

Kansanterveyslaitos Folkhälsoinstitutet National Public Health Institute

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NPHI A 24/1998

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ATTEMPTED SUICIDE IN HELSINKI: MENTAL DISORDERS AND TREATMENT RECEIVED

Department of Mental Health and Alcohol Research, National Public Health Institute, Helsinki, Finland 1998

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Kirsi Suominen

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 December 11, 1998, at 12 noon.

Helsinki 1998

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Julkaisija -Utgivare - Publisher

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ISBN 951-740-108-6 ISSN 0359-3584

Hakapaino Oy, Helsinki 1998

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To my family

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1. LIST OF ORIGINAL PUBLICATIONS

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

- I Suominen K, Henriksson M, Suokas J, Isometsä E, Ostamo A, Lönnqvist J.
 Mental disorders and comorbidity in attempted suicide. Acta Psychiatr Scand 94: 234-240, 1996.
- II Suominen K, Isometsä E, Henriksson M, Suokas J, Ostamo A, Lönnqvist J. Consultation vs. research diagnoses of mental disorders among suicide attempters. Nord J Psychiatry (in press).
- III Suominen K, Isometsä E, Henriksson M, Ostamo A, Lönnqvist J. Hopelessness, impulsiveness and intent among suicide attempters with major depression, alcohol dependence or both. Acta Psychiatr Scand 96: 142-149, 1997.
- IV Suominen KH, Isometsä ET, Henriksson MM, Ostamo AI, Lönnqvist JK. Inadequate treatment for major depression both before and after attempted suicide. Am J Psychiatry (in press).
- V Suominen K, Isometsä E, Henriksson M, Ostamo A, Lönnqvist J. Treatment received by alcohol dependent suicide attempters. Acta Psychiatr Scand (in press).



2. INTRODUCTION

2.1. Classification of suicidal behaviour

The concept of suicidal behaviour or suicidality ranges from suicidal ideation to suicide attempts and completed suicide (Beck et al., 1973). Thus when studying suicidal behaviour, persons with suicide ideas, those who have made suicide attempts and those who have completed suicide should be separated from each other and their specific suicidal behaviour clearly defined (Smith & Maris, 1986).

Suicide ideators are commonly defined as individuals who have thoughts and wishes of suicide, but have not yet acted on a plan to cause self-injury (Beck, 1986). Suicide ideation includes suicide threats, suicide preoccupations, and expressions of the wish to die, as well as indirect indicators of suicide planning.

Among the factors found to predict eventual suicide, a previous attempt is one of the strongest (Hawton, 1987; van Egmond & Diekstra, 1989; Hirschfeld & Russell, 1997; Lewis et al., 1997; Moscicki, 1997). In most definition proposals, completed suicide is considered a fatal act of self-injury undertaken with more or less conscious self-destructive intent (Mayo, 1992). There has been debate as to whether attempted and completed suicides represent a single or two separate populations (Linehan, 1986). Suicidal people can be seen as a single population, as separate populations or as overlapping populations; these three points of view are visualized in Figures 1-3.







Figure 2. Separate populations



Figure 3. Overlapping populations

Nowadays there is accumulating evidence for the view of overlapping populations. This thesis focuses on attempted suicide.

2.2. Attempted suicide

2.2.1. Definition of suicide attempt

There is no single, unanimously accepted definition of a suicide attempt. Sometimes it is interpreted as an unsuccessful suicide and considered to be an action in which the intent is to take one's own life, but this view has been criticised (Suokas, 1991). A suicide attempt can also be regarded as an action arising from complicated motives and in which the intent may be something other than to die. The lethality of the action forms a continuum from a completely harmless act to a fatal one (Stengel, 1973).

The term "parasuicide" (Kreitman et al., 1969) was introduced instead of "attempted suicide" to supply a word which would indicate a behavioural analogue of suicide, but without considering a psychological orientation towards death being in any way essential to the definition (Kreitman, 1977). Kreitman's definition of parasuicide is: "a non-fatal act in which an individual deliberately causes self-injury or ingests a substance in excess of any prescribed or generally recognized therapeutic dosage" (Kreitman, 1977). Other terms have also been used, including "non-fatal deliberate self-harm" (a deliberate non-fatal act, whether physical, drug overdosage or poisoning, done in the knowledge that it was potentially harmful, and in the case of drug overdosage, that the amount taken was excessive) (Morgan, 1979); "deliberate self-poisoning", first used by Kessel, 1965 (the deliberate ingestion of more than the prescribed amount of medical substances, or ingestion of substances never intended for human consumption, irrespective of whether harm was intended) (Hawton & Catalan, 1987); and "deliberate self-injury" (any intentional self-inflicted injury, irrespective of the apparent purpose of the act) (Hawton & Catalan, 1987).

In this thesis the WHO's definition of parasuicide has been used: "an act with nonfatal outcome, in which an individual deliberately initiates a nonhabitual behaviour that, without intervention by others, will cause self-harm, or ingests a substance in excess of the prescribed or generally recognized therapeutic dosage, and which is aimed at realizing changes which he/she desired via the actual or expected physical consequences" (World Health Organization, 1986). Simple alcohol intoxication is not regarded as parasuicide. Here, attempted suicide and parasuicide are used as synonyms.

2.2.2. Attempted suicide as a public health problem

Suicide and attempted suicide are a significant public health problem in many European countries (Platt et al., 1992; Diekstra, 1993) and particularly in Finland (Ostamo & Lönnqvist, 1994). The suicide rate in Finland is one of the highest in the world (Retterstøl, 1993) and furthermore, Finland has very high attempted suicide rates (Platt et al., 1992). Although no country in the world has collected official statistics on attempted suicide, and the definitions of parasuicide or attempted suicide

have been variable in many studies, it appears that trends in suicide and parasuicide are closely related (Ostamo et al., 1991; Diekstra, 1993). Attempted suicide is at least ten times more common than completed suicide (Ostamo et al., 1991; Maris, 1992; Diekstra, 1993).

Parasuicidal behaviour is a considerable drain on resources in both primary and secondary health care (Platt et al., 1992). Yeo (1992) estimated the treatment cost of each case of deliberate self-harm in Sheffield, from attendance to hospital discharge, to be ± 425 . In Sweden, Runeson and Wasserman (1994) estimated that the care of suicide attempters accounted for 6.4% of the total budget for psychiatric inpatient care, and that the total direct management cost of suicide attempters in Sweden would be SEK 220 million a year. The cost of aftercare was not analysed.

2.2.2.1. Outcome of attempted suicide

Those who have attempted suicide carry a risk of suicide about 100 times greater than that of the general population (1%) during the year following the attempt, though this declines somewhat thereafter (Hawton, 1987). It appears that approximately 16% of suicide-attempting males and 17% of females will reattempt suicide within the next 12 months (Schmidtke et al., 1996), and over the subsequent years up to 31.6% may repeat the attempt (Hall et al., 1998). On average, about 10-15% of individuals who have ever made nonfatal suicide attempts eventually go on to kill themselves (Maris, 1992). A Finnish study of self-poisoned suicide attempters showed that 3.2% died by suicide during a 5-year follow-up period (Suokas & Lönnqvist, 1991b). Overall, according to a recent meta-analysis, the suicide risk among those treated for attempted suicide by self-poisoning is 40 times the expected value, which is higher than the risk related to any specific mental disorder (Harris & Barraclough, 1997). Increased risk was related to the proximity of the previous attempt, more than one previous attempt, a history of previous or current psychiatric treatment - particularly for depression or schizophrenia - and to measures of social cohesion. The risk of suicide after attempted suicide seems to be higher in men than women (Nordström et al., 1995). However, it has been estimated that only about 30-40% of suicide completers have made at least one prior attempt (Maris, 1992). In Finland, as a part of the National Suicide Prevention Project, Isometsä and Lönnqvist (in press) found that the majority (56%) of suicide victims, particularly males, died at their first lifetime suicide attempt.

2.2.3. Epidemiology of attempted suicide

Estimates of lifetime prevalence of suicide attempts in adults have ranged from 1.1% to 4.2% (Mintz, 1970; Schwab et al., 1972; Paykel et al., 1974; Ramsay & Bagley, 1985; Moscicki et al., 1988), with higher rates for females (Schwab et al., 1972; Moscicki et al., 1988). The estimates of 12-month prevalence of attempts have ranged from 0.19% to 0.8% (Schwab et al., 1972; Paykel et al., 1974; Ramsay & Bagley, 1985; Petronis et al., 1990) without clear sex difference (Moscicki, 1997). However, in a sample of 18-24-year-old students, 2% reported having attempted suicide during the preceding 12 months and 10% at some time in their life (Meehan et al., 1992). There are at least four possible explanations for this discrepancy. Firstly, there may be unconscious or conscious denial or forgetting of previous suicide attempts by adults. Secondly, it is possible that in younger cohorts the prevalence of suicide attempts has risen. Thirdly, the formulation of questions can lead to different results; and fourthly, a definition of suicide attempt has yet to be unanimously agreed.

As a part of the WHO/EURO Multicentre Study on Parasuicide (monitoring study), the rates of attempted suicide among persons aged 15 years or more in 16 centres in 13 European countries were estimated for the period 1989-1992 (Schmidtke et al., 1996). In this study "estimation factors" for each year were used, computed with regard to completeness of the sample and to whether annual or sample periods were covered. In order to improve the reliability of the data, the rates according to age groups were calculated using broader age bands than the usual 5-year bands. Also, in order to take account of the different age structures of the general populations served by the centres, age-standardized rates were calculated. For each sociodemographic variable, the average value of the percentages in each centre was calculated in order to avoid centres with a high number of suicide attempters distorting the percentages in the direction of their population. The highest average male person based agestandardized rate of suicide attempts was found in Helsinki, Finland (314/100 000) and the lowest rate (45/100 000) in Guipuzcoa, Spain. The highest average female person based age-standardized rate was found in Cergy-Pontoise, France (462/100 000) and the lowest (69/100 000) in Guipuzcoa, Spain. The centres with the next highest female rates were Oxford, UK (308/100 000) and Helsinki (246/100 000). Average-adjusted "European" suicide attempt rates calculated for people aged 15 years and over for the years 1989-1992 would be 133/100 000 for males and 184/100 000 for females. With only one exception, namely Helsinki, the person-based suicide attempt rates were higher among women than men (Schmidtke et al., 1996).

In 1989 all parasuicides admitted to health care were systematically registered over one year in four catchment areas of Finland (Helsinki, Jyväskylä, Rovaniemi, Seinäjoki), and the parasuicide rates appeared to vary locally with the suicide rates (Ostamo & Lönnqvist, 1991). In Helsinki, information about attempted suicide has been systematically collected since 1989. Over the period 1989-1993 suicide attempt event rates declined (from 355/100 000 to 274/100 000), due to a decrease in male event rates. Person rates increased from 1989 to 1990 and declined in both sexes afterwards. Male rates in Helsinki were persistently higher than female rates throughout the period 1989-1993 (Ostamo & Lönnqvist, 1994).

In a sample of the Finnish general population the prevalence of parasuicide during the preceding 12 months was 0.9% in women and 1.1% in men (Hintikka et al., 1998). These 12-month prevalences of parasuicide were nearly three times higher than those in a study based on the use of health services (Schmidtke et al., 1996). Previously it has been estimated that a quarter of suicide attempts lead to contact with health care services (Diekstra, 1993).

2.3. Mental disorders

2.3.1. Definition of mental disorder

There is no single, universal definition that would specify precise boundaries for the concept of mental disorder. Mental disorders have been defined by a variety of criteria; from a descriptive viewpoint DSM-III-R (American Psychiatric Association, 1987) and DSM-IV (American Psychiatric Association, 1994) define mental disorder as follows: "Each of the mental disorders is conceptualized as a clinically significant behavioral or psychological 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 be merely 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. Neither deviant behavior, e.g., political, religious, or sexual, nor conflicts that are primarily between the individual and society are mental disorders unless the deviance or conflict is a symptom of a dysfunction in the person, as described above."

Similarly, according to ICD-10 (World Health Organization, 1992), "disorder" is not an exact term, but is used instead of "disease" or "illness" to imply the existence of a clinically recognizable set of symptoms or behaviours associated in most cases with distress and with interference with personal functions. Social deviance or conflict alone, without personal dysfunction, should not be included in mental disorders as defined in ICD-10.

During the last decade, there has been growing interest in the phenomenon of comorbidity of mental disorders. Comorbidity refers to the presence of more than one specific disorder in a person at the same time (Maser & Cloninger, 1990). Psychiatric comorbidity means the joint occurrence of two or more mental disorders and the term somatopsychiatric comorbidity refers to the co-occurrence of a mental disorder and a physical disorder or condition (Henriksson, 1996). It has been recommended that the term comorbidity should be reserved for the co-occurrence of syndromes fulfilling criteria of different disorders (Maser & Cloninger, 1990), although "cosyndromal" might be a technically more accurate term (Maser et al., 1997).

2.3.2. Epidemiology of mental disorders

Two large, community based epidemiologic surveys have provided information on the epidemiology of mental disorders, namely the Epidemiologic Catchment Area Study (ECA) and the National Comorbidity Survey (NCS).

