reported similarly high rates for affective disorders and any psychiatric disorder among adolescent suicide completers compared with living suicidal adolescent inpatients. They found bipolar disorders and co-occurrence of affective disorder and any nonaffective disorder more often among suicide completers.

From a psychoanalytic viewpoint, Laufer & Laufer (1984) have pointed out that "a suicide attempt, however minor, always represents a temporary loss of the ability to maintain the link to external reality and must be viewed as an acute psychotic episode". According to the authors, the adolescent who intends to kill himself is experienceing a particular relationship to his body. The ability or wish to protect the body from external danger or from his own hatred and attack on it has become severely impaired. The body has instead become totally identified with the fantasied attacker who must now be silenced. Laufer and Laufer (1984) consider an actual suicide attempt as a sign of severe mental disturbance and of urgent need for psychological help.

Only a minority of adolescent suicide victims has received psychiatric treatment. The frequency of psychiatric contacts at some point in the subjects' lives has ranged in different studies from 14 % (Leblhuber et al., 1983) to approximately 58 % (Brent et al., 1993). At the time of suicide, few victims have been in active psychiatric treatment (Brent et al., 1988a; Shafii et al., 1988). On the other hand, many adolescents presenting different symptoms come in contact with other helping agencies than psychiatric care (Almqvist, 1983).

4.2.3 Antisocial behaviour in adolescent suicide

The frequency of antisocial acts in the general population increases during adolescence, and then declines during early adulthood (Pulkkinen, 1988). Conduct problems (Wolff, 1987a), antisocial and delinquent acts (Almqvist, 1986) in adolescence are more common among boys than girls. This is reflected also in the different patterns of help seeking among boys and girls; girls often seek help for less severe symptoms, e.g. psychosomatic symtpoms, while boys often come in contact with professionals due to externalizing symptoms (Almqvist, 1983; Laukkanen, 1993).

Antisocial behaviours have been reported in association with adolescent suicidal behaviour, particularly among males (Holden, 1986; Kashani et al., 1989). Delinquent adolescents are at high risk for early violent death, and early indicators of antisocial personality strongly predict suicide (Allebeck et al., 1988; Yeager & Lewis, 1990). The high comorbidity of mental disorders, particularly of affective disorders and substance abuse, among antisocial adolescents further increases the risk for suicide.

In adolescent completed suicides, antisocial behaviour has often been reported in combination with depressive symptoms and / or substance abuse (Brent et al., 1993; Shaffer, 1974; Shafii et al., 1985). Legal problems are also overrepresented among adolescent suicides (Thompson, 1987; Brent et al., 1988a).

Adolescents who break social norms by antisocial acts, often become in contact with social welfare or legal authorities. These contacts offer opportunities for intervention, and e.g. for prevention of youth suicides. Although the association of antisocial behaviour and adolescent suicide has been reported, previous research has not focused on the characterization of suicide victims with antisocial behaviour.

4.2.4 Family related and recent stress

Parental loss by divorce or death is thought to be a risk factor for the individual's development and for mental disorders. According to Brown (1988), parental loss is a vulnerability factor that increases the risk for depression in the context of stressful current life circumstances. Depression has been found to be more common among young adults with a family background of parental divorce compared with those who come from nondivorced families (Aro & Palosaari, 1992). One type of family related stress may involve loss of social support due to family change, and another type of stress may be related to problems in parental adaptive functioning due to parental psychopathology (Pfeffer, 1989).

The relationship between family risk factors and suicide is complex. Certain family related events may rather be general risk factors for the individual's development and for mental problems than specifically for suicide (Schaller & Schmidtke, 1988; Aro & Palosaari, 1992). Nelson and associates (1988) concluded that youth suicide is the result of a combination of factors including family problems, problems in peer relationships, and psychological difficulties.

Conflicts with parents or peers, and separations from parents have frequently been reported as precipitants of adolescent suicides (Shaffer, 1974; Eisele et al., 1987; Rich et al., 1990). Arguments with a boyfriend or girlfriend, and / or termination of the relationship seem to be important precipitants (Thompson, 1987, Brent et al., 1988a). Disciplinary and legal problems, feelings of humiliation or rejection also often precede adolescent suicides (Shaffer et al.,

1988). The importance of interpersonal loss both developmentally and in the immediate time frame as an external precipitator of suicidal behaviour has been stressed by Linehan and Shearin (1988).

Thus far, little attention has been paid to the relationships between stressors and psychiatric disorders. Search for new combinations of contributing factors will enhance the identification of adolescents with high risk for suicide.

5 AIMS OF THE STUDY

The aim of the study was to examine factors associated with adolescent completed suicides with a nationwide, unselected suicide population aged 13 to 19 years. The main focuses of interest were:

I To characterize adolescent suicide victims, to examine their previous suicidal behaviour and the frequency of psychiatric contacts in relation to mental health.

II To determine the prevalence and comorbidity of mental disorders among adolescent suicide victims.

III To study the significance of antisocial behaviour in adolescent suicide and to characterize adolescent suicide victims with antisocial behaviour.

IV To examine the frequency and quality of recent stressors, and their role as suicide precipitants.

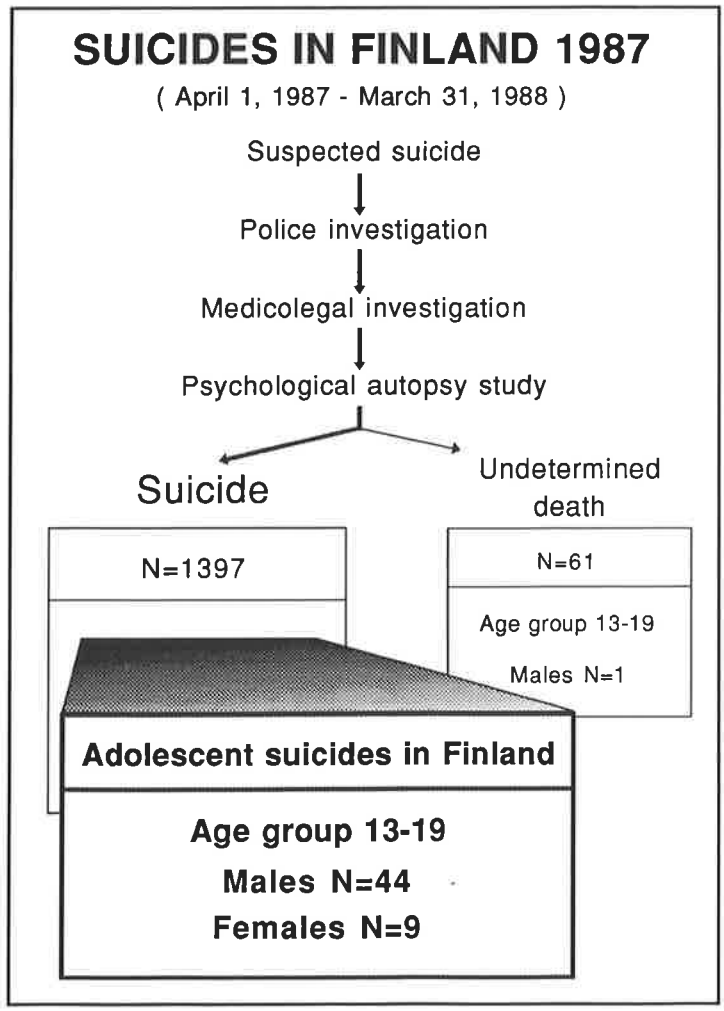
V To explore the relationship between recent stressors and psychiatric diagnoses in adolescent suicide, especially between adolescent victims with substance abuse and those with depressive disorders.