In the Epidemiologic Catchment Area Study (ECA), using a structured interview containing the Diagnostic Interview Schedule (DIS) based on the DSM-III, 15.4% and 32.2% of the population 18 years of age and over fulfilled criteria for at least one alcohol, drug abuse, or other mental disorder during the one month period before interview and during the lifetime, respectively. One-month and lifetime prevalences were 2.8% and 13.3% for alcohol abuse or dependence, 0.6% and 1.3% for schizophrenia, 5.1% and 8.3% for affective disorders, 2.2% and 5.8% for major depressive episode, 7.3% and 14.6% for anxiety disorders and 0.5% and 2.5% for personality disorders (antisocial personality), respectively (Regier et al., 1988).

In the National Comorbidity Survey (NCS) using the Composite International Diagnostic Interview (CIDI) the lifetime prevalence of at least one DSM-III-R mental disorder was 48%, and the 12-month prevalence of at least one disorder was close to

30%. The most common psychiatric disorders were major depressive episode, alcohol dependence, social phobia, and simple phobia. 12-month and lifetime prevalences were 11.3% and 26.6% for any substance abuse or dependence, 7.2% and 14.1% for alcohol dependence, 11.3% and 19.3% for any affective disorder, 10.3% and 17.1% for major depressive episode and 17.2% and 24.9% for any anxiety disorder. More than half of all lifetime disorders occured in the 14% of the population with a history of three or more comorbid disorders and less than 20% of those with a recent disorder had been in treatment during the past 12 months (Kessler et al., 1994).

In both surveys, women had elevated rates of affective disorders and anxiety disorders and men had elevated rates of substance use disorders and antisocial personality disorder. However, in the recent comparison between the ECA and NCS findings it was suggested that standardized methods are needed to reduce apparent discrepancies in prevalence rates between similar population surveys and to differentiate clinically important disorders in need of treatment from less severe syndromes (Regier et al., 1998). Furthermore, the estimates of prevalences of mental disorders are mostly based on these studies from the USA and there are no correspondingly large studies from Europe because of the expense involved.

In Finland, two well-known epidemiologic studies have reported the epidemiology of mental disorders, namely the cross-sectional Mini Finland Health Survey (Lehtinen et al., 1990a) and the longitudinal UKKI-study (Lehtinen et al., 1993). In the Mini Finland Health Survey (Lehtinen et al., 1990a) using the short version of the Present State Examination (PSE), the point-prevalence of clinically assessed mental disorders in the Finnish population aged 30 years and over, was 17.4%; 14.8% in the men and 19.5% in the women. The most common diagnoses were phobic and anxiety neurosis (6.2%) and neurotic depression (4.6%).

In the UKKI-study (Lehtinen et al., 1990c; Lehtinen et al., 1993; Lehtinen et al., 1996) the age-adjusted prevalence of mental disorders in the 16-year follow-up was 27.4%; 23.1% in men and 31.0% in women (Lehtinen et al., 1993). The most common mental disorders were phobic and anxiety neuroses (9.3%) and neurotic depression (5.3%). The age-adjusted prevalence of mental disorders using the complete Present State Examination (PSE) in the 16-year follow-up was 9.9% (Lehtinen et al., 1990c). The highest prevalence was for depression (4.6%).

Although these studies provide a useful picture of the occurrence of mental disorders and the treatment situation in Finland, their weaknesses lie in their methodology, their mainly descriptive nature (Lehtinen, 1996), and their age. In the UKKI study, the psychiatric interview was clinical and non-standardized, although the PSE was also used in the last phase of the study. The diagnostic classification used in both studies was based on ICD-8 without any standardized criteria.

The prevalence of depressive disorders in the general Finnish population aged 25-79 years was investigated using the Computer-Assisted Telephone Interview (CATI) method, including a short form of the University of Michigan version of the Composite International Diagnostic Interview (UM-CIDI) which generated probability diagnoses of a DSM-III-R major depressive episode and dysthymia (Isometsä et al., 1997). The age-adjusted 6-month prevalence was 4.1% for major depressive episode and 1.7% for current dysthymia.

The prevalence of alcohol dependence in Finland has not been properly studied. However, in a study of risk factors for alcohol dependence among a representative sample of 614 Finns the prevalence of current (past 12-month) alcohol dependence based on the ICD-10 criteria was 10.8% (Poikolainen, 1997).

2.3.3. Treatment of mental disorders

2.3.3.1. Treatment of major depression

Treatment of major depression consists of an acute phase, during which remission is induced, a continuation phase, during which remission is preserved, and a maintenance phase, during which the susceptible patient is protected against the recurrence of subsequent depressive episodes (American Psychiatric Association, 1993).

Effective treatments for major depression include psychotherapy, antidepressant medications, and ECT (American Psychiatric Association, 1993; Depression Guideline Panel, 1993; Lehtinen, 1994; Suomen Akatemia, Suomalainen Lääkäriseura Duodecim, 1995). Most patients are best treated with antidepresant medication coupled with psychotherapeutic management or psychotherapy (American Psychiatric Association, 1993; Thase et al., 1997). The combination of psychotherapy and medication also seems to enhance compliance (Paykel, 1995). However, several clinical features influence the choice of treatment.

2.3.3.1.1 Psychotherapeutic interventions

There are a range of psychotherapeutic interventions (particularly cognitivebehavioural therapies) that may be useful in major depressive disorder (American Psychiatric Association, 1993). Patients with mild to moderate depression may be treated with psychotherapy alone or with a combination of medication and psychotherapy (American Psychiatric Association, 1993; Depression Guideline Panel, 1993). Moreover, it has been argued that the APA guideline (American Psychiatric Association, 1993) understates the value of psychotherapy in the treatment of depression (Persons et al., 1996). The prophylactic effect of psychotherapy in preventing relapse needs to be further studied (Frank et al., 1992).

2.3.3.1.2. Somatic interventions

As the severity of depression increases somatic intervention becomes progressively indicated (American Psychiatric Association, 1993). Antidepressant pharmacotherapy provides a 60-70% rate of response in major depressive disorders (American Psychiatric Association, 1993). In nonselected cases of major depression, the data indicate similar rates of response to all antidepressant drugs (American Psychiatric Association, 1993; Trindade & Menon, 1997). However, the efficacy of tricyclic antidepressants depends on the adequacy of the dose used. A full trial of a tricyclic antidepressant drug to determine response must involve at least 150 mg of imipramine (or equivalent) for at least four to six weeks (Potter et al., 1991). There is no evidence from controlled trials that doses of 75 mg daily or lower are effective, although individual patients may respond to and remain well on such doses and relapse on withdrawal (Paykel & Priest, 1992). The prophylactic efficacy of antidepressants in preventing recurrences has been established (Montgomery & Montgomery, 1992).

Electroconvulsive therapy (ECT) is an effective treatment of major depression (American Psychiatric Association, 1990). ECT should be considered as an initial treatment for severe major depression with psychotic features or severe suicidality (American Psychiatric Association, 1993; Depression Guideline Panel, 1993; Lehtinen, 1994; Suomen Akatemia, Suomalainen Lääkäriseura Duodecim, 1995). It has been suggested that ECT is more effective than other treatments for severe depressive disorder, resulting in a lower incidence of suicide (American Psychiatric Association, 1990).

2.3.3.2. Treatment of alcohol dependence

Although abstinence is the preferred goal in the treatment of alcohol dependence, other important treatment outcomes may include relapse prevention, reduction in alcohol use and improvement in health and social functioning (American Psychiatric Association, 1995; O'Connor & Schottenfeld, 1998). Treatment of alcohol dependence includes management of withdrawal symptoms, if necessary, and psychosocial and possibly pharmacological treatments to prevent relapse (O'Connor & Schottenfeld, 1998).

Current criteria for inpatient or residential treatment of alcohol dependence include severe coexisting medical or psychiatric conditions, risk of harm to self or others, failure to respond to less intensive treatment, or a severely disrupted social or family environment that interferes with recovery (American Psychiatric Association, 1995; American Society of Addiction Medicine, 1996). Research on the psychotherapy of substance abuse is less developed than that on depression. However, there is growing evidence of the effectiveness of psychotherapy in reducing alcohol use, at least in the short term (McDuff & Beuger, 1997; O'Connor & Schottenfeld, 1998). Psychosocial treatments found effective for selected patients with alcohol use disorders include cognitive behavioural therapies, other behavioural therapies, psychodynamic/ interpersonal therapy, brief interventions, marital and family therapy, and group therapies (American Psychiatric Association, 1995). Patient participation in self-help groups, such as Alcoholic Anonymous, is frequently helpful (American Psychiatric Association, 1995) and may be cost effective for some patients (O'Connor & Schottenfeld, 1998).

A variety of medications for the prevention of relapse have been studied in disorders of alcohol use, including selective serotonin-reuptake inhibitors, serotonin antagonists, other serotonergic agents, GABAergic agents, and dopaminergic agents. Nowadays there is accumulating evidence that disulfiram, naltrexone and acamprosate are helpful in reducing drinking (O'Connor & Schottenfeld, 1998).

3. SUICIDE INTENT, HOPELESSNESS AND IMPULSIVENESS IN ATTEMPTED SUICIDE

Suicide intent, hopelessness, impulsiveness, depression, alcoholism and previous parasuicide have all been identified as risk factors for completed suicide. It is generally accepted that many acts of deliberate self-harm are impulsive (Evans et al., 1996). The biological markers of impulsiveness have been found to predict completed suicide after a suicide attempt (Åsberg et al., 1976; Nordström et al., 1994). Greater premeditation, however, has been suggested to be associated with more serious suicidal intent (Hawton & Osborn, 1984). Moreover, the seriousness of intent of a parasuicide seems to be related to the tendency to completed suicide at a later date (Linehan, 1986).

3.1. Suicide intent

Suicide intent is commonly defined as the seriousness or intensity of the wish of a patient to terminate his life (Beck et al., 1974a). Suicide attempters with high intent may have a higher risk of completed suicide than those with lower intent (Pierce, 1981; Pallis et al., 1984; Lönnqvist & Tolppanen, 1985; Lönnqvist & Ostamo, 1991; Suokas & Lönnqvist, 1991b), although not all studies support this (Linehan, 1986). Several studies have investigated the relationship between depression and suicide intent (Silver et al., 1971; Pallis & Sainsbury, 1976; Linehan, 1986; O'Brien et al., 1987; De Maso et al., 1994). It has been suggested that hopelessness is the key mediating variable between depression and suicide intent (Minkoff et al., 1973; Beck et al., 1975; Wetzel, 1976; Wetzel et al., 1980; Dyer & Kreitman 1984; Salter & Platt, 1990), but not all findings accord with this interpretation (Pokorny et al., 1975; Strosahl et al., 1992).

The lethality of a suicide attempt (somatic severity) means danger to life in a medical, biological sense (Beck et al., 1973). The rating should be based on the objective medically-accepted danger, and not on what the subject knew or thought about it. There appears to be almost no or only weak correlation between the measures of suicide intent and the lethality of a suicide attempt (Linehan, 1986; Plutchik et al., 1989). In a Finnish study, a nonimpulsive index suicide attempt, moderate to very

serious lethality, and severe intention to die during the index attempt, were found as risk factors for later suicide (Suokas & Lönnqvist, 1991b).

3.2. Hopelessness

Hopelessness, defined as a state of negative expectations (Beck et al., 1974b), appears to be another predictor of eventual suicide (Beck et al., 1985; Fawcett et al., 1987; Beck et al., 1989a; Beck et al., 1990; Weishaar & Beck, 1992; Keller & Wolfersdorf, 1993). Hopelessness has been found predictive of actual suicide, both in psychiatric outpatients (Beck et al., 1990) and in hospitalized suicide ideators (Beck et al., 1989a). The role of hopelessness in the relationship between alcoholism and suicide attempts is not clear, however. In studies concerning suicidal intention the influence of alcohol is only rarely discussed (Nielsen et al., 1993). Although hopelessness rather than depression has been found the key determinant of suicidal intent, both in alcoholic and nonalcoholic suicide attempters (Beck et al., 1976), hopelessness did not predict suicide among alcohol abusing suicide attempters (Beck et al., 1989b). In fact, Beck and Steer (1989) found that only a diagnosis of alcoholism predicted eventual suicide in a sample of hospitalized suicide attempters. In addition, Nimeus et al. (1997) found in a similar sample of suicide attempters with different diagnoses that the Hopelesseness Scale was not a satisfactory instrument for predicting future suicide; hopelessness was rather associated with mood disorders. On the other hand, in patients with affective disorders (Fawcett et al., 1987; Keller & Wolfersdorf, 1993) the degree of hopelessness appeared to be an important factor predicting eventual suicide, although its significance may depend on the history of drug and alcohol abuse (Young et al., 1994). Thus the role of hopelessness may vary between mental disorders.

3.3. Impulsiveness

Impulsiveness may be defined as a tendency to respond quickly to a given stimulus, without deliberation and evaluation of the consequences (Evans et al., 1996). When investigating impulsiveness on the behavioural level, it seems that subjects attempting suicide impulsively are less depressive, less hopeless and have lower intent to die than nonimpulsive attempters (Pallis & Jenkins, 1977; Williams et al., 1980; Hawton & Osborn, 1984; Brown et al., 1991). Fox & Weissman (1975) have found that suicide

attempts by pill overdose are the most impulsive and carry the least intention to kill oneself.

It was earlier found that patients with formal psychiatric illnesses premeditate selfpoisoning more often than others (Kessel, 1965) and that suicide attempts are not planned among subjects with adjustment reaction, in comparison with subjects with major depression (Polyakova et al., 1998). However, few studies have investigated impulsiveness, suicide intent or hopelessness in different diagnostic groups.

4. ATTEMPTED SUICIDE AND MENTAL DISORDERS

4.1. Mental disorders and completed suicide

The association between mental disorders and completed suicide is well established (Harris & Barraclough, 1997). Studies of completed suicide have generally found depressive disorders and substance abuse to be the most prevalent mental disorders (Black & Winokur, 1990; Henriksson, 1996). In the National Suicide Prevention Project in Finland, using a psychological autopsy method, one or more diagnosis on axis I was made for 93% and a diagnosis on axis II for 31% of the victims. The majority of suicide victims suffered from comorbid disorders (Henriksson et al., 1993).

Lifetime risk of suicide in severe forms of depression has been estimated as high as 15% (Guze & Robins, 1970) or even 19% (Goodwin & Jamison, 1990). However, these are likely to be overestimates (Blair-West et al., 1997). Recently, the lifetime risk of suicide has been estimated at 6% for affective disorder (Inskip et al., 1998). In mood disorders, a recent suicide attempt associates with a particularly high risk of subsequent suicide (Nordström et al., 1995).

The suicide mortality of persons suffering from alcoholism has been estimated to be as high as 18% (Roy & Linnoila, 1986). According to Murphy & Wetzel (1990) these, too, are overestimates, and they have estimated the lifetime risk of suicide in alcoholism at between 2% - 3.4%. Recently, the lifetime risk of suicide was estimated at 7% for alcohol dependence (Inskip et al., 1998). The risk of completed suicide is reportedly highest among subjects with comorbid major depression and substance use disorders (Cheng, 1995).

4.2. Mental disorders and attempted suicide

In contrast, the role of mental disorders in attempted suicide remains controversial. It has been stated that only a small proportion of suicide attempters have major psychiatric disorders, and individuals who harm themselves should not generally be considered as psychiatrically ill because of their behaviour, but rather as people made vulnerable by personal and social difficulties (Hawton & Catalan, 1987; Rihmer, 1996). On the other hand, there is accumulating evidence that psychiatric disorders are associated with high rates of suicide attempts (Wetzler et al., 1997).

Numerous studies have generated information about mental disorders among suicide attempters. In the first study using an interview, a standard questionnaire and defined diagnostic criteria in investigating mental disorders in attempted suicide (Schmidt et al., 1954) 81% of the subjects received a diagnosis of some kind of mental disorder. Urwin & Gibbons (1979) examined 539 suicide attempters using the Present State Examination (PSE) in diagnosing the presence of mental disorders. It was found that 30% of the patients could be classified as not having a mental illness while 60% could be classified as depressed.

In many studies, depression, alcoholism, schizophrenia and other psychotic disorders, personality disorders and adjustment disorders have tended to be associated with parasuicide (Dyck et al., 1988; Allgulander & Fisher, 1990; Pykäläinen & Pakaslahti, 1990; Nordentoft et al., 1993; Nordentoft & Rubin, 1993; Rudd et al., 1993; Welcher et al., 1993; Gregory, 1994; Runeson & Wasserman, 1994).

The results of studies investigating the prevalence or distribution of specific mental disorders among suicide attempters have been uneven, and there are several possible explanations for this. Firstly, the patient samples have been dissimilar in these studies, and secondly, the terminology used has been diverse. Thirdly, few of the studies have been based on well-defined operationalized diagnostic criteria for mental disorders; indeed, many were conducted prior to the introduction of operational diagnostic criteria and structured interviews. In several reports the evaluation and diagnosis of mental disorder was based on clinical diagnosis according to diverse criteria, or only on hospital records, self-report questionnaires or observer rating scales, or else the diagnostic procedure and classification used in the study are not described.

In the following, only studies using DSM-III (American Psychiatric Association, 1980), DSM-III-R (American Psychiatric Association, 1987), DSM-IV (American Psychiatric Association, 1994) or ICD-10 (World Health Organization, 1992) in the classification of mental disorders among suicide attempters are reviewed.

Studies of the diagnostic distribution of mental disorders among adult suicide attempters have found the majority to have suffered from diagnosable mental disorders according to DSM-III (Fernandez-Pol, 1986; Ennis et al., 1989; McGrath, 1989; Sakinofsky et al., 1990; Hamer et al., 1991; Van Heeringen et al., 1991; Öjehagen et al., 1991; Allard et al., 1992; Strosahl et al., 1992; Nordström et al., 1994), DSM-III-R (Hale et al., 1990; Magne-Ingvar et al., 1992; Van Heeringen et al., 1993; Van Heeringen et al., 1995; Beautrais et al., 1996; Engström et al., 1996; Stenager, 1996; Engström et al., 1997; Gupta & Trzepacz, 1997; Nimeus et al., 1997; Schnyder & Valach, 1997; Van der Sande et al., 1997b; Ferreira de Castro et al., 1998), DSM-IV (Elliott et al., 1996; Carter et al., 1998) or ICD-10 (Asukai, 1995).

The proportions of mental disorders have varied in these studies: major depression 3-62% (weighted mean 24%), alcohol dependence or abuse 6-47% (weighted mean 16%), schizophrenia 1-18% (weighted mean 5%), personality disorders 6-77% (weighted mean 47%) and adjustment disorders 10-58% (weighted mean 34%). Only one of these studies was based on the Stuctured Clinical Interview for DSM-III-R -Patient Version (SCID-P) (Beautrais et al., 1996), while one other used part of the Structured Clinical Interview for DSM-III (SCID) relevant to anxiety and depressive disorders (Hamer et al., 1991).

Most earlier studies reported only one principal diagnosis of mental disorder for each suicide attempter. However, the risk of attempted suicide seems to rise with increasing psychiatric comorbidity (Hale et al., 1990; Rudd et al., 1993; Bronisch & Wittchen, 1994; Moscicki, 1994; Beautrais et al., 1996; Wetzler et al., 1997).

In summary, few previous studies of parasuicide have been based on well-defined diagnostic criteria for mental disorders. In most reports, the diagnostic procedures for mental disorders are not described in detail, the diagnoses have been based on psychiatric consultation data, or evaluation only on hospital records. In some studies, completed suicides, suicide attempts and suicidal ideation have been pooled together, and very few studies of attempted suicide have been based on interview and defined diagnostic criteria which also take possible comorbidity into account.

4.2.1. Mental disorders and attempted suicide in Finland

Depression and alcoholism are associated with attempted suicide in Finnish studies; alcoholism has been more prevalent among males and depression more prevalent among female suicide attempters (Harenko, 1967; Jokinen & Lehtinen, 1978; Mäkelä & Pitkäjärvi, 1979; Oksa et al., 1981; Mäkelä, 1983; Palosaari, 1990; Haatainen et al., 1993). 96% of suicide attempters were depressed as assessed by the Hamilton Depression Scale (HDS) (Taiminen et al., 1996a) and 90% as assessed by the Depression Scale (DEPS) (Taiminen et al., 1996b). According to ICD-10 criteria a fifth (20%) of suicide attempters received a diagnosis of depression, and personality disorder was diagnosed in a third (Haatainen et al., 1993). 11-41% (weighted mean 15%) of suicide attempters have suffered from psychotic disorders (Achté & Ginman, 1966; Niskanen et al., 1975; Mäkelä & Pitkäjärvi, 1979; Jokinen et al., 1979; Oksa et al., 1981; Palosaari, 1990; Pykäläinen & Pakaslahti, 1990), 3-49% (weighted mean 19%) from neuroses (Achté & Ginman, 1966; Niskanen et al., 1975; Jokinen et al., 1979; Mäkelä & Pitkäjärvi, 1979; Oksa et al., 1981; Pykäläinen & Pakaslahti, 1990) and 13-40% (weighted mean 23%) from alcoholism (Achté & Ginman, 1966; Harenko, 1967; Niskanen et al., 1975; Mäkelä & Pitkäjärvi, 1979; Oksa et al., 1981; Mäkelä, 1983; Palosaari, 1990; Pykäläinen & Pakaslahti, 1990). Major depression was diagnosed in 21% and adjustment disorder in 12% of suicide attempters (Pykäläinen & Pakaslahti, 1990).

Studies of mental disorders in attempted suicide based on interview and well-defined diagnostic criteria, and which also report comorbidity, have not previously been systematically undertaken in Finland. Furthermore, although diagnoses have often been based on psychiatric consultation data, possible discrepancies between diagnoses made in the routine clinical psychiatric consultation situation and in carefully assigned research interviews have not been examined.

5. TREATMENT OF SUICIDE ATTEMPTERS

Despite the well-known risk of completed suicide or repetition of suicide attempt after attempted suicide, only a limited number of special intervention programmes for suicide attempters have been described. One possible reason is the lack of clear evidence from earlier studies that treatment interventions may reduce the risk of repeated suicide attempts or suicides (Goldney & Burvill, 1980; Hirsch et al., 1982; Hawton, 1989; Möller, 1989; Möller, 1992; Cantor, 1994; Kurz & Möller, 1995; Van der Sande et al., 1997a). Another factor that may have contributed to this low level of interest might be the poor compliance with outpatient aftercare among suicide attempters. In a review of studies on efforts to improve the compliance of suicide attempters the proportion of compliant patients in routine care situations hardly ever exceeded 40% (Van Heeringen, 1992). For these reasons, in part, there is no general agreement about which treatment approaches for suicide attempt patients are most appropriate (Hawton, 1989). Furthermore, attitudes of health care professionals toward patients who have attempted suicide are often negative or indifferent (Hawton & Catalan, 1987; Suokas, 1991), so the possibility that attitudes have also influenced research cannot be excluded.

Only studies concerning treatment received by suicide attempters (excluding primary prevention and treatment received for "suicidal crisis") are reviewed here.

5.1. Studies evaluating treatment received after attempted suicide

5.1.1.Retrospective studies evaluating treatment received after attempted suicide

Greer & Bagley (1971) followed up 204 subjects retrospectively from 12 to 24 months after a suicide attempt and classified them into groups according to treatment received. They concluded that psychiatric intervention is associated with a significant reduction in subsequent suicidal behaviour.

Kennedy (1972) compared retrospectively 204 suicide attempters admitted to a regional poisoning treatment centre in Edinburgh after the event with attempters who had been referred elsewhere or had not been referred at all. He found a lower repetition rate during the following year among those referred to the poisoning treatment centre than in those referred elsewhere. Both these studies were retrospective and the groups were not randomly selected.

5.1.2. Randomized prospective controlled trials of the efficacy of psychosocial/ psychotherapeutic treatment interventions following attempted suicide

17 prospective randomized controlled studies of psychosocial or psychotherapeutic treatment interventions following attempted suicide using repeated suicide attempts as the main outcome are summarized in Table 1. All these studies involved diagnostically heterogeneous groups of suicide attempters, with two exceptions. Linehan et al. (1991) investigated chronically parasuicidal women who met the DSM-III criteria for borderline personality disorder, while in the study of Liberman & Eckman (1981) all patients had received a diagnosis of depressive neurosis according to DSM-II. Most of the mentioned studies had small sample sizes and a type II error cannot be excluded. Only two studies showed a significant reduction in suicide reattempts (Welu, 1977; Linehan et al., 1991) during the follow-up. In one study (Salkovskis et al., 1990) cognitive-behavioural problem solving therapy was better than "treatment as usual" after six months follow-up, but not after 18 months.

A recent review (Van der Sande et al., 1997a) of these intervention studies classified them into four categories: psychiatric management of poor compliance (Chowdhury et al., 1973; Welu, 1977; Hawton et al., 1981; Möller, 1989; Allard et al., 1992; Van Heeringen et al., 1995), guaranteed in-patient shelter (Morgan et al., 1993; Cotgrove et al., 1995), psychosocial crisis intervention (Gibbons et al., 1978; Hawton et al., 1987) and cognitive-behavioural treatment (Liberman & Eckman, 1981; Salkovskis et al., 1990; Linehan et al., 1993; McLeavey et al., 1994). Only the cognitive-behavioural approach appeared to have a beneficial effect on the repetition risk of suicide attempts (Van der Sande et al., 1997a). Another recent systematic review of psychosocial and pharmacological treatments for preventing repetition of deliberate self harm also concluded that problem solving therapy and provision of an emergency contact card in addition to standard care seemed to reduce the repetition of deliberate self harm (Hawton et al., 1998). However, there remains a lack of evidence to indicate the most effective forms of treatment for patients who deliberately harm themselves, and further larger trials of treatment are needed (Hawton et al., 1998).