6 SUBJECTS AND METHODS

In 1986, the Finnish National Board of Health set up the National Suicide Prevention Project to deal with the significant public health concern of completed suicide in Finland. This study is part of the project (Lönnqvist, 1988; Lönnqvist et al., 1993). During the research phase of the project, all suicides (N=1397) and undetermined deaths suspected of suicide (N=61) in Finland between April 1st, 1987 and March 31st, 1988 were carefully recorded and analyzed using the psychological autopsy method.

6.1 Subjects

Figure 1. Suicides in Finland 1.4.1987 - 31.3.1988



The subjects of this study were the adolescent suicides in the ages 13 to 19 years, 44 males and 9 females, committed in Finland during the period between April 1st, 1987 and March 31st, 1988 (Figure 1). The age and sex distribution of the victims is presented in II table 2.

During the study period, one 9-year old child committed suicide, and two male deaths under age 13 years were classified as undetermined deaths. In the age group 13 to 19 years, there was one undetermined death (Figure 1).

In addition to the adolescent suicides included in this study, there was one suicide of a 17-year old male that was not included in the project. He received the verdict of suicide after the data collection of the projecet "Suicide in Finland 1987" was terminated.

6.2 Data collection

During the National Suicide Prevention Project in Finland, the police investigation and medicolegal examination including toxicological analyses of all deaths suspected of suicide were systematic and more detailed than usual. In addition, data collection included thorough interviews of the next of kin and attending health care personnel. Records from social agencies and from police, medical and other available records were included. The study comprised of all cases officially defined as suicides in the mediocolegal examination (Lönnqvist, 1988; Lönnqvist et al., 1993).

6.2.1 Interviews with relatives

A structured face to face interview of a family member was conducted in 50 cases (II Table 1). The victim's mother was interviewed in 27 cases, father in 10 cases, both parents in 11 cases, and other relatives in two cases. The interview form contained 234 items concerning the victim's everyday life and behaviour, family factors, use of alcohol and drugs, previous suicidality, help seeking, and life events (Lönnqvist et al., 1993). The interviewees were contacted by telephone or by a letter, usually about one month after the suicide. During the phonecall the aim and a description of the interview was given. Informed consent was obtained from the relatives. Interviews of the relatives took place about two months after the suicide, and the mean duration of one interview was three hours. The interviews were conducted

usually in the homes of the families. The interviewers were mental health professionals, and trained to the technique used. Additional unstructured interviews of non-professionals were done in 12 cases.

6.2.2 Interviews with professionals

Professionals were systematically interviewed in 29 cases. In 12 cases, health care professionals attending the deceased during the previous year were interviewed to obtain information about the victim's state of health, treatment in the health care system, psychosocial symptoms, stressors, and level of functioning. The personal interview was structured and the interview form contained 113 items (Lönnqvist et al., 1993). In 28 cases, a semistructured interview containing 8 items was conducted either face to face or by telephone with the health or social care professional, whom the victim consulted for the last time before the death. The aim was to find out the victim's motive for the last contact and possible suicidal communication during the consultation. Additional unstructured interviews of professionals were conducted in 40 cases, most often by telephone.

6.2.3 Other data

After the interview of the relative, all available records from the victim's domicile concerning the victim were collected. According to the records and the interviews of relatives, two thirds of the adolescents (N=37) had consulted health or social care within one year prior to the suicide. Medical records were available in 36 cases, additional records in another four cases, and 17 victims had left a suicide note (II Table 1). When all the data were collected, a multidisciplinary team discussed all the cases and a comprehensive case report was written on the basis of all information available.

During the process of the data collection, altogether 148 persons, 77 non-professionals and 71 professionals, were interviewed. Information from both relatives and professionals (interviews and / or records) was available in 79 % of the cases (N=42). In the three cases in which the relatives could not be interviewed, the sources of information were police and autopsy reports, medical and school records, suicide notes, or an interview with a professional. All the collected data were thoroughly reviewed and information from different sources was integrated.

6.3 Diagnostic procedure

Diagnoses on DSM-III-R (American Psychiatric Association, 1987) Axes I - V were independently assessed by two psychiatrists. Best estimate diagnoses were generated by weighing and integrating all available information from different sources (Leckman et al., 1982). Stringent documentation of the diagnostic criteria was required for specific diagnoses. In each case a general conclusion of a probable diagnosis was drawn, and then a check for the presence of each DSM-III-R criterion was made. Multiple diagnoses on Axes I - III were made, when applicable.

The interrater reliability for diagnoses on Axis I and II was measured using the kappa statistics (Fleiss, 1975). The k coefficients for each individual diagnostic category were calculated for diagnoses occurring in at least 5 % of the cases. The agreement was good ($k \geq .61$) in the diagnostic categories of major depression, schizophrenic disorders, alcohol dependence, alcohol abuse, alcohol intoxication, and antisocial personality disorder. The agreement was moderate (k .41 - .60) in the diagnostic category of borderline personality disorder, and unsatisfactory ($k \leq .40$) in the diagnostic categories of conduct disorder, depressive disorder not otherwise specified, and identity disorder. However, the agreement was good for the combined categories of depressive disorders (major depression, depressive disorder not otherwise specified and dysthymia) and antisocial disorders (conduct disorder and antisocial personality disorder).

After these assessments each suicide was thoroughly reanalyzed by three psychiatrists in diagnostic meetings to achieve general consensus for the final diagnoses. When a suicide victim received several diagnoses, principal diagnosis was assigned at the consensus meeting. Principal diagnosis refers to the mental disorder that was assessed to be the main focus of attention in relation to the suicidal process and the suicide.

The severity of psychosocial stressors was rated using the "Severity of Psychosocial Stressors Scale" included in DSM-III-R (Axis IV). Different from the time definitions in the DSM-III-R, stressors taking place within one week prior to suicide were coded as "acute stressors", and those occurring within one year prior to suicide as "chronic stressors". The psychological, social, and occupational functioning was assessed using the "Global Assessment of Functioning Scale" of DSM-III-R (Axis V). During one year preceding the suicide, the assessment was

based on the best level of functioning. The judgement of the current level of functioning was based on the period of one week prior to suicide.

6.4 Definition of concepts

6.4.1 Mental disorder

In the present study, the concept of mental disorder is defined as in the DSM-III-R: "Each of the mental disorders is conceptualized as a clinically significant syndrome or pattern that occurs in a person and that is associated with present distress (a painful symptom) or disability (impairment in one or more important areas of functioning) or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom. In addition, this syndrome or pattern must not merely be an expectable response to a particular event, e.g., the death of a loved one. Whatever its original cause, it must currently be considered a manifestation of a behavioral, psychological or biological dysfunction in the person."