Although the risk of repetition has not necessarily decreased, many of these intervention studies have shown beneficial effects on compliance (Hawton et al., 1981; Torhorst et al., 1987; Torhorst et al., 1988; Allard et al., 1992; Van Heeringen et al., 1995; Van der Sande et al., 1997b), social improvement (Chowdhury et al., 1973; Welu, 1977; Gibbons et al., 1978; Hawton et al., 1987; Torhorst et al., 1988;

Study	Sample type	Experimental group (E)	Control group (C)	N (E:C)	Duration of intervention	Follow-up	Psychiatric morbidity %	Repetition (E:C) %	Suicide (E:C) N
Chowdhury et al. (1973)	Repeated parasuicide	Frequent and regular out-patient appointments, home visits and emergency telephone service	Conventional care	71:84	6 months	6 months	Depression 49% Alcohol/drug abuse 53% Schizophrenia 5%	24% vs 23%	0:0
Welu (1977)	Parasuicide	Immediate follow-up after release from hospital, home visit and individual treatment plan	Routine aftercare	62:57	4 months	4 months		5% vs 16%	
Gibbons et al. (1978)	Parasuicide by overdose	Task-centred social casework	Routine service	200:200	3 months	l year		13.5% vs 14.5%	
Hawton et al. (1981)	Parasuicide by overdose	Home-based brief problem- orientated counselling, flexible times	Brief out-patient problem- orientated counselling	48:48	3 months	l year		10% vs 15%	
Liberman & Eckman (1981)	Repeated parasuicide	Behavioural therapy	Insight- oriented psychotherapy	12:12	10 days	2 years	DSM-II: Depressive neurosis 100%	16.7% vs 25%	
Hawton et al. (1987)	Parasuicide by overdose	Brief out-patient problem- orientated counselling	Referral to general practitioner	41:39	3 months	l year		7.3% vs 15.4%	1:0

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Table 1. Study characteristics and outcome of randomized controlled trials on treatment of suicide attempters

Kurz et al. (1988) Möller et al. (1987) Möller (1989) Torhorst et al. (1987)	Parasuicide by overdose	Motivational interview, continuity of care	Routine management	66:70	Up to 3 months	l year	ICD: Neurosis Reactive disorder Personality disorder Addictive behaviour	14% vs 4%	3:2
Torhorst et al. (1988)	Repeated parasuicide by overdose	Short-term crisis-oriented outpatient treatment: 12 weekly sessions/3 months	One session per month/ 1 2 months	40:40	Up to 1 year	I year		22.5% vs 22.5%	
Salkovskis et al. (1990)	Repeated parasuicide	Cognitive-behavioural problem- solving therapy	Treatment as usual	12:8	l month	18 months		25% vs 50%	
Waterhouse & Platt (1990)	Parasuicide	Hospitalization in general hospital	Discharge home	38:39	1 day	4 months		7.9% vs 10.3%	
Linehan et al. (1991) Linehan et al. (1993)	Chronically parasuicidal women with borderline personality disorder	Cognitive-behavioural therapy	Treatment as usual	19:20	l year	1 year (2 years)	DSM-III-R: Borderline personality disorder 100%	26% vs 60%	
Allard et al. (1992)	Parasuicide	Individual treatment plan with a schedule of visits, home visit(s) and written or telephone reminders in case of missed appointments	Care as usual	63:63	1 year	2 years	DSM-III: Depression 86% Substance abuse 52% Personality disorder 45%	35% vs 30%	3:1
Morgan et al. (1993)	First time parasuicide	"Green card"; easy access to on-call psychiatrist; on-demand crisis admission	Treatment as usual	101:111	l year	l year		5% vs 10.8%	0:0

Study	Sample type	Experimental group (E)	Control group (C)	N (E:C)	Duration of intervention	Follow-up	Psychiatric morbidity %	Repetition (E:C) %	Suicide (E:C) N
McLeavey et al. (1994)	Parasuicide by overdose	Interpersonal problem-solving skills training	Brief problem- oriented approach	17:16	2 months	l year	Dysthymia 23% Personality disorder 15% Alcohol abuse 13%	10.5% vs 25%	
Cotgrove et al. (1995)	Adolescent parasuicide	Giving a card allowing readmission to hospital on demand	Standard management	47:58		l year		6% vs 12%	
Van Heeringen et al. (1995)	Parasuicide	Home visits by a community nurse in cases of non-compliance to motivate compliance with referral	Usual referral procedure	196:195		1 year	DSM-III-R: Axis I disorder 82% Mood disorder 15% Anxiety disorder 3%	10.7% vs 17.4%	6:7
Van der Sande et al. (1997b)	Parasuicide	Intensive psychosocial treatment	Care as usual	140:134		l year	DSM-III-R: Mood disorder 32% Adjustment disorder 15%	17.1% vs 14.9%	
Salkovskis et al., 1990; Linehan et al., 1993; McLeavey et al., 1994) and on psychological improvement (Gibbons et al., 1978; Liberman & Eckman 1981; Salkovskis et al., 1990). Assertive outreach for poorly compliant patients may be a necessary component for maximising the delivery of any treatment that is shown to be effective (Hawton et al., 1998).

5.1.3. Other studies of psychosocial/psychotherapeutic treatment interventions following attempted suicide

Neither have other non-randomized studies demonstrated lasting positive effects on repeated suicidal behaviour. Ettlinger (1975) studied a large sample of suicide attempt patients (N=670 in the period 1964-1966) and compared them with suicide attempters (N=681) during the preceding three year period receiving treatment as usual. The study group was offered psychiatric, social and psychological help in connection with the attempted suicide and after one month, 6 months and 12 months. After 5-6 years follow-up the suicide mortality and proportion of repeated attempts were similar in both groups. The only possible preventive effect of the intervention program was that men in the study group with abuse of alcohol had a significantly lower suicide mortality than others.

In a study by Termansen and Bywater (1975) suicide attempters were allocated to four groups. In the first group the patient was assessed by a mental health worker in the emergency ward as soon as possible after the suicide attempt, and then followed up for three months and reassessed by the same worker. The second group was also assessed in the emergency ward by a mental health worker, but followed-up by a crisis center volunteer. The third group was again assessed in emergency by a trained community mental health worker, but without follow-up. The fourth group was only identified from records. All were re-evaluated after 12 weeks. Of the original 280 suicide attempters only 128 (46%) could be followed-up. Patients who were initially assessed and followed-up by a trained community mental health worker showed a lower rate of repeated attempts and a greater degree of improvement with respect to a variety of measures of "role impairmant" during the follow-up.

Wulliemier et al. (1977) investigated 326 suicide attempters divided into two groups. A proposition of regular treatment was systematically made to all of these subjects in both groups. In addition, the study group was informed that the researchers would get in touch with them several times during the next two years if not in treatment. The

control group was contacted only after two years and without prior notice, at which time a significant reduction in reattempts and suicides in the study group was found.

5.1.4. Controlled trials of the efficacy of psychopharmacological treatment of suicide attempters

There appear to be only four published prospective randomized studies investigating psychopharmacological treatment interventions after attempted suicide.

In the first study, Montgomery et al. (1979) randomly allocated 37 repeated suicide attempters (with a history of at least two previous attempts and who were not suffering from depression or schizophrenia) to receive either flupenthixol decanoate 20 mg i.m. monthly, or placebo. Of those 30 patients completing the trial, only 21% (3 of 14) receiving active medication reattempted suicide during the six month study period, compared to 75% (12 of 16) receiving placebo. This study was the first report of a positive effect of pharmacotherapy in reducing subsequent suicidal acts.

In the second study, Montgomery et al. (1983) randomly allocated 58 suicide attempters diagnosed as suffering from personality disorders (with a history of at least two previous attempts and who were not suffering from depression or schizophrenia) to receive either 30 mg mianserin at night or placebo in a six month trial. 38 patients completed the study; there was no significant difference in outcome between the mianserin and placebo treated groups at any point in the six months follow-up.

The third randomized study (Hirsch et al., 1982) compared mianserin 60 mg, nomifensine 150 mg and placebo among 114 patients following hospitalization for parasuicide. The medication was discontinued at six weeks and patients were followed up for 12 weeks without a significant difference appearing in repeated suicide attempts.

In the fourth and recent study, Verkes et al. (1998) conducted a 1-year double-blind trial comparing paroxetine 40 mg/day and placebo in 91 patients who had recently attempted suicide for at least a second time. None of the patients had experienced a major depressive episode or had any other major DSM-III-R axis I diagnosis, but at least one cluster B personality disorder was present in 74 patients. After adjustment for the number of previous suicide attempts, paroxetine showed significant efficacy in the prevention of recurrent suicidal behaviour. In contrast, Montgomery et al. (1994)

failed to find any effect with fluoxetine (in a dose of 60 mg twice weekly for six months compared with placebo) on the suicide attempt rate among 107 patients attending a psychiatric clinic with a history of two or more suicide attempts but not suffering from major depression.

5.2. Treatment received by suicide attempters

5.2.1. Treatment received before the suicide attempt

About half of suicide attempters have received psychiatric outpatient treatment (40-72%) or inpatient treatment (24-63%) previously (Holding et al., 1977; Pablo & Lamarre, 1986; Suokas & Lönnqvist, 1991a; Öjehagen et al., 1991; Nordentoft & Rubin, 1993; Michel et al., 1997; Schnyder & Valach, 1997). Some form of psychiatric treatment has been received by 16-84% of suicide attempters during their lifetime (Smith & Davison, 1971; Turner & Morgan, 1979; Starkey & Lawson, 1980; Barnes, 1986; Platt et al., 1988; Öjehagen et al., 1991; Welcher et al., 1993; Stenager, 1996; Schnyder & Valach, 1997). 25-47% of suicide attempters had contacted their general practitioner (GP) shortly before the act (Diekstra & van Egmond, 1989; Stenager & Jensen, 1994; Michel et al., 1997) and approximately half of them (range 30%-66%) had been in current psychiatric care (Pablo & Lamarre, 1986; Suokas & Lönnqvist, 1991a; Öjehagen et al., 1991).

Although there are many studies describing treatment received before the suicide attempt, the vast majority of them concern heterogeneous groups of suicide attempters and the quality of treatment has not been systematically studied.

5.2.2. Treatment received after the suicide attempt

The majority (70-98%) of suicide attempters are referred for aftercare after the attempt (Fox & Weissman, 1975; Morgan et al., 1976; Adam et al., 1983; Diekstra & van Egmond, 1989; McGrath 1989; Hawton et al., 1991 & 1992; Öjehagen et al., 1992; Runeson & Wasserman, 1994; Hawton et al., 1995; Schmidtke et al., 1996; Schnyder & Valach, 1997). However, in a recent English study 46% of the suicide attempters received no psychosocial assessment at any time during their hospital contact (Kapur et al., 1998). Outpatient psychiatric care had been provided for 24-

61% and psychiatric hospitalization for 6-57% of suicide attempters (Fox & Weissman, 1975; Morgan et al., 1976; Holding et al., 1977; Starkey & Lawson, 1980; Adam et al., 1983; McGrath, 1989; Platt & Robinson, 1991; Hawton et al., 1991 & 1992; Öjehagen et al., 1992; Welcher et al., 1993; Runeson & Wasserman, 1994; Hawton et al., 1995; Stenager, 1996; Hawton et al., 1997; Schnyder & Valach, 1997). In the WHO/EURO Multicentre Study on Parasuicide the recommended aftercare following the acute medical treatment differed between centres (Schmidtke et al., 1996). No further treatment was recommended for an average of 16% of all males and 14% of all females. The type of aftercare most often recommended for both males (51%) and females (48%) was in-patient treatment.

Factors found to be associated with aftercare have been age, intention to die, previous psychiatric treatment, experience of consulting psychiatrist, previous suicidality, the lethality of the attempt, and depressive disorders and substance abuse and dependence (Fox & Weissman, 1975; Morgan et al., 1976; Lönnqvist, 1985; Lönnqvist & Ostamo, 1988; Runeson & Wasserman, 1994). During the 1-5 year follow-up after the attempt 43-71% had received psychotropic medication, 83% some form of individual counselling, 46% conjoint family or marital counselling, 30% group therapy and 6% ECT (Adam et al., 1983; Öjehagen et al., 1992; Johnsson Fridell et al., 1996).

In Sweden, Runeson et al. (1994) found that two thirds of psychiatric care providers had specific routines for the management of suicidal patients. Only a fifth of these providers used rating scales for assessment of suicide risk, and although psychiatric assessment was provided for the majority of the patients, the physician was not always a specialized psychiatrist. Recently, Kapur et al. (1998) concluded in a study assessing the management of self poisonings in four teaching hospitals in England, that services for suicide attempters remain in disarray.

In summary, numerous studies have described treatment received after the suicide attempt. However, they have concerned heterogeneous groups of suicide attempters, and the type and quality of treatment received after attempted suicide has not been systematically studied diagnosis-specifically. Moreover, there appear to be no previous studies investigating how treatment received by suicide attempters changes after the attempt and contact with health care.

Only one study has investigated treatment received for major depression before attempted suicide. Theret et al. (1989) found that only 3% of the suicide attempters with major depression received adequate treatment for depression before the attempt. There appear to be no previous studies investigating treatment received specifically for major depression after attempted suicide or for alcohol dependence before or after the suicide attempt. Platt & Robinson (1991) found that alcohol dependent suicide attempters were more likely to have received psychiatric treatment in the past compared with non-alcohol dependent suicide attempters, and nearly half of alcohol dependent subjects were offered no psychiatric or social work aftercare. However, the treatment received by major depressive and alcohol dependent suicide attempters has not been systematically studied.

5.2.4. Treatment received by suicide attempters in Finland

About half or a little over of suicide attempters have previously received psychiaric treatment (Achté & Ginman, 1966; Jokinen et al., 1979; Mäkelä & Pitkäjärvi, 1979; Ulmanen, 1983; Lönnqvist & Ostamo, 1988; Palosaari, 1990; Pykäläinen & Pakaslahti, 1990; Suokas & Lönnqvist, 1991a). 22-47% had previous psychiatric inpatient treatment (Achté & Ginman, 1966; Jokinen & Lehtinen, 1978; Mäkelä & Pitkäjärvi, 1979; Ulmanen, 1983; Lönnqvist & Ostamo, 1988; Pykäläinen & Pakaslahti, 1990; Suokas & Lönnqvist, 1991a), males more often than females (Lönnqvist & Ostamo, 1988). During the last five years before the suicide attempt two thirds of subjects had received psychiatric inpatient or outpatient treatment (Haatainen et al., 1993). At the time of the suicide attempt, 34-45% of patients had been under psychiatric outpatient care (Jokinen et al., 1979; Lönnqvist & Ostamo, 1988; Pykäläinen & Pakaslahti, 1990; Suokas & Lönnqvist, 1991a) and 4% admitted to a psychiatric hospital (Suokas & Lönnqvist, 1991a). Females had more often received psychiatric outpatient treatment than males at the time of the attempt (Lönnqvist & Ostamo, 1988). 29% of adolescent suicide attempters had previously received psychiaric inpatient treatment and 40% outpatient treatment (Kotila, 1989). At the time of the suicide attempt 22% of adolescents had been under outpatient care (Kotila, 1989).

Nowadays the majority of medically treated suicide attempters are referred to aftercare (Jokinen & Lehtinen, 1978; Oksa et al., 1981; Lönnqvist & Kärhä, 1984; Lönnqvist, 1985; Lönnqvist & Tolppanen, 1985; Lönnqvist & Ostamo, 1988; Kotila, 1989; Palosaari, 1990; Pykäläinen & Pakaslahti, 1990; Lönnqvist & Ostamo, 1992; Haatainen et al., 1993), although many patients without psychiatric consultation are left without arranged aftercare or are only advised to seek further treatment (Suokas & Lönnqvist, 1991a). However, patients are more likely to attend the recommended aftercare when they are given a fixed appointment instead of only advice (Pykäläinen & Pakaslahti, 1992). Psychiatric consultation seems to have a positive effect on the outcome of attempted suicide (Suokas & Lönnqvist, 1991b). It also seems that the intensity of psychiatric treatment correlates with the subsequent suicide rate (Lönnqvist & Tolppanen, 1985), as more severe cases are referred to more intensive aftercare.

As a part of the suicide prevention programme in Finland it is recommended that every suicide attempter receive a psychiatric consultation (Arinperä, 1994) and be actively referred to aftercare (Upanne et al., 1992). At the initial phase the treatment contacts should occur frequently, and special attention should be paid to the continuity of the care in order to improve treatment compliance.

6. AIMS OF THE STUDY

This thesis examined mental disorders and treatment received in a sample of 114 suicide attempters in Helsinki. The aims of the study were:

- I To investigate the prevalence and comorbidity of current mental disorders according to DSM-III-R criteria in a sample of suicide attempters, and to compare the prevalences and comorbidity between genders.
- II To compare diagnoses made in the routine clinical emergency psychiatric consultation situation with research diagnoses.
- III To examine the differences in suicide intent, hopelessness and impulsiveness in suicide attempts between subjects with major depression, alcohol dependence, both of these disorders, or neither.
- IV To characterize and examine suicide attempters with current unipolar DSM-III-R major depression in aspects relevant to suicide prevention, including clinical features and history and any treatment they received both preceding and following the suicide attempt.
- V To characterize and investigate suicide attempters with current DSM-III-R alcohol dependence, particularly their clinical features and any treatment they received both preceding and following the suicide attempt.

7. SUBJECTS AND METHODS

7.1. WHO/EURO Multicentre Study on Parasuicide

Parasuicidal behaviour is identified as a major public health problem in many countries, and is a considerable drain on resources in both primary and secondary health care. In the absence of reliable national data, research on parasuicide has been based on local surveys, which vary markedly in terms of the definition of parasuicide, representativeness of samples, the time period covered and the amount of information gathered. Target 12 of the World Health Organization (WHO) programme for the European region "Health for All by the Year 2000" states that: "By the year 2000, the current rising trends in suicides and attempted suicides in the Region should be reversed" (World Health Organization, 1985). For these reasons, it was decided that the WHO Regional Office for Europe should support a collaborative multicentre study designed to provide an epidemiological picture of parasuicide in Europe. (World Health Organization, 1986; Platt et al., 1992).

The WHO/EURO Multicentre Study on Parasuicide covers two broad areas of research: (a) monitoring trends in the epidemiology of parasuicide (epidemiological monitoring study) (Bille-Brahe et al., 1993; Bille-Brahe et al., 1995; Kerhof et al., 1994; Platt et al., 1992; Schmidtke et al., 1996) and (b) follow-up investigations of parasuicide populations with a view to identifying social and personal characteristics predictive of future suicidal behaviour (repetition prediction study) (Bille-Brahe et al., 1996; Bille-Brahe et al., 1997). Helsinki is one of the centres participating in the study.

7.2. WHO/EURO Multicentre Study on Parasuicide in Helsinki

The studies of this thesis comprise a diagnostic subproject of the WHO/EURO Multicentre Study on Parasuicide (repetition prediction study) in Helsinki.

The Finnish Study was conducted by the National Public Health Institute. The data were collected in co-operation with Helsinki University Central Hospital and the City of Helsinki. The research project in Helsinki was approved by the Ethics Committee of the Medical Faculty of the University of Helsinki, and by the hospital directors. The Ministry of Social and Health Affairs gave permission (STM, Dnro 1760/69/88

and 150/08/94) to use information in the patient documents of the suicide attempters included in the study. Written informed consent was requested of every interviewee. The interviewers were experienced mental health professionals specially trained for the EPSIS interviews and in DSM-III-R, and had attended a training course before the study.

7.3. Interview schedules

The interview schedules were translated from English to Finnish. Field testing was done before the actual interviews to test the application of the schedule and to estimate the duration of interviews.

7.3.1. EPSIS I

EPSIS I (European Parasuicide Study Interview Schedule I) is the interview form designed for the project and used for the interviews in 1990 (Kerkhof et al., 1993a).

EPSIS I is a structured interview schedule containing 424 items (in the Finnish version) concerning the patient's everyday life and behaviour, sociodemographic information, previous suicidality, circumstances and precipitating factors of the index suicide attempt, state of health, use of alcohol and other drugs, family factors, social support, life events and treatment in the health care system. Beck's Suicidal Intention Scale (SIS) (Beck et al., 1974a), Beck's Hopelessness Scale (HS) (Beck et al., 1974b), the Beck Depression Inventory (BDI) (Beck et al., 1961), and the CAGE questionnaire (Mayfield et al., 1974) are included.

The 424 items include:

- Written informed consent form
- General information, items 1-6
- Medical questionnaire for the index attempt, items 7-22 (including information on method of parasuicide and recommended aftercare)
- Sociodemographic information, items 23-42 (including information on gender, age, marital status, children, education, religion)
- Circumstances of present parasuicide (unstructured description)
- Beck's Suicidal Intention Scale (SIS)
- Factors precipitating the present parasuicide (unstructured description)

- Motives for the present suicide attempt, items 59-60 and 66-80 (Rating: no influence minor influence major influence)
- Help seeking before the suicide attempt, items 61-65
- Beck Depression Inventory (BDI)
- Beck's Hopelessness Scale (HS)
- Interviewer's assessment of the somatic and psychological severity of the attempt (evaluated on a scale 1-4), items 121-122
- Life events and history, items 123-225 (including information on significant life events in childhood, later in life and during the last year)
- State of physical health, items 226-236
- State of mental health, items 237-245
- Contacts with health services, items 246-257
- Use of alcohol, drugs and medicines, items 258-291
- Previous parasuicides; precipitating factors and motives for and consequences and aftercare of most recent parasuicide, items 292-317 (all previous suicide attempts were recorded exactly)
- State Trait Anger Scale (STAS), items 318-337
- Suicidal behaviour by models, item 338 (including information on the relationship of model to subject, type of behaviour, method of model event, personal involvement of subject in model's act)
- Social support, social integration and working conditions, items 339-394
- Self Esteem Scale (SES), items 395-404
- Psychiatric consultation, items 405-415
- Help seeking because of the suicidal problem, items 416-424
- Consent form for follow-up

Some of the open-ended question responses were not stored on computer, but are available in the original forms. Finnish additions to the original EPSIS I interview schedule were questions about contacts with health and social services during the month before the index attempt, help seeking because of the suicidal problem, and psychiatric consultation and aftercare arrangements following the index attempt. Scandinavian additions to the original EPSIS I interview schedule included questions about the use of medicines, alcohol and illegal drugs, working conditions and social support. In each case a comprehensive case report was compiled on the basis of the interview. The structure of the case report was as follows: identification number of the interviewee, circumstances of the suicide attempt, description of the suicidal process, background information, help seeking and efforts to solve the problem, and conclusions drawn by the interviewer (Ostamo et al., 1995). In addition, the psychiatric history prior to the index attempt was extracted from the medical records and mentioned in the report.

7.3.2. EPSIS II

EPSIS II (European Parasuicide Study Interview Schedule II) (Kerkhof et al., 1993b) is a structured interview schedule for the follow-up interview carried out one year after the first interview. EPSIS II contains 292 items (Finnish version) concerning the patient's suicidal behaviour, life events and social relations, state of health, use of alcohol and other drugs, and treatment in the health care system during the follow-up period.

In addition, a comprehensive summary of each interview was made, including information on treatment contacts during the follow-up year, interviewee's evaluation of his/her care, suicidal behaviour, most significant life events, and physical, mental and social capabilities during the follow-up year.

EPSIS I and EPSIS II interview schedules are not included as an appendix in this thesis, because EPSIS I consists of 76 pages and EPSIS II 66 pages.

7.4. Subjects

In order to construct a comprehensive picture of parasuicide, the aim of this study project was to interview, from the beginning of 1990, about 100-125 medically treated suicide attempters in Helsinki aged 15 years and over. The interviews were conducted according to a structured schedule, the European Parasuicide Study Interview Schedule (EPSIS I) (Kerkhof et al., 1993a). 732 consecutive suicide attempt cases appearing at the emergency rooms of general hospitals in Helsinki were identified from 1 January to 31 July 1990. The data were gathered from all five general hospitals treating suicide attempters in Helsinki: three university clinics and two municipal hospitals.

	Males	(n=53)	Females	(n=61)	Total	(n=114)
Variable	n	%	n	%	n	%
Marital status						
Single	23	43	34	56	57	50
Married	10	19	13	21	23	20
Separated	19	36	10	16	29	25
Widowed	1	2	4	7	5	4
Employment status						
Employed	21	40	27	44	48	42
Unemployed/retired	21	40	18	30	39	34
Other	11	21	16	26	27	24
Level of education						
Lowest level	27	51	23	38	50	44
Intermediate level	21	40	27	44	48	42
Highest level	5	9	11	18	16	14
Method of index attempt						
Overdose	41	77	56	92	97	85
Other	12	23	5	8	17	15
Previous parasuicide	32	60	43	70	75	66
Used alcohol before the attempt	41	77	36	59	77	68

Table 2. Sociodemographic and clinical characteristics of 114 suicide attempters

All of the patients were provided with a written explanation of the study while still in the emergency department, and oral consent was requested for a later interview. Written consent was requested separately, in connection with the actual Epsis interview. At the beginning of the study period, every third suicide attempter was asked to participate in the study. However, only about 36% (48 of 133) of those asked actually turned up to participate. As the resources were available to accomodate more interviews, it was decided to ask every second patient to participate in an interview from the beginning of April. The subsequent participation rate (35 of 166) was still well below the expected level, so in June every suicide attempter was asked to participate (31 of 115). In July the process was terminated, as the target number of interviews had been reached (Ostamo et al., 1995). Overall, 114 (28%) of the patients invited to participate were actually interviewed (53 males and 61 females: male: female ratio 0.87). The mean age of the interviewed suicide attempters was 37.2 years (SD 12.5 years, range 17.6-74.5 years) (males: mean age 37.5 years, SD=12.2 years, range 18.7-74.4 years; females: mean age 36.9 years, SD=12.8 years, range 17.6-69.0 years). The sociodemographic and clinical features of these subjects are shown in Table 2. The method of the index suicide attempt was self-poisoning by drugs in 85% (N=97) of the cases (Table 2), self-poisoning by gas in 1% (N=1), drowning in 2% (N=2), shooting in 1% (N=1), cutting or piercing in 6% (N=7), jumping in 3% (N=3) and other in 3% (N=3).

The two most important causes of drop-out were failure to trace the patient after discharge from the hospital (n=137, 46%) and refusal of the patient to be interviewed (n=145, 48%).