6.4.2 Antisocial behaviour

Adolescents with one or more of the following reported behaviours were included in the group of victims with antisocial behaviour: truancy, recurrent stealing (with or without confrontation of a victim), recurrent running away from home, use of illicit drugs, sexual promiscuity, violence against person, arrests, and convictions (for reasons more serious than drunkenness or traffic offences). Alcohol abuse as such was not an inclusion criterion.

6.4.3 Previous suicidal behaviour

Previous suicidal behaviour included previous suicide attempts and verbal communication of suicidal intent. A victim was coded to have made previous suicide attempts if the evidence indicated at least one previous suicide attempt. Verbal communication of suicidal thoughts included verbal expressions concerning the person's intention of killing himself / herself but not indirect warnings.

6.4.4 Stressor concepts

In addition to the life event questionnaire administered to the relatives containing 33 items (Heikkinen et al., 1992; Lönnqvist et al., 1993), all cases were thoroughly reviewed, and any other items documented during the data collection concerning stressful life events were included in the stressors. The assessment of stressors and precipitants was based on consensus between two investigators. When there was evidence that a stressor occurring during the final month had directly contributed to the suicide it was classified as a precipitant. Subjects with more than one stressor in one category were counted only once in that category. A victim was considered to have experienced major stress during the year preceding suicide if (s)he had experienced one or more major stressors (death of significant other, severe somatic or psychiatric illness, abortion, psychiatric hospitalisation, imprisonment, parental divorce, severe parental somatic or psychiatric illness).

6.4.5 Family characteristics

Parental support during the year preceding the suicide was considered weakened if there was evidence of parental alcohol abuse, severe parental somatic or psychiatric illness, parental attempted suicide, or parental violence.

The socioeconomic status of the family was based on the occupation of the parent considered to be the guardian of the deceased (Central Statistical Office of Finland, 1987).

6.5 Statistical methods

The data were analyzed by percentages, cross-tabulations, by using the chi-squared test with Yate's correction, Fisher's exact test, and Student's t-test. The interrater reliability for diagnoses on Axis I and II in study II was measured using the kappa statistics. The software packages used in data analysis were the SAS (SAS Inc, 1985) and the SYSTAT (SYSTAT Inc, 1990).

7 RESULTS

7.1 Adolescent suicide as an endpoint of long-lasting difficulties

7.1.1 Characteristics of the victims

The victims were predominantly older adolescents, the mean age being 17.4 years (SD, 1.6 years). About four in five suicides were males. The most common methods of suicide were firearms and hanging among males, hanging and drug ingestion among females (I Table 1). The victim's parents had divorced in 40 % of the cases, six adolescents (11 %) had been in institutional care, and four victims had lost a parent by death. The parental socioeconomic status was low in most cases. All victims were unmarried. At the time of death, 47 % of the victims were students, and 28 % were working. Five victims were unemployed, four were incapable for work, two were conscripts, one was in prison, and in one case this information was lacking. Half (51 %) of the victims had consumed alcohol at the time of death. The blood alcohol level was 1.0 o/oo or more in 36 % of the cases.

7.1.2 Previous suicide attempts and suicidal communication

One third of the victims had made previous suicide attempts, girls more often than boys (I Table 2). In one third of these cases, the parents were not cognizant of the attempts.

Of the victims, 60 % had verbally communicated suicidal thoughts. Only one female (17 %) had not told her thoughts to the parents or other adults whereas 58 % of the males had expressed their suicidal ideas only to peers. Two thirds of the victims were known to have communicated suicidality either verbally or by suicidal acts, and in three quarters of these cases the first communication had occurred more than three months prior to the death (I Table 3). Anticipation of suicide was infrequent. The suicide was unexpected to all but three families.

All three victims with a schizophrenic disorder had communicated their suicidality for the first time more than three months prior to the suicide. This was the case in two thirds of the

victims with antisocial personality or conduct disorder (67 %) and with depressive disorders (70 %), and in half of the victims with alcohol abuse or dependence (50 %).

Previous suicide attempts were reported most often among adolescents with antisocial and schizophrenic disorders (I Table 4). Two of the three victims who received no diagnosis had made the first suicidal threat just before the act. Those adolescents, who did not communicate their suicidality or expressed it just before the act, were a diagnostically heterogeneous group.

7.1.3 Contacts with psychiatric care and other helping agencies

Within one year prior to the suicide 44 % of the girls but only 18 % of the boys had had psychiatric contacts. The respective figures for the lifetime were 44 % for girls and 34 % for boys. The frequencies of contacts with psychiatric care system among victims with different psychiatric diagnoses is presented in I Table 5.

There were no marked differences in the frequency of psychiatric contacts during the previous year between those adolescents who had verbalized their suicidality and those who had not (25 % vs 19 %). Among the victims with no previous suicide attempts mental health visits within a year prior to the death were reported in 9 %, among attempters in 50 %.

During the year preceding suicide 70 % of the victims had had contacts with health care system, and 15 % had contacts with other helping agencies, mainly with social welfare authorities.

7.2 Adolescent suicide victims' mental health

7.2.1 Prevalence of mental disorders

All but three male victims received at least one psychiatric diagnosis. Two or more diagnoses were assigned to 51 % of the victims. The most common disorders were depressive disorders (II Table 2). Almost two thirds of the victims (64 %) had a depressive syndrome (major depression, dysthymia, depressive disorder not otherwise specified or adjustment disorder with depressed mood).

Alcohol abuse or dependence was diagnosed in 26 % of the victims. In two cases involving alcohol abuse, other psychoactive substance abuse was also found. A diagnosis of alcohol intoxication was made in 17 % of the cases. All of them were males, two of them had no other diagnosis. A quarter of the male victims, but no females had an adjustment disorder. Psychotic disorders were diagnosed in 11 % of the males and 22 % of the females. Three of the psychotic cases were schizophrenic disorders, three were major depressions with psychotic features, and one was delirium due to pneumonia.

Personality disorders or identity disorder were diagnosed in 36 % of the males and in 55 % of the females. The most prevalent personality disorders were the cluster B personality disorders (antisocial PD, borderline PD, histrionic PD and narcissistic PD). Antisocial personality disorder or conduct disorder were diagnosed in 18 % of the male and in 11 % of the female victims.

Compared with younger adolescents aged 13 to 16 years, 17 to 19 years old adolescents were more often diagnosed of having alcohol abuse or dependence (31 % vs 18 %), adjustment disorders (28 % vs 6 %), and personality disorders (42 % vs 12 %). All three males with no diagnosis were in the younger age group.

The distribution of principal diagnoses, i.e. the mental disorders most relevant to the suicidal process was: depressive disorders 40 % (21/53), adjustment disorders 15 % (8/53), schizophrenic disorders 6 % (3/53), personality disorders 21 % (11/53), and other disorders 9 % (5/53). No diagnosis was made in three cases. The information was insufficient for assessing the principal diagnosis in two cases.

7.2.2 Comorbidity of mental disorders

Comorbidity of mental disorders was common (II Table 2). Almost one third of the victims received diagnoses on both Axis I and II. One third of the victims with a depressive disorder (33 %) also had a diagnosis of alcohol abuse or dependence. In addition, three males with a depressive disorder were intoxicated with alcohol at the time of the suicide.