7.5. Diagnostic procedure

The interviews were conducted according to a structured schedule, EPSIS I (Kerkhof et al., 1993a). Most interviews took place within ten days of the index attempt (median 8 days, range 1-43 days). The interviewers were experienced mental health professionals specially trained for the EPSIS interviews and in DSM-III-R. The interview lasted about 2 hours (mean 117 minutes, SD 37 minutes, range 30-230 minutes), and in each case a comprehensive case report was compiled. Medical and psychiatric records were available, including psychiatric consultation forms: medical records for all suicide attempters (median 1.0, range 1.0-3.0) and psychiatric records for 77% of them (median 1.0, range 0-4.0). A comprehensive case report was

available on all subjects, 64% of whom had also received a psychiatric consultation; these psychiatric consultation forms were available.

During subsequent meetings with the interviewers, an experienced psychiatrist (Markus Henriksson) assigned the diagnoses according to DSM-III-R-criteria (American Psychiatric Association, 1987) on the basis of all available information, including the EPSIS I interview information, the psychiatric and medical records, and the psychiatric consultation forms. Multiple diagnoses were made when applicable. Only one principal personality disorder diagnosis on axis II was made. The diagnoses are best-estimate diagnoses based on all available information (Leckman et al., 1982; Spitzer, 1983). The aim was to evaluate the current mental state preceding the suicide attempt, not the lifetime disorders or the state during the interview.

DSM-III-R diagnoses on Axis III (current physical disorder or condition relevant to the subject) were based on information gathered from interviews and evaluation of medical records.

7.6. The study groups examined in the present study

7.6.1. Mental disorders and comorbidity in attempted suicide

All 114 comprehensively interviewed suicide attempters (61 females and 53 males) in Helsinki 1.1-31.7.1990 are included in study I.

7.6.2. Suicide attempters referred for psychiatric consultation

Of the 114 suicide attempters, 73 (64%) had also received a psychiatric emergency consultation independently of the study project (males n=34, females n=39; mean age 35.8 years, SD 12.4 years, range 17.6-74.4 years) and are the subjects of study II. All psychiatric consultation forms were reviewed to gather information on the diagnoses assigned by the consultants. DSM-III-R criteria were translated for the Finnish version of Classification of Diseases (Kuoppasalmi et al., 1989) and used as the official diagnostic system in Finland at the time of this study. The psychiatric emergency consultations had been conducted by psychiatric residents (supervised by a senior psychiatrist) soon after the suicide attempt (median 1 day; range 0-7 days).

27% (31 of 114) of all interviewed suicide attempters did not know if they had been consulted by a psychiatrist after the index attempt. Of those 73 suicide attempters referred for psychiatric consultation after the index attempt 79% (58 of 73) knew that they had been consulted by a psychiatrist, 16% (12 of 73) did not know or remember, and 4% (3 of 73) said that they had not met a psychiatrist.

7.6.3. Suicide intent, hopelessness and impulsiveness among suicide attempters

Among the 114 suicide attempters, 43 subjects (38%) received a diagnosis of major depression and 47 (41%) alcohol dependence (Study I). Four different diagnostic subgroups were formed in study III:

1) 27 suicide attempters (24%) had major depression without comorbid alcohol dependence

2) 31 subjects (27%) had alcohol dependence without comorbid major depression.

3) 16 subjects (14%) had comorbid major depression and alcohol dependence.

4) 40 subjects (35%) had neither major depression nor alcohol dependence.

The following instruments were used in the assessment:

1. The Suicidal Intent Scale (SIS) (Beck et al., 1974a). This is a 15-item questionnaire administered in a clinical interview to individuals who have attempted suicide. Each of the 15 items is scored from 0 to 2, giving a possible range of total scores from 0 to 30. The scale assesses the severity of the subject's psychological intent to die at the time of the attempt by examining relevant aspects of the attempter's behaviour before, during and after the suicidal act. The scale consists of two parts: part 1 (items 1 through 8) covers the objective circumstances of the attempt; part 2 (items 9 through 15) reflects the attempter's self-report. The SIS is a widely used scale which has been validated as a measure of seriousness of intent to die (Beck et al., 1974a; Beck et al., 1974c).

2. *The Hopelessness Scale (HS)* (Beck et al., 1974b). This consists of 20 true-false statements that assess the extent of pessimism. Nine of the items are keyed false and 11 are keyed true. Each of the 20 items is scored 1 or 0; the total is the sum of the individual item scores and ranges from 0 to 20. The psychometric properties of the HS are presented by Beck et al. (Beck et al., 1975).

3. Impulsiveness. This was measured by two items of the Suicide Intent Scale, namely items 6 (degree of planning) and 15 (degree of premeditation), as in a previous study by Brown et al. (1991). SIS items have three possible ratings that describe characteristics ranging from the most impulsive to the most premeditated attempt (0-2). The sum of the scores of items 6 and 15 was used to measure impulsiveness (a range of 0 to 4). Impulsive attempts were defined by both a rating of "no preparation" on the degree of planning for a suicide attempt (SIS, item 6 =0) and a rating of "none, impulsive" for the degree of premeditation (SIS, item 15 =0). Non-impulsive attempts were defined by rating the sum of the scores on the two Suicide Intent Scale items as 3 or 4. "Intermediate" impulsivity was defined by rating the sum of the scores as 1 or 2. If either of the two items was missing, these cases were dropped from the analyses.

7.6.4. Major depressive suicide attempters

Of the 114 suicide attempters 43 (38%) received a diagnosis of current unipolar DSM-III-R major depression (Study I) and became the subjects of study IV (16 males and 27 females; male: female ratio 0.59). The mean age of the subjects was 40.8 years (SD 13.2 years, range 18.8-74.4 years).

The medical and psychiatric records of all 43 patients were examined. In addition, a follow-up interview one year after the index suicide attempt was conducted with subjects consenting to participate (56%, 24 of 43) using the European Parasuicide Study Interview Schedule II (Kerkhof et al., 1993b). Information concerning recommended aftercare, prescribed drug treatment (during the month before and after the suicide attempt) and ECT was obtained from medical and psychiatric records. Only drugs used regularly were included. The other details of clinical history, treatment received, and follow-up information are reported on the basis of all available information, including interview responses, psychiatric and medical records and psychiatric consultation forms.

The communication of suicidal intent was defined here as verbal communication of intent to kill oneself to family members, neighbours or friends (significant others) during the past year, or reportedly to health care personnel during the last three months.

Adequate antidepressant treatment was defined as tricyclic antidepressants $\geq 150^{\circ}$ mg/day, mianserin ≥ 30 mg/day, trazodone ≥ 150 mg/day, fluvoxamine ≥ 100 mg/day, fluoxetine ≥ 20 mg/day, or citalopram ≥ 20 mg/day. Psychotherapy was defined here as regular treatment sessions with a mental health professional at least once a week for at least three visits, with the aim of helping the patient by discussing his or her problems.

7.6.5. Alcohol dependent suicide attempters

Of the 114 suicide attempters 47 received a diagnosis of current DSM-III-R alcohol dependence (34 males and 13 females, mean age 36.9 years, SD 9.7 years, range 18.2-65.4 years) (Study I) and are the subjects of study V.

The medical and psychiatric records of these 47 patients were examined in order to obtain information on treatment received for alcohol dependence during the final month before the suicide attempt and one month after the attempt. In addition, a follow-up interview of subjects consenting to participate (49%, 23 of 47) was conducted one year after the index suicide attempt using the European Parasuicide Study Interview Schedule II (Kerkhof et al., 1993b). The details of clinical history, treatment received, recommended aftercare, prescribed drug treatment and follow-up information are reported on the basis of all available information, including interview responses, psychiatric and medical records and psychiatric consultation forms.

The principal precipitating factor of the parasuicide as expressed by the suicide attempter to the interviewer was classified in this study (V) as follows:

1. Problems with interpersonal relationships.

2. Other social difficulties (e.g. financial trouble, unemployment, imprisonment).

3. Does not know or remember, or sudden impulse.

4. Other reason.

7.7. Statistical methods

In the non-paired statistical analysis, subpopulations of suicide attempters were compared by using the two-tailed chi-square test with Yates' correction for continuity. Fisher's exact test, two-tailed, was used when the chi-square test was inappropriate because of too small expected counts. Possible confounding factors were controlled for using the Mantel-Haenszel test. Differences between the matched pairs of subjects were analyzed by using the McNemar test. Student's two-tailed t-test was used to analyze differences in mean values between groups.

In study II, emergency consultation diagnoses were compared with research diagnoses by calculating percentage distributions, sensitivity (the proportion of positives that are correctly identified by the test) and specificity (the proportion of negatives that are correctly identified by the test) (Altman, 1991), and using the McNemar test. The means of the number of diagnoses made in the psychiatric emergency consultation and the research situation were compared using the Wilcoxon matched-pair signed-ranks test.

In study III, Pearson's correlation coefficient and Spearman's rank correlation were computed to assess the relationships between the scores on the Suicide Intent Scale, Hopelessness Scale, Beck Depression Inventory and impulsiveness. The scores on the Suicide Intent Scale and Hopelessness Scale were compared using one-way analysis of variance (ANOVA), and post-hoc comparisons between the diagnostic groups were performed using Tukey's Honestly Significant Difference-test (HSD). In addition, in order to control for possible confounding factors, a multifactorial ANOVA-model was used to investigate the main effects of sex, age, repeater status, anxiety disorders and any axis II diagnosis and the possible 2-way interactions. The impulsiveness scores were compared by the Kruskal-Wallis nonparametric analysis. Finally, analysis of covariance (ANCOVA) was used to assess the effects of diagnostic groups on the dependent variable, suicide intent. The covariates were age, sex, repeater status (first-timers and repeaters), hopelessness (Hopelessness Scale) and impulsiveness (SIS-scale items 6 and 15). To avoid circularity the items measuring impulsiveness (items 6 and 15) were excluded from the Suicide Intent Scale.

In study IV, several univariate analyses were made to find factors possibly influencing adequate antidepressant therapy received. Two logistic regression models concerning treatment before and after the suicide attempt were created, with adequate antidepressant therapy as the dependent variable. The independent variables used were sex, age, and comorbidity with alcohol dependence.

In study V, several univariate analyses were made to characterize those suicide attempters who went to recommended aftercare after the index attempt. The possible explanatory factors used were: sex, age, level of education, marital status, comorbid Axis II diagnosis, comorbid major depression, previous suicide attempts (first-evers vs. repeaters), psychiatric consultation, active referral to aftercare, impulsiveness of the index attempt (defined as impulsive, intermediate or non-impulsive [as in study III]), somatic severity of the attempt (interviewers assessment: mild, moderate, serious, very serious), Suicide Intent Scale scores, alcohol use before the suicide attempt, and heavy drinking before the attempt. A logistic regression model was created with sex, age and variables associating with compliance in univariate analyses (active referring and comorbid major depression) as explanatory variables, and compliance with recommended aftercare as the dependent variable.

A probability level of < 0.05 was considered to be statistically significant. Computations were made using SPSS statistical software (Norusis, 1993) and MEDSTAT (1991) software.

8. RESULTS

8.1. Mental disorders and comorbidity in attempted suicide

8.1.1. DSM-III-R diagnoses

One or more diagnosis on axis I was assigned to 98% (112 of 114) of the suicide attempters (study I: Table 1). In one case no diagnosis of mental disorder could be made, and information was insufficient for axis I assessment in one other case.

Depressive disorders (major depression, depressive disorder not otherwise specified, bipolar disorders, dysthymia) were the most common disorders (74%, 84 of 114). A diagnosis of major depression was assigned in 38% (43 of 114) of the cases. 5% (2 of 43) of subjects with major depression had psychotic features. A depressive syndrome (major depression, depressive disorder not otherwise specified, bipolar disorders, dysthymia, depressive schizoaffective disorder, organic mood disorders, adjustment disorder with depressive mood included) was diagnosed in 75% (86 of 114) of cases. The prevalence of depressive syndrome was higher among females (85%, 52 of 61) than males (64%, 34 of 53) (χ^2 =5.72, df=1, p<0.05). The differences between sexes remained significant when age (Mantel-Haenszel test, χ^2 =5.58, df=1, p<0.05) were controlled for.

Psychotic disorders (including schizophrenia, schizoaffective disorder, bipolar disorders and major depression with psychotic features) were diagnosed in 11% (13 of 114) of the cases. Schizophrenia was found in 6% (7 of 114) of cases and bipolar disorders in 3% (3 of 114).

Alcohol dependence was diagnosed in 41% (47 of 114) of the patients and alcohol abuse (harmful use not fullfilling the criteria of dependence) in 12% (14 of 114) of the subjects. Alcohol dependence was more common among males (64%, 34 of 53) than females (21%, 13 of 61)(χ^2 =19.75, df=1, p<0.001). The differences between sexes remained significant when age (Mantel-Haenszel test, χ^2 =19.49, df=1, p<0.001) and psychiatric consultation (Mantel-Haenszel test, χ^2 =19.46, df=1,p<0.001) were controlled for. Other substance dependence or abuse was diagnosed in 12% (14 of 114) of the suicide attempters.

A diagnosis of anxiety disorder was assigned to 18% (20 of 114) of the subjects. Panic disorder was diagnosed in four cases (3%). Adjustment disorders were diagnosed in 3% (4 of 114) of suicide attempters, two of whom received a diagnosis of adjustment disorder with depressed mood.