Almost two thirds (64 %) of the subjects with alcohol abuse or dependence had a concurrent depressive disorder, and 71 % had a personality disorder. Seven of the nine (78 %) victims

with a diagnosis of antisocial personality disorder or conduct disorder had a concurrent alcohol abuse or dependence, six (67 %) had a depressive disorder, and five (56 %) had both of these coexisting diagnoses. Of the 11 male victims with a diagnosis of an adjustment disorder, a personality disorder was diagnosed in four cases, and an additional diagnosis of alcohol abuse in one case.

7.3 Antisocial behaviour in adolescent suicide

Antisocial behaviour (ASB) was reported in 45 % of the male, and 33 % of the female subjects (III Table 1). Eight male and two female victims with antisocial behaviour had a history of violence against person.

There were nine victims who met DSM-III-R criteria for a diagnosis of conduct disorder (CD) or antisocial personality disorder (ASPD). Of the 14 cases with ASB who did not meet the DSM-III-R diagnostic criteria for CD or ASPD the duration of ASB was less than six months in 11 cases, and in the three other cases the number of reported diagnostic criteria was less than required for a diagnosis of CD or ASPD.

7.3.1 Male suicides with and without antisocial behaviour

Male subjects with ASB were under influence of alcohol at the time of suicide more frequently than those without ASB ($p < .01$). Two males committed homicide followed by suicide, one in the group with ASB and one in the other group. One male with ASB made the final suicide attempt with a peer, who survived. One male committed suicide while in prison.

Separations from parents, parental alcohol abuse, and parental violence were more common among male victims with ASB than among those without ASB (III Table 2).

Of the males with ASB, 90 % had dating experiences compared with 42 % of the others ($p < .01$). Within a month preceding the suicide, 45 % of the victims in the ASB group and 17 % in the other group had separated from partner or had had arguments or other problems in the relationship.

Depressive disorders were common among all male subjects (III Table 3). Alcohol abuse or dependence was more common among the victims with ASB than among those without ASB ($p < .001$), as was also comorbidity on DSM-III-R Axis I ($p < .001$). Three males with ASB had a diagnosis of Borderline personality disorder (BPD), and one had a diagnosis of Identity disorder (IDD). Of the victims without ASB, no one received a diagnosis of BPD and one subject was diagnosed of having IDD. Physical disorders were diagnosed in 30 % of the male subjects with ASB and in 42 % of the other subjects.

Male victims with ASB had experienced more severe chronic and more severe acute stressors preceding the suicide compared with the other subjects. During the year prior to suicide, psychosocial impairment of the male victims with ASB was more severe than among the other subjects. During the last week preceding the suicide, psychosocial impairment among all the male subjects was severe.

Male victims with ASB had more often (though not statistically significantly) previous suicide attempts, and they had more often made the first attempt at least one year prior to the suicide compared with those without ASB.

The lifetime prevalence of psychiatric contacts was 50 % among the male victims with ASB, and 21 % among the others ($p = .09$). Seven of the ten male subjects with ASB who had had psychiatric contacts at some point in their lives did not have psychiatric contacts within one year prior to the suicide. All five victims with lifetime psychiatric contacts in the other group had contacts also during the last year of their lives ($p < .05$).

The eight violent male victims often had a chaotic family history including separations, parental violence and parental alcohol problems. All of them had either depressive disorders or alcohol abuse, half of them both. Almost two thirds (63 %) of them had made previous suicide attempts. Their psychosocial impairment was commonly poor, and three quarters of them (75 %) had psychiatric contacts at some point in their lives.

7.3.2 Female suicides with antisocial behaviour

All three female suicide victims with a history of ASB came from families with a low socioeconomic status, two of them had a family history of alcohol abuse and family violence.

All three had a diagnosis of alcohol abuse or dependence, in two cases with a concomitant depressive disorder. Further, all three had a diagnosis of borderline personality disorder (BPD) compared with no one of the six females without ASB. All three females with ASB had a history of previous suicide attempts, two of them had multiple attempts, and both of them had made their first suicide attempt more than one year prior to suicide. Within one year preceding suicide, two of the three female subjects with ASB had consulted a psychiatrist or other mental health professional, and the third had contacts with social welfare agencies.

7.4 Suicide precipitants among adolescent suicide completers

All but two victims had stressors during the month preceding suicide with a mean of 3.1 (SD +/- 1.5) stressors per case, 3.9 (SD +/- 1.8) among females and 3.0 (SD +/- 1.4 among males (IV Table 1). Interpersonal problems and family discord were the most common stressors.

7.4.1 Suicide precipitants

Of the 159 stressors, 47 were assessed as precipitants. At least one precipitant was found in 70 % of the cases, and two precipitants in ten cases (19 %). Of all the precipitants, 62 % fell in the categories of interpersonal separation, conflict or other interpersonal problems (IV Table 2).

Almost half (47 %) of the precipitants occurred during the last 24 hours preceding the suicide, and more than two thirds (70 %) during the final week. The timing of the precipitants varied in different precipitant categories: 78 % of the interpersonal conflicts, 29 % of the separations, half of the other interpersonal problems, and half of the disciplinary / legal difficulties occurred during the final 24 hours. Half of the separations but all conflicts and all other interpersonal problems occurred within one week preceding the suicide.

7.4.2 Precipitants and parental support

Compared with other victims, those with weakened parental support more often had separation as a precipitant ($p < .05$). They also had experienced more often major stress during the final year ($p = .02$), and they had a higher number of stressors during the month preceding death (p

= .001). Adolescents with a history of parental divorce had separation as a precipitant twice as often as the others (33 % vs. 16 %), though the difference did not reach statistical significance. In only one (male) case no precipitant, no major stress nor weakened parental support during the year preceding suicide was found.

7.5 Diagnosis specific stressors preceding adolescent suicide

7.5.1 Stressors

Among subjects with stressors during the final month (N=51), the mean number of stressors (+/- SD) was 3.9 (+/-1.7) among the alcohol abusers, 3.0 (+/- 1.5) among the depressives, and 2.7 (+/-1.3) among the other victims. Interpersonal problems and family discord were the most common stressors reported during the month preceding suicide. Interpersonal separations and difficulties with dicipline or the law were more common among victims with alcohol abuse compared with those with depressive disorder (V Table 1). Compared with the alcohol abusers, interpersonal conflicts and medical illness were more common (though not statistically significantly) among those with depressive disorder. When interpersonal separations, conflicts, and other interpersonal problems were combined into "any interpersonal problem", the difference in the frequencies of interpersonal stressors between the two groups disappeared.

When the analyses were made for male subjects only (10 males with substance abuse, 15 males with depression), the results remained in the same direction. For males, the frequency of interpersonal conflicts was higher among victims with alcohol abuse than among those with depressive disorder ($p < .05$).

7.5.2 Precipitants

At least one precipitant was found in two thirds of the victims in each diagnostic category with no differences between alcohol abusing and depressive victims. Interpersonal separations were more common precipitants among alcohol abusers than among those with depressive disorders (V Table 2).

Precipitants occurring within 24 hours before the suicide were found in 36 % of the victims with alcohol abuse, in 39 % of those with a depressive disorder, and in 48 % of the other victims. Approximately one half of the victims in each diagnostic category (7 of the 14 alcohol abusers, 9 of the 18 depressives, 11 of the 21 other victims) had experienced precipitants during the last week.

7.5.3 Family history and stressors during the previous year

During the year preceding suicide, weakened parental support was twice as common (though not statistically significantly) among the alcohol abusing as among the depressive victims (V Table 3). In most cases with major stress within the year prior to suicide there were multiple stressors during that time irrespective of diagnosis. Compared with victims with depressive disorders those with alcohol abuse were more likely to have had an earlier family history of parental problems.

8 DISCUSSION

8.1 Methodology

The general methodological problems of psychological autopsy studies include the possibility of incomplete and biased information and difficulties in the assessment of psychopathology of the victims (Beskow et al., 1990, Clark & Horton-Deutsch, 1992; Litman et al., 1963, Marttunen et al., 1992; Shaffer et al., 1972). In the psychological autopsy the information is collected retrospectively after the suicide, and the informants are other than the subjects themselves.

In retrospective interview studies, the reliability of the data depends heavily on the informants' recall of events. The informants may be unaware of important events in the victims' lives, or they may be aware of them only within a limited time period. Undetected illegal activities and subjective mental states may be underreported by the informants. Parents as informants tend to underreport psychopathology and symptoms in their children. Parents are often unaware of their children's affective symptomatology, substance abuse, anxiety related symptoms, suicidal ideation, and suicide attempts (Kashani et al., 1985; Weissman et al., 1987; Brent et al., 1988b; Kashani et al., 1989; Walker et al., 1990). The information in records may be incomplete; missing information may be truly absent or may have been present but not noted (Shaffer et al., 1988). According to Yarrow and her collegues (1970), recollections of the past tend to be biased in the direction of consistency with the present. Reliable recall is more likely for events that carry importance for the individual. Whether events have happened is more accurately recalled than when they occurred (Quinton & Rutter, 1988). The ordinary inaccuracies of recall may be magnified in the study of suicides by the effort to give meaning to the act (Paykel, 1989). Thus, factors related to underreporting of psychopathology, and the incomplete information in some cases affect the results towards underestimation. On the other hand, the effort to explain the suicide and the informants' recollection bias in the direction of consistency with the present may lead to overreporting of stressful life events and psychopathology.

Interviewing several informants and supplementing interviews with data obtained from different records can increase the accuracy of the psychological autopsy method (Shaffer et al.,

1972). Using structured or semistructured interview schedules to elicit psychiatric symptoms (Brent, 1989) and using explicit diagnostic criteria can increase the accuracy of the assessment of psychopathology (Beskow et al., 1990).

The identification and diagnosis of psychopathology in the adolescent is complicated by factors intrinsic to the adolescent, and the developmental events of this stage, by factors that relate to our present level of knowledge, and to the individual conceptual thinking of clinicians and researchers about psychopathology (Schwab-Stone, 1989). The difficulty to distinguish between normal and abnormal symptomatology and to identify psychopathology in adolescence may lead to delayed referral of adolescents who need psychiatric help (Laukkanen, 1993). According to Cantwell and Baker (1988), criteria for the effectiveness of a particular classification include reliability, validity, coverage, and feasibility. The diagnostic assessment in adolescence shoud contain careful consideration of age-specific developmental features (Rutter & Gould, 1987). Diagnostic stability in adolescence is low in certain diagnostic categories, especially in the case of adjustment disorders (Andreasen et al., 1982). However, the reliability of the most common major diagnostic categories in adolescence based on explicit descriptive criteria has been reported to be good (Rey et al., 1989; Strober et al., 1981). Currently, no single classification system in child and adolescent psychiatry can be regarded as being the "right" system (Cantwell & Baker, 1988). In a study where the diagnostic information is based on information other than direct subject interviews, one must inevitably apply a diagnostic classification system based on descriptive diagnostic criteria. Beskow et al. (1990) recommend the use of the current version of the DSM in psychological autopsy studies to ensure the comparability of different studies.

In this study, most precipitant stressors had a precise timing, but there were also stressors with less precise beginning. The focus of this study was on specific stressors during the final month, and one can assume that recall errors did not strongly affect reporting of these events. The definition of parental support was restricted to concrete aspects of the victims' parents. Due to the definition of the variable, the frequency of weakened parental support is very likely to be an underestimate.

Limitations in the methodology of the present study include lack of systematic information from peers and teachers, who often have some knowledge about the victim that parents do not have (Brent et al., 1988b), and lack of using standardized diagnostic interview schedules. The

validity of different sources of information was not weighed, but a synthesis of all available data on each victim was generated. Integrating data from different sources, assigning the diagnoses, determining the timing of stressors, and weighing the role of the stressors in the suicide process required clinical judgement when the data were incomplete or conflicting. Variability among informants is probably an inherent problem in the psychological autopsy method (Rich et al., 1986). The lack of a control group puts a limitation on the generalizability of the results. Due to the small nuber of female adolescent suicides no firm conclusions concerning differences between the two sexes can be made.

This nationwide population-based psychological autopsy study included all adolescent suicides committed during one year in Finland. The police investigation and medicolegal investigation were more detailed than usual. The compliance of the interviewees was good: there were multiple informants, both relatives and professionals, in most cases. The data included supplementary information from various records. A diagnostic classification with explicit diagnostic criteria was used, and the final diagnoses were based on consensus between three investigators after thorough reanalysis of the cases. Further, evaluation of stressors and precipitants were based on consensus between two investigators.

The indirect nature and possible incompleteness of the data may have led to underreporting of certain characteristics of the victims. Thus, the presented figures concerning drug and alcohol abuse, affective symptomatology, previous suicide attempts, and suicidal communication, individual antisocial symptoms, and stressful life events represent an underestimate rather than an overestimate.

8.2 Previous suicidal behaviour

Consistently with previous research (Shaffer & Fisher, 1981), suicide in early adolescence was rare. In this study, as also reported in previous research (Hawton, 1986), males used more violent suicide methods than females. Consistently with the study by Brent et al. (1988a), approximately one third of the victims in the present study had a blood alcohol level greater or equal to 1.0 o/oo.

Adolescent suicide attempters constitute a high-risk group concerning subsequent suicide completion (Otto, 1972). Also verbal expressions of suicidality indicate a heightened risk for

suicide (Motto, 1984). The prevalence of previous suicide attempts in this study (34 %) is in line with earlier studies (Brent et al., 1988a, Eisele et al., 1987). Consistently with previous research (Robins et al., 1959; Shaffer et al., 1988) female suicide completers had more often than males made suicide attempts. The frequency of verbal suicidal communication in adolescent suicide has varied in different studies between 28 % and 58 % (Brent et al., 1988a, Leblhuber et al., 1983, Shafii et al., 1985). In this study, 60 % of the victims had talked about their suicidal thoughts.

Many adolescents, particularly males, confided their suicidal thoughts only to peers. Unexpectedly many parents were unaware even of their children's suicide attempts, and anticipation of suicide was infrequent. These findings probably indicate a communication gap between these suicidal youngsters and the adult generation.