Personality disorder diagnoses were made in 40% (46 of 114) of the cases. Borderline personality disorder was more common among females (26%, 16 of 61) than males (9%, 5 of 53) (χ^2 =4.26, df=1, p<0.05), even when age (Mantel-Haenszel test, χ^2 =4.26, df=1, p<0.05) and psychiatric consultation (Mantel-Haenszel test, χ^2 =4.22, df=1, p<0.05) were controlled for. All subjects receiving a diagnosis of antisocial personality disorder were male (7/53 vs. 0/61, Fisher's exact test p<0.01). Almost a third (28%, 13 of 46) of all those with an axis II disorder received a diagnosis of personality disorder not otherwise specified, because of the mixed features involved.

One or more diagnosis on axis III was made for 34% (18 of 53) of the male and 33% (20 of 61) of the female suicide attempters.

8.1.2. Comorbidity of mental disorders

At least two diagnoses on axis I were made in 56% (64 of 114) of the cases (study I: Table 2). Somatopsychiatric comorbidity was found in 32 % (37 of 114) of the cases. No comorbidity (psychiatric or somatopsychiatric) was found in 18% (21 of 114) of the patients, while 72% (82 of 114) of the subjects suffered from psychiatric comorbidity.

Among the suicide attempters with major depression 37% (16 of 43) had alcohol dependence and 14% (6 of 43) alcohol abuse. Anxiety disorders were diagnosed in 14% (6 of 43), personality disorders in 28% (12 of 43) and physical disorders in 40% (17 of 43) of the subjects with major depression. Only 12% (5 of 43) of the suicide attempters with major depression had no psychiatric or somatopsychiatric comorbidity.

Among the suicide attempters who had alcohol dependence or abuse 36% (22 of 61) had comorbid major depression and a third (33%, 20 of 61) other depressive disorders (depressive disorder not otherwise specified, bipolar disorders, dysthymia). A fifth

(20%, 12 of 61) of the cases with alcohol dependence or abuse received a diagnosis of anxiety disorder, almost a half (46%, 28 of 61) a diagnosis of personality disorder and in 38% (23 of 61) physical illness was diagnosed. Only 5% (3 of 61) of the suicide attempters who had alcohol dependence or abuse were without any comorbidity.

Among the suicide attempters with anxiety disorders, 30% (6 of 20) had major depression, 40% (8 of 20) other depressive disorders, 35% (7 of 20) alcohol dependence, 25% (5 of 20) alcohol abuse, 45% (9 of 20) personality disorder and 30% (6 of 20) physical illness. 5% (1 of 20) had no comorbidity.

Of the suicide attempters with personality disorders, 26% (12 of 46) had major depression and 48% (22 of 46) other depressive disorder. In 50% (23 of 46) of cases with personality disorder alcohol dependence, and in 11% (5 of 46) alcohol abuse, was diagnosed. Anxiety disorders were diagnosed in 20% (9 of 46) and physical illnesses on axis III in 28% (13 of 46) of the suicide attempters with personality disorders. Only 2% (1 of 46) of those with personality disorders were without any comorbidity.

8.2. Consultation vs. research diagnoses of mental disorders among suicide attempters

One or more diagnosis on Axis I was made for 70 suicide attempters (96%) in the psychiatric emergency consultation and for 71 subjects (97%) after the research interview (the information was discrepant for Axis I assessment in one case). In the psychiatric emergency consultation all 73 subjects received one or more diagnosis of mental disorder (on Axis I or Axis II). After the research interview, in just one case could no diagnosis of mental disorder (on Axis I or Axis I or Axis I or Axis I) be assigned, due to the stringent use of DSM-III-R-criteria.

Major depression was diagnosed in 21 subjects (29%) in the psychiatric emergency consultation and in 31 (42%) after the research interview (sensitivity 0.39, specificity 0.79; McNemar test $\chi^2=2.9$, p=0.09). Alcohol dependence was diagnosed in 18 subjects (25%) in the psychiatric emergency consultation and in 25 (34%) after the research interview (sensitivity 0.64, specificity 0.96; McNemar test (binomial distribution) p=0.06). Schizophrenia was diagnosed in 5 subjects (7%) in both settings.

A depressive syndrome (major depression, depressive disorder not otherwise specified, bipolar disorders, dysthymia, depressive schizoaffective disorder, organic mood disorders, adjustment disorder with depressive mood) was diagnosed more often after the research interview (78%, 57 of 73) than in the consultation situation (58%, 42 of 73) (sensitivity 0.65, specificity 0.69; McNemar test (binomial distribution) p=0.004) (study II: Table 1). A diagnosis of alcohol dependence or abuse was also more often assigned after the research interview (51%, 37 of 73) than in the consultation situation (36%, 26 of 73) (sensitivity 0.57, specificity 0.86; McNemar test (binomial distribution) p=0.03). Anxiety disorders were diagnosed in 8 subjects (11%) in the psychiatric consultation situation and in 15 subjects (20%) after the research interview (sensitivity 0.27, specificity 0.93; McNemar test (binomial distribution) p=0.12). Nine subjects (12%) received a diagnosis of psychotic disorder (affective psychoses excluded) in the consultation situation and five subjects (7%) after the research interview (sensitivity 1.0, specificity 0.94; McNemar test (binomial distribution) p=0.12). Some diagnosis on axis II was assigned for 18 subjects (25%) in the emergency consultation situation and for 24 subjects (33%) after the research interview (sensitivity 0.46, specificity 0.86; McNemar test (binomial distribution) p = 0.26).

More diagnoses per subject were made after the research interview (mean 2.0, SD 0.9) than in the consultation situation (mean 1.5, SD 0.6) (Wilcoxon matched-pair signed-ranks test Z=-4.5, p<0.001). In the emergency consultation 5 out of 21 subjects (24%) with major depression received an additional diagnosis on Axis I, while after the research interview 22 out of 31 subjects (71%) with major depression also received an Axis I disorder diagnosis (5/21 vs. 22/31, Fisher's exact test, p=0.002). In the emergency consultation 8 out of 18 subjects (44%) with alcohol dependence received an additional diagnosis on Axis I, whereas after the research interview 21 out of 25 subjects (84%) with alcohol dependence received concurrent Axis I disorder diagnoses (8/18 vs. 21/25, Fisher's exact test, p=0.02). In the psychiatric emergency consultation 4 out of 8 subjects (50%) with anxiety disorder received an additional diagnosis on Axis I, while after the research interview all 15 subjects with anxiety disorder received concurrent Axis I disorder received concurrent Axis I, while after the research interview all 15 subjects with anxiety disorder received concurrent Axis I disorder received concurrent Axis I, while after the research interview all 15 subjects with anxiety disorder received concurrent Axis I disorder diagnoses (4/8 vs. 15/15, Fisher's exact test, p=0.02).

8.3. Suicide intent, hopelessness and impulsiveness among suicide attempters with major depression, both of these disorders, or neither

The mean scores on the Suicide Intent Scale and the Hopelessness Scale were 12.3 (n=103, SD 6.4) and 9.8 (n=100, SD 5.0), respectively; and the median of impulsiveness (n=108) was 1.0 (range 0-4) among suicide attempters with major depression, alcohol dependence, both of these disorders, or neither.

8.3.1. Correlations between suicide intent, hopelessness and impulsiveness

Hopelessness was found to correlate significantly with suicide intent (r=0.32, p<0.01) and highly significantly with Beck Depression Inventory scores (r=0.69, p<0.001). By contrast, suicide intent did not correlate significantly with Beck Depression Inventory scores (r=0.17, p=0.1). Impulsiveness was found to correlate inversely and significantly with hopelessness (r_s =0.24, p<0.05) and with Beck Depression Inventory scores (r_s =0.21, p<0.05), and highly significantly with suicide intent (r_s =0.60, p<0.001) (SIS-scale items 6 and 15 excluded). Age did not correlate significantly with suicide intent (r=-0.02, p=0.87), hopelessness (r=0.08, p=0.40) or impulsiveness (r_s =-0.09, p=0.35).

8.3.2. Hopelessness

Suicide attempts among subjects in four different diagnostic groups were found to differ from each other in terms of hopelessness (study III: Table 2). In post-hoc comparisons, subjects with major depression without comorbid alcohol dependence were more hopeless than subjects without major depression or alcohol dependence. None of the possible confounding factors (age, sex, repeater status, anxiety disorders and any axis II diagnosis) had a significant main effect, nor were there significant interactions.

8.3.3. Impulsiveness

Suicide attempts among subjects in different diagnostic groups were also found to differ from each other in terms of impulsiveness (study III: Table 3). In total, 48 out of 108 (44%) cases were classified as impulsive and 29 out of 108 (27%) as

nonimpulsive. The medians for impulsiveness in different groups were 1) 2.03 (n=25, range 0-4) in subjects with major depression without comorbid alcohol dependence, 2) 2.00 (n=16, range 0-3) in subjects with comorbid major depression and alcohol dependence, 3) 0.02 (n=28, range 0-4) in subjects with alcohol dependence without comorbid major depression, and 4) 0.98 (n=39, range 0-4) in subjects without either disorder. Suicide attempts among subjects with nondepressive alcohol dependence were more impulsive than among subjects with nonalcoholic major depression (Kruskal-Wallis nonparametric analysis F=4.13 (df=3, 104); p<0.05).

8.3.4. Suicide intent

The four diagnostic groups were found to differ from each other in terms of suicide intent (study III: Table 4). In post-hoc comparisons, suicide attempters with major depression without comorbid alcohol dependence showed more serious suicide intent than either those with alcohol dependence but no comorbid major depression, or without either disorder. None of the confounding factors had a significant main effect, nor were there significant interactions. When the analyses were repeated so that the SIS-scale items 6 and 15 (used as a measure of impulsiveness) were excluded, the results remained unchanged.

Finally, factors possibly affecting the suicide intent were investigated. In the ANCOVA, impulsiveness (F=34.34, df=1, p < 0.001) and hopelessness (F=5.40, df=1, p < 0.05) emerged as significant covariates, but not age, sex or repeater status.

All analyses were repeated with groups consisting of subjects with 1) depressive syndromes (major depression, depressive disorder not otherwise specified, bipolar disorders, dysthymia, depressive schizoaffective disorder, organic mood disorders, adjustment disorder with depressive mood included) without alcohol dependence or abuse, 2) alcohol dependence or abuse without depressive syndrome, 3) comorbid depressive syndrome with alcohol dependence or abuse, and 4) without these disorders. Hopelessness alone was found to be statistically significantly higher (F=4.78 (df=3, 96); p<0.01) in subjects without these disorders, as well as in the comorbid group compared to subjects without these disorders, as well as in the results for suicide intent and impulsiveness remained non-significant.

8.4. Treatment received for major depression before and after attempted suicide

The majority of the 43 suicide attempters with major depression had a life-time history of psychiatric treatment (86%, 37 of 43). Twenty-six (60%) had been in psychiatric inpatient treatment previously and 35 (81%) had received psychiatric outpatient treatment. Twenty-seven (63%) had attempted suicide before. The communication of suicidal intent was rated as present in 49% of the subjects (21 of 43). Before the suicide attempt 7% (3 of 43) had reportedly communicated to health care personnel, and 46% (20 of 43) to a significant other, their intention to kill themselves.

In thirty-nine cases (91%) the method of the index attempt was overdose. During the final month before the attempt two thirds (65%, 28 of 43) of the subjects had been treated in health care: 9% (4 of 43) by a general practitioner, 42% (18 of 43) as a psychiatric outpatient, one patient (2%) in psychiatric hospital and 12% (5 of 43) in substance abuse facilities (study IV: Table 1). A third (35%, 15 of 43) had received no treatment during the final month. 13 patients (30%) had received antidepressants, 22 (51%) benzodiazepines and 10 (23%) neuroleptics. 38% (5 of 13) of those receiving antidepressants, 82% (18 of 22) of those receiving benzodiazepines, and 50% (5 of 10) of those receiving neuroleptics had used them for self-poisoning. Benzodiazepines were more often used for overdose than antidepressants (18/22 vs. 5/13, p=0.03, Fisher's exact test, two-tailed). 16% (7 of 43) of all the patients had received antidepressants in adequate doses, 16% (7 of 43) weekly psychotherapy, and none had received ECT.

After the index attempt 31 of the suicide attempters (72%) were referred to psychiatric consultation, although major depression had been diagnosed by a psychiatric consultant in only 39% of them (12 of 31). The vast majority of all attempters (93%, 40 of 43) were referred to after-care, of whom 13 (32%) were referred to psychiatric inpatient, 19 (48%) to psychiatric outpatient treatment, and 8 (20%) to substance abuse treatment. At the emergency service, of the 40 subjects referred to aftercare 14 patients (35%) were only advised, 10 (25%) received a referral and 9 (22%) a fixed appointment for aftercare, 5 (12%) were referred to a psychiatric hospital voluntarily and 2 (5%) involuntarily. Only one (2.5%) person did not attend the recommended aftercare when actively referred (referral, fixed appointment and voluntary and involuntary psychiatric hospitalisation) than not (no aftercare-recommendation and advice) (26/26 vs. 12/16, p=0.02, Fisher's exact test, two-tailed).