Suicidal communication (verbal or attempt) was often expressed for the first time several months prior to the death. This offers possibilities for prevention, providing that the suicidality of these youngsters is acknowledged and leads to interventions. The relatively high frequency of verbalized suicidality regardless of psychiatric diagnosis suggests that suicidal statements of adolescents must be taken seriously whenever they occur. However, one third of the victims did not communicate their suicidality, and three boys made the first threat just before the suicide. In these cases, the suicidal process is probably of shorter duration, anticipation of suicide is difficult, and there is less time for intervention. The majority of adolescent suicide completers had shown signs of severe psychosocial distress during their life course. The results strongly suggest that in most cases adolescent suicide is an endpoint of long-term risk path of development.

8.3 Mental disorders

II Table 6 compares the results of study II with some other interview studies on adolescent suicide (Brent et al., 1988a; Rich et al., 1986; Runeson, 1989; Shaffer, 1974; Shaffer et al., 1988; Shafii et al., 1985; Shafii et al., 1988;). As in previous studies, the vast majority of adolescent suicide victims were diagnosed of having a mental disorder. The most common disorders in this study were depressive disorders. The requirement of stringent documentation of the diagnostic criteria for specific diagnoses may explain the relatively high prevalence of depressive disorder nos and the lower prevalence of major depression in this study compared

with previous research (Brent et al., 1988a; Shafii et al., 1988). The prevalence of schizophrenic disorders in the present study (6 %) falls in the middle of the prevalence rates (0 - 14 %) found in previous studies (Brent et al., 1988a; Rich et al., 1986; Runeson, 1989). Alcohol problems were common; 26 % of the victims received a diagnosis of alcohol abuse or dependence. All suicides with alcohol abuse or dependence had several psychiatric symptoms. However, substance use diagnoses were not as common as in previous studies in the U.S.A. (Brent et al., 1988a; Fowler et al., 1986; Shaffer et al., 1988; Shafii et al., 1985), and drug abuse was relatively rare, probably reflecting the low incidence of drug abuse in Finland compared with the U.S.A. (Kontula, 1987).

Deviant personality traits have been reported in 65 - 80 % of adolescent suicides (Jan-Tausch, 1964; Shaffer, 1974; Shafii et al., 1985). The 32 % prevalence of personality disorders in this study is consistent with the results in previous studies of youth suicides using the DSM-III or DSM-III-R criteria (Rich et al., 1986; Shafii et al., 1988; Runeson, 1989). However, the nonexistence of diagnosed personality disorders according to the DSM-II-R classification in almost 70 % of the victims does not rule out deviance in personality development in a broader sense among these adolescents. In this study, psychopathology was dealt with mainly from a diagnostic viewpoint.

Consistently with the findings by Shafii et al (1988), a high comorbidity of mental disorders among adolescent suicide victims was found. Especially victims with substance abuse often had coexisting mental disorders, such as depression and antisocial disorders. Irrespective of whether the comorbid disorders were separate psychopathologic syndromes or different manifestations of disturbed personality development, this finding emphasizes the importance to recognise and treat these coexisting disturbances.

One quarter of the male victims, but no females, received a diagnosis of adjustment disorder, the majority of them without comorbidity. Further research is needed to explain whether this finding reflects a lack of constructive coping strategies among Finnish male adolescents, narcissistic vulnerability, or problems in separating from parents.

Robins (1986) has suggested that the seemingly "well" suicide subjects have probably suffered from psychiatric illness of one sort or another that did not manifest typically. In spite of abundant information for classification, three young males in this study did not meet DSM-III-

R criteria for any mental disorder. All the three no diagnosis victims in this study lived in families with both parental figures. Two of them were characterised as shy or passive, and one was described of having narscissistic personality traits. Two of these boys had previously had difficulties to deal with disappointments. They all had communicated suicidal thoughts before the suicide. In all these cases, a precipitant preceded the suicide within one day (disciplinary problem in two cases, and an argument with mother in the third), the acts seemed relatively impulsive, and the suicides were completed with violent methods (Marttunen et al., 1994).

8.4 Antisocial behaviour

Heightened risk for suicide has been reported among adolescents with antisocial and aggressive behaviour (Allebeck et al., 1988; de Chateau, 1990). Gould et al (1990) reported aggressive and antisocial behaviour among almost half of adolescent suicide victims. The frequency of violence in this study was lower, probably partly due to the restrictive definition of violence as violence against person. Victims with ASB, particularly those with a history of violence, had frequently attempted suicide. Aggression toward others and aggression toward oneself seemed not to be mutually exclusive forms of aggressive expressions.

The finding that there was a group of fourteen victims with ASB not severe enough to meet the diagnostic criteria for actual antisocial disorders (CD or ASPD in DSM-III-R), suggests that "less severe" antisocial symptomatology also has importance in the suicide process in adolescence. On the other hand, it has been argued that the diagnostic criteria for CD in DSM-III-R may be too restrictive (Zoccolillo et al., 1992).

Antisocial adolescents are often depressed (Chiles et al., 1980), and adolescents with depressive disorders often have antisocial symptoms that may cause diagnostic difficulties (Keller, 1987). In this study, half of the males with ASB had a diagnosis of alcohol abuse or dependence suggesting a strong interrelationship between ASB and alcohol abuse in adolescent suicide. Further, half of the victims with ASB had a depressive disorder, and almost one third of them had both a depressive disorder and alcohol abuse or dependence. Treatment of depression and other psychiatric disorders seem to have a beneficial effect on the course of antisocial problems (Puig-Antich, 1982; McManus, 1989).

According to Shaffer (1988), suicide among female adolescents is more likely to be found in association with depression or transient situational problems, whereas in males it is more likely to be associated with a pattern of aggressive behaviour, often coupled with substance abuse or alcoholism. In this study (study II), the female suicides seemed to be more severely mentally disturbed than the males. However, in this study, there were only nine females, and thus these differences between the sexes must be regarded as suggestive.

Adverse family background, e.g. poor parenting, antisocial and alcoholic parents, and early separations have been reported as risk factors for antisocial behaviour (Kolvin et al., 1988; Farrington, 1990). Loss of parent, parental psychopathology, parental suicidal behaviour, parental substance use problems, and family violence have been found to be common in the families of adolescent suicides (Pfeffer, 1989). In this study, early separations, parental alcohol problems, and parental violence characterised the victims with ASB, particularly the violent subjects.

The results of studies II and III indicate a strong relatedness between adolescent suicide and the presence - especially coexistence - of depression, antisocial behaviour, and alcohol abuse. Antisocial symptoms with relatively short duration and not severe enough to meet the criteria for actual antisocial disorders also need to be taken into account as probable predisposing factors in adolescent suicide.

8.5 Contacts with mental health care

In conformity with previous research (Leblhuber et al. 1983; Shaffer et al., 1988), one third of the victims in this study had had psychiatric contacts at some point in their lives. The frequency of psychiatric contacts during the lifetime among depressive and alcohol abusing victims were consistent with the figures reported among adult suicides (Barraclough et al., 1974). With the exception of the most seriously disturbed adolescents (those with schizophrenic disorders), psychiatric contacs within the year prior to death were rare.

Talking about suicidal thoughts was not associated with psychiatric contacts, and only one half of the adolescents with a previous suicide attempt had psychiatric contacts within the year prior to suicide. Not even clear suicidal communication had led to referral, which may be due to the ambivalent, aggressive or negligent responses of parents and peers to suicidal statements

(Wolk-Wasserman, 1986, Farberow & Simon, 1975). Half of the male victims with ASB in this study had had psychiatric contacts during their lives, but most of them did not receive psychiatric treatment during the year preceding the suicide.

The low frequency of psychiatric contacts may indicate problems in primary health care system in identifying high-risk adolescents and in referring them to psychiatric treatment. The small proportion of adolescents in psychiatric care during the last year of their lives may indicate difficulties in the psychiatric treatment of these youngsters. However, the relatively high frequency of contacts with health care professionals and social welfare authorities offer possibilities for preventive interventions if the suicidal adolescents are identified.

8.6 Recent psychosocial stressors and precipitants

Recent stressors were reported in all but two adolescent suicides (96 %). The reported prevalence of recent stressful life events was higher than reported in adult suicides within a comparable time period (Rich et al., 1988; Heikkinen et al., 1992). It is possible that these events are more common among adolescents than among older persons also in the general population.

The frequency of precipitants found in this study (70 %) is in agreement with previous studies of adolescent suicides (Hoberman and Garfinkel, 1988; Poteet, 1987; Rich et al., 1990; Shaffer, 1974; Thompson, 1987). The importance of interpersonal loss or conflicts preceding suicide has been demonstrated in previous psychological autopsy studies (Dorpat & Ripley, 1960; Brent et al., 1988a; Rich et al., 1988; Heikkinen et al., 1992). Results of this study underscore the importance of conflicts and separations with girlfriend or boyfriend as suicide precipitants in adolescence.

In many cases, the time lag between the precipitant and suicide was relatively short. This finding lends support to the preliminary findigs of Shaffer and coworkers (1988) that many teenagers commit suicide shortly after a rejection or humiliation or in the context of acute disciplinary crisis, with a brief stress-suicide interval. In clinical practice, adolescents' acute life crises need to be taken seriously.

The hypothesis that perceived low level of parental control and little parental support is linked with suicidal behaviour (Asarnow & Carlson, 1988) is supported by the finding that separation as a precipitant was more common among victims with weakened parental support. The finding that separation as a precipitant was more common (though not statistically significantly) among suicide victims with a history of parental divorce suggests that parental divorce may have an impact as a vulnerability factor for the consequences of later separations. Another explanation could be that parental divorce leads to a life process, that includes frequent separations.

The high frequency of major stress during the final year and high number of stressors during the final month among victims with weakened parental support suggest a cumulative effect of different stresses in these cases. These are also mutually intertwined and can be thought to form a stressful context.

In studies of adult suicides, recent interpersonal loss has been reported to be more common among alcoholic victims than among depressives (Murphy & Robins, 1967; Rich et al., 1988; Duberstein et al., 1993). That finding was not confirmed in youth suicides comprising both adolescent and young adult suicides (Rich et al., 1988). This study included specifically suicides in adolescence, and interpersonal separations were found to be more common among alcohol abusers than among those with depressive disorder. The finding suggests that, if there is a difference between the way adult suicidal individuals with substance abuse and affective disorder respond to interpersonal loss as hypothesized by Rich et al. (1988), this difference probably already exists in adolescence.

The finding that victims with depressive disorders had more frequently (although statistically significantly for males only) interpersonal conflicts than those with alcohol abuse suggests that specific (interpersonal) stressors may have different relationships with suicide. In the study of the associations between stressors and suicide one ought to aim at as detailed as possible analysis of the stressors as well as detailed age-groupings of the suicide victims representing suicides in different life stages.

Recently, Murphy and associates (1992) reported that, among adult alcoholics, multiple risk factors predicted suicide. In the present study, the finding that parental problems, weakened

parental support, and major stress prior to suicide characterized the victims with alcohol abuse suggests a cumulative effect of different stresses also in these adolescent suicides.

8.7 Implications for suicide prevention

Primary prevention of such rare events as adolescent suicide is problematic. In most cases in this study, adolescent suicides were an endpoint of long lasting difficulties. The victims often had a history of mental problems, alcohol abuse, antisocial symptomatology, and suicidal behaviour. Results of this study show a strong relationship between adolescent suicide and the presence - especially the coexistence - of depression, antisocial behaviour, and alcohol abuse. So early recognition and active treatment of these disorders among adolescents might decrease the risk of suicide. Alcohol use seemed to have a significant role in adolescent suicide: chronic abuse as a predisposing factor, and drunkenness as a situational factor irrespective of diagnosis.

Almost two thirds of the victims in this study had never had contact with psychiatric care system. Professionals working in primary health care, in social welfare services, and in schools should recognize signs of depression, substance abuse, and antisocial traits as possible warning signs for suicidality. All expressions of intended suicide should be taken seriously and should prompt an examination of the adolescent's development and life circumstances. An actual suicide attempt should always lead to adolescent psychiatric evaluation.

A specific problem seems to be the communication gap between suicidal youngsters and the adult generation. Adolescents should be informed that suicidal expressions do not belong to normal adolescence but are a sign of risk development. Peers could be encouraged to let adults know about the suicidality of their friend.

Assessment of stressful life events in general should be one element in the evaluation of suicide risk among adolescents. Specific recent psychosocial stressors may be critical for suicidal adolescents with different psychiatric disorders. The "diagnosis-specificity" of certain stressors can guide the clinician in his / hers decisions regading the treatment of adolescents with risk for suicide. In the clinical assessment of suicide risk, even minor events from the viewpoint of adults, especially in the context of impaired parental support, need to be taken into account. In particular, adolescents' experiences of rejection and separation in their intimate

relationships should not be underestimated. Disruptions in the adolescent's interpersonal relationships, excess cumulation of stress, and lacking support from the family may be warning signs of suicide potential and indications for additional social support, for more intensive treatment, or for a change in the treatment setting.

Continuity of care should be an essential element in the psychiatric care of adolescents with suicidal tendencies. A relatively active role of the therapist and the involvement of the family in the treatment might improve the treatment compliance of suicidal youngsters. The key question is how to develop services of a high quality which are accepted and used by the young people. Also close follow-up and an opportunity for the adolecent to easily return to treatment should be guaranteed.

8.8 Implications for further research

Suicide as a multidetermined phenomenon cannot be explained from a single viewpoint. Multidisciplinary research on different aspects of suicidal behaviour is required. Many characteristics, such as previous suicide attempts, depressive disorders and alcohol problems are common among suicide completers irrespective of age. On the other hand, some features, e.g. the high frequency of antisocial behaviour, are characteristic of adolescent suicides. Further research is required to identify risk factors and combinations of factors specifically related to adolescent suicide.

The results of the present study do not represent suicides during the whole adolescence. Studies on suicides including those during late adolescence are needed. There is also a paucity of detailed studies including sufficiently large groups of female adolescent suicides to enable adequate comparisons with male adolescent suicides.

The relation of the psychosocial stressors found in this study specifically with adolescent suicide remains uncertain. Further research with proper control subjects is needed. The choice of a control group (e.g. adolescents deceased of natural causes, homicide or accident victims, suicide attempters, psychiatric inpatients or outpatients, adolescents with psychiatric disorders in the community, etc), depends on the specific questions to be answered.

Further research is needed to explore the similarities and dissimilarities of suicides in different mental disorders at various specific phases of the life cycle. Future studies should also focus on mechanisms that mediate between risk factors during an individual's development and those occurring close to the suicide. Studies should address those individual, family related, and other social factors and processes that protect adolescents living in adverse and stressful circumstances.

9 SUMMARY

The aim of the study was to examine factors associated with adolescent suicides with a nationwide, unselected suicide population. The role of the victims' previous suicidality, of mental disorders and antisocial behaviour in the suicidal process were studied. Recent stressors, stressors as precipitants, and the relationship between recent stressors and psychiatric diagnosis in adolescent suicide were elaborated.

The study subjects were all 53 adolescent suicides, 44 boys and 9 girls, in the ages 13 to 19 years committed in Finland during one year. The mean age of the victims was 17.4 years (SD, 1.6 years). All victims were unmarried, and most of them came from families with low socioeconomic status.

The data were collected through interviews of the victims' parents and attending health care personnel, and from official records, i.e. by a psychological autopsy. After reviewing all the collected data, classification of recent stressors and precipitants, and the assignment of psychiatric diagnoses according to the DSM-III-R criteria were based on consensus of three researchers.

One third of the adolescents had previous suicide attempts, and six in ten were known to have verbalized their suicidal thoughts. One third of the victims had been in contact with psychiatric care system. All but three victims (94 %) suffered from a mental disorder. The most prevalent disorders were depressive disorders (51 %) and alcohol abuse or dependence (26 %). The prevalence of adjustment disorders (21 %) was higher than in most studies from other countries. Personality disorder was diagnosed in 32 % of the cases. Comorbidity of mental disorders was found in 51 % of the victims.

Antisocial behaviour was reported among 45 % of the male and 33 % of the female victims. Separations from parents, parental alcohol abuse and parental violence were commonly found among male victims with antisocial behaviour. Their psychosocial adjustment was poor, and they had experienced severe stressors. In retrospective diagnostic assessment, depressive disorders were common among all male suicides, but victims with ASB had more often alcohol abuse and comorbid mental disorders compared with victims without ASB.

Recent stressors were reported among all but two subjects. Precipitants were found in 70 % of the cases. Interpersonal separations and conflicts were the most common precipitants. Compared with other suicide victims, those with weakened parental support more often had separation as a precipitant, a higher number of stressors during the final month, and they had more often experienced major stress during the year prior to suicide. Interpersonal separations and disciplinary / legal difficulties were more common among victims with substance abuse compared with those with depressive disorder.

Most adolescent suicides seemed to be endpoints of long-term difficulties. Previous suicidal behaviour and communication of suicide intent were relatively common. Mental disorders, particularly depressive disorders and substance abuse had an important role in the suicides. A strong relatedness existed between adolescent suicide and the presence of depression, antisocial behaviour, and alcohol abuse. The results further showed the importance of stress, either acute or chronic or both, in adolescent suicide. Interpersonal problems were common precipitants in adolescent suicide. Especially interpersonal separations in the context of poor parental support seemed to have an important suicide precipitanting role in adolescence.

Professionals working in primary health care, in social welfare services, and in schools should recognize signs of depression, substance abuse, and antisocial traits as possible warning signs for suicidality. All expressions of intended suicide should be taken seriously and should prompt an examination of the adolescent's development and life circumstances. An actual suicide attempt should always lead to adolescent psychiatric evaluation. Adolescents should be informed that suicidal expressions do not belong to normal adolescence but are a sign of risk development. Peers could be encouraged to let adults know about the suicidality of their friend.

Assessment of stressful life events in general should be one element in the evaluation of suicide risk among adolescents. In the clinical assessment of suicide risk, even minor events from the viewpoint of adults, especially in the context of impaired parental support, need to be taken into account. In particular, adolescents' experiences of rejection and separation in their intimate relationships should not be underestimated.

Continuity of care, a relatively active role of the therapist and the involvement of the family in the treatment of adolescents with suicidal tendencies is suggested. Also close follow-up and an opportunity for the adolecent to easily return to treatment should be guaranteed.

Further research with proper control subjects is required to identify risk factors and combinations of factors specifically related to adolescent suicide. Further research addressing the similarities and dissimilarities of suicides at various specific phases of the life cycle is suggested. Future studies should also focus on mechanisms that mediate between risk factors during an individual's development and those occurring close to the suicide. Studies should address those individual, family related, and other social factors and processes that protect adolescents living in adverse and stressful circumstances.

10 ACKNOWLEDGEMENTS

This study was carried out at the National Public Health Institute of Finland and at the Department of Psychiatry, University of Helsinki. To the head of the National Public Health Institute, Director General, Professor Jussi Huttunen M.D. I wish to express my gratitude. As an academic dissertation this work was done at the Department of Psychiatry, which opportunity I most gratefully thank the acting Professor Matti Virkkunen, M.D.

I am most grateful to Professor Jouko Lönnqvist, M.D., Ph.D. and Hillevi Aro, M.D., Ph.D., my supervisors, who introduced me to psychiatric research and guided me to autonomous research. Without their guidance and encouragement this study would never have been completed.

I wish to express my gratitude to Professor Fredrik Almqvist, M.D. and Professor Johannes Lehtonen, M.D., the official referees of the dissertation, for their constructive criticism and valuable comments.

The staff of the Mental Health Department at the National Public Health Insitute and members of our study group, especially Martti Heikkinen, M.D., Markus Henriksson, M.D., and Erkki Isometsä, M.D., have provided a stimulating scientific atmosphere, for which I am most grateful. Markus Henriksson, M.D. and Aini Ostamo M.Sc. have read my manuscript, and I thank them for their comments and suggestions.

Discussions with my colleagues Erkki Pulkkinen, M.D., Ph.D., and Mirjami Pelkonen, Lic. in Social Sciences, have proved invaluable. I wish to express my sincere thanks also to Raimo Väisänen, M.D., for his relevant comments and linguistic assistance of the original publications I and II, and Richard Burton B.Sc. in revising the language of the original publications III, IV and V.

I wish to thank Ms. Eevaliisa Orelma for her expert secretarial assistance during the study.

I also wish to express my sincere thanks to the interviewed relatives of the adolescents who were the subjects of this study. The co-operation of the interviewed professionals provided valuable information. Without the work of the interviewers the practical conduction of this nationwide study would not have been possible.

The study was financially supported by The National Public Health Institute, The Academy of Finland, The Yrjö Jahnsson Foundation, The Kellokoski and Peijas Hospitals, The Finnish Medical Foundation, The Finnish-Norwegian Medical Foundation, The Jalmari and Rauha Ahokas Foundation, The Foundation for Psychiatric Research in Finland, The Finnish Psychiatric Association, and The Finnish Adolescent Psychiatric Association.

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