After the suicide attempt depressed mood was recognised and documented in 36 cases (84%), and 88% (37 of 42, information missing on one subject) were treated in health care (study IV: Table 1). However, after one month the proportion of cases receiving adequate treatment for major depression was no higher than before the index attempt. 17% (7 of 41) of the patients (information missing on two subjects) were receiving antidepressant therapy in adequate doses, 22% (9 of 41) weekly psychotherapy, and none had received or were receiving ECT.

The only variable predicting inadequate antidepressant therapy one month after the suicide attempt was comorbid alcohol abuse or dependence: none of the subjects with these disorders were receiving adequate antidepressant therapy (0/20 vs. 7/21, Fisher's exact test, two-tailed, p=0.009). Two logistic regression models concerning treatment both before and after the suicide attempt were created, with adequate antidepressant therapy as the dependent variable. None of the independent variables (sex, age and comorbidity with alcohol dependence) proved a significant predictor before the index attempt. One month after it, however, comorbidity with alcohol dependence was a significant predictor: when comparing the model with sex, age and comorbidity with alcohol dependent variables to the model without alcohol dependence it was found that the likelihood ratio test statistic between the two models was statistically significant (-2 log LR=6.6 (df=1), p=0.01).

8.5. Clinical characteristics and treatment received by alcohol dependent suicide attempters

Of the 47 suicide attempters with a diagnosis of current DSM-III-R alcohol dependence the majority (83%, 39 of 47) had a life-time history of psychiatric treatment, and the majority also had a history of substance abuse treatment (83%, 39 of 47) (study V: Table 1). Before the suicide attempt 13% of these subjects (6 of 47) had reportedly communicated to health care personnel their intention to kill themselves. 40% of the suicide attempters with alcohol dependence (19 of 47) did not know or remember why they had attempted suicide, or had done so on sudden impulse (study V: Table 1).

After the suicide attempt 25 subjects (53%) were referred to psychiatric consultation, and were diagnosed with alcohol dependence in 16 cases (64%). Of all 47 patients, 12 (26%) were not referred to aftercare, 12 (26%) were referred to psychiatric hospital,

8 (17%) to psychiatric outpatient treatment, 4 (8%) to substance abuse inpatient treatment and 11 to substance abuse outpatient treatment (23%). At the emergency service, of the 35 subjects referred to aftercare 17 patients (49%) received only advice, 8 (23%) referral and 3 (9%) a fixed appointment for aftercare, while 5 (14%) were referred to a psychiatric hospital voluntarily and 2 (6%) involuntarily. Of those referred to aftercare, six patients (18%) failed to attend (information missing on one subject). Patients more often attended the recommended aftercare when actively referred (referral, fixed appointment and voluntary and involuntary psychiatric hospitalization) than not (no aftercare-recommendation and advice) (17/18 vs. 11/28, p<0.001, Fisher's exact test, two-tailed). Comorbid major depression also associated with compliance with recommended aftercare (13/15 vs. 15/31, χ^2 =4.7, df=1, p=0.03). The chosen logistic regression model correctly predicted compliance with recommended aftercare in 83%, with sex, age, active referral and comorbid major depression as explanatory variables (study V: Table 2).

During the final month before the suicide attempt half of the subjects (51%) had been treated in health care. One month after the attempt two-thirds (64%) were being treated in health care (study V: Table 3), patients with comorbid major depression more often than those without major depression (13/15 vs. 16/30, p=0.05, Fisher's exact test, two-tailed). Only a minority of the subjects received disulfiram-treatment (11%, 5 of 47) or psychotherapy (6%, 3 of 47) during the month before the suicide attempt, whereas one month after the attempt 14% (6 of 44, information missing on three subjects) were receiving disulfiram-treatment and 9% (4 of 44, information missing on three subjects) weekly psychotherapy.

9. DISCUSSION

9.1. Methods

9.1.1. Selection and representativeness of the suicide attempters

Studies of parasuicide are typically based either on hospital records, which usually results in satisfactory representativeness, or on interview data, which are commonly compromised by selection bias due to the large proportion of cases not participating. The extensive structured interview and case report method used in the present studies (I-V) provided a more comprehensive view of the suicide attempts that were studied, but the disadvantage remained that so many patients refused to participate, or initially consented but then failed to attend the interview.

In this study project the hospital staff gave patients the initial information about the study, after which the interviewers tried to contact the patient in person to make an appointment. If that failed, contact was made by letter or phone. All these suicide attempters received at least one letter, and several phone calls at different times of day. Despite checking through registers, the phone number or address was quite often found to be erroneous or unknown, for example. Moreover, as it was decided to conduct the interviews as soon as possible after the incident in order to improve the validity of reporting, an unexpectedly large number of the subjects was not traced. Low participation rates were also a problem in several other centers in the WHO-Euro study (Bille-Brahe et al., 1996; Bille-Brahe et al., 1997).

Of the total attempted suicide population in Helsinki between 1 January and 31 July 1990 (N=732), 57% (N=414) formed the sample during this study period, and 28% (N=114) of these were comprehensively interviewed. The degree of selection bias could have a crucial bearing on the generalizability of the present findings. This was analysed by comparing those who participated in the EPSIS I-interview (N=114) with the total consecutive patient sample (N=732) treated during the same period in the catchment area. The selection of the interviewees and the comparisons between the EPSIS I interviewed and the entire attempted suicide population have been reported in detail (Ostamo et al., 1995). The variables compared were age, sex, marital status, level of education, employment status, socioeconomic status, method of index attempt, alcohol in blood, psychiatric consultation and previous parasuicide. No statistically

significant differences between the two groups were found in sociodemographic variables, previous suicide attempts or index suicide attempt methods (Ostamo et al., 1995). However, the interviewed (especially men) were more likely to have been referred to a psychiatric consultation in the hospital after the index attempt (52%) compared to all suicide attempters (39%) (p < 0.05) (data from monitoring project). Thus it seems that if a bias is present, it has resulted in an overrepresentation of more severe cases. The somatic severity of a suicide attempt and intent to die are more severe in suicide attempters referred to psychiatric consultation (Suokas & Lönnqvist, 1991a). In any case, the sample would appear to be representative of those parasuicide patients who are motivated enough to stay in health care.

Another limitation of these studies (I-V) is that in the absence of a control group (concerning the whole WHO/EURO Multicentre Study on Parasuicide) no conclusions about the differences in mental disorders and associated factors between the suicide attempters and completers or general population can be drawn.

The modest sample sizes may have limited the statistical power of these studies (I-V) and the possibility of type II error cannot be excluded.

9.1.2. The best-estimate diagnostic procedure

The limitation of these studies (I-V) is that the diagnoses of mental disorders are not based on any standardized diagnostic interview schedule. The best-estimate diagnoses are based on comprehensive interviews, hospital records and psychiatric consultation forms. The interview took place days after the emergency department situation, when drug intoxication was over and the situation was calm. Any immediate cathartic effect (Van Praag & Plutchik, 1985; Bronisch, 1992) of parasuicide was also likely to have ended by this stage.

The best-estimate diagnostic procedure used in study I shares features with the LEAD standard proposed by Spitzer (1983). The acronym LEAD involves three essential concepts: Longitudinal, Expert, and All Data. *Longitudinal* means that the diagnostic evaluation is not limited to a single point in the evolution of the disorder. The EPSIS I interview schedule contains questions relating right back to childhood and the interviewers compiled a comprehensive case report based on the entire life-span perspective. Furthermore, medical records included longitudinal information concerning the subject's state of health, use of health care services and treatment

received. *Expert* means that diagnoses are made by expert clinicians who have demonstrated their ability to make reliable diagnoses. All interviewers in this research project were mental health professionals specially trained in DSM-III-R for the research project. Information gathered from interviewes and medical records was integrated during diagnostic discussions with the interviewers, and the diagnoses were assigned by an experienced senior diagnostician. *All Data* means that the diagnosticians review all available data on a subject and use their clinical judgement when integrating the information from different sources. The data for this research project included the extensive EPSIS interview and all available medical records. The best-estimate diagnoses of current mental disorders were assigned by carefully integrating and weighing all available information from different sources. While multiple sources of information are likely to have improved the diagnostic accuracy, the reliability of this method could not be estimated. The stringent use of the DSM-III-R criteria has probably led to underestimation of the prevalence of some mental disorders.

In conclusion, despite the limitations in the diagnostic methodology in these studies (I-V), the diagnoses are best estimate DSM-III-R diagnoses based on all available information allowing multiple diagnoses when applicable, while most previous studies of parasuicide have not been based on well-defined diagnostic criteria for mental disorders, nor on taking possible comorbidity into account.

9.2. Mental disorders and comorbidity in attempted suicide

Comorbidity of mental disorders seems to be an important factor in completed suicide, and may also be so in parasuicide. Few previous studies have comprehensively evaluated mental disorders among representative samples of male and female suicide attempters; the comorbidity of mental disorders as well as any sex differences involved are even less thoroughly investigated.

In their studies of mental disorders among parasuicides, Fernandez-Pol (1986), Ennis et al. (1989), McGrath (1989), Hale et al. (1990), Van Heeringen et al. (1991), Öjehagen et al. (1991), Magne-Ingvar et al. (1992), Nordentoft et al. (1993), Nordentoft & Rubin (1993), Rudd et al. (1993), Welcher et al. (1993), Gregory (1994), Beautrais et al. (1996), Elliott et al. (1996), Engstöm et al. (1996), Stenager (1996), Gupta & Trzepacz (1997), Nimeus et al. (1997), Schnyder & Valach (1997) and Ferreira de Castro et al. (1998) found that the majority of suicide attempters had

suffered from mental disorders. In the present study (I) the rate of mental disorders was similar, or even higher, although this might be partly due to selection factors. In contrast, in the study of Allgulander & Fisher (1990) only a minority of suicide attempters had received a diagnosis of mental disorder, though this discrepancy might be associated with the use of discharge diagnoses in that study.

As expected, depressive syndromes made up the largest diagnostic group: only a fourth of the patients received no diagnosis of depression. The prevalence of depression was higher than in most previous reports of mental disorders in attempted suicide, though in the study of Gregory (1994) most suicide attempters (49 of 53) had a depressive diagnosis. 77% of the serious suicide attempters in the study of Beautrais et al. (1996) had received some diagnosis of mood disorder, and the prevalence of major depression (62%) was much higher than in the present study (I) (38%). This discrepancy can obviously be explained by the differences in the study groups.

The prevalence of alcoholism (both dependence and abuse) was greater than in most previous studies and, somewhat surprisingly, also higher than in the study of Beautrais et al. (1996), but it accords with the high frequency among men observed by Nordentoft et al. (1993) and Welcher et al. (1993).

While adjustment disorders have been associated with suicidality and suicide attempts (Greenberg et al., 1995; Mitrev, 1996), and most other studies have reported relatively high prevalences of adjustment disorders in attempted suicide (10%-58%) (Fernandez-Pol, 1986; Ennis et al., 1989; McGrath, 1989; Hale et al., 1990; Sakinofsky et al., 1990; Van Heeringen et al., 1991; Öjehagen et al., 1991; Magne-Ingvar et al., 1992; Strosahl et al., 1992; Gregory, 1994; Nordström et al., 1994; Elliott et al., 1996; Engström et al., 1996; Engström et al., 1997; Gupta & Trzepacz, 1997; Nimeus et al., 1997; Schnyder & Valach, 1997; Ferreira de Castro et al., 1998), adjustment disorders in this sample were rare (3%).

40% of all patients received a diagnosis on axis II. Although some personality disorders have also been associated with suicide attempts and increased suicide mortality (Perry, 1993), not all of the previous studies have examined personality disorders among suicide attempters. It is safe to assume that the prevalences of personality disorders and alcohol dependence were underestimated here, since denial of alcohol dependence is common, and those with personality disorders may be less inclined to participate in such interviews. Furthermore, only one principal personality disorder diagnosis on axis II was assigned.

Previous studies have suggested that comorbidity of depression with anxiety disorders and/or substance abuse seems to be a risk factor for suicide attempts (Rudd et al., 1993; Bronisch & Wittchen, 1994; Cornelius et al., 1995). Hale et al. (1990) and Beautrais et al. (1996) also found increased psychiatric comorbidity among suicide attempters. The results of this study (I) corroborate these findings. The majority of suicide attempters appeared to suffer from comorbid mental disorders, whereas noncomorbid depression and alcoholism were rare. About half of the subjects suffering from major depression or other depressive disorders had comorbid alcohol abuse or dependence. Sixty percent of those with comorbid anxiety disorders also suffered from alcohol abuse or dependence, while non-comorbid anxiety disorders were rare. In the study of Gregory (1994), 43 of 53 patients had comorbid axis I or axis II diagnoses: usually a depressive disorder and alcohol dependence or abuse. Given the recent epidemiological reports of the high prevalence of comorbidity in the general population, and particularly among persons seeking professional help for their mental problems, this finding is not unexpected (Kessler et al., 1994). Although somewhat fewer suicide attempters than completers have suffered from mental disorders and between 5% and 20% vs. 3% to 12% correspondingly have been estimated as free of mental disorders, the similarities still appear greater than the differences (Black & Winokur, 1990). Overall, these results do not support the view of suicide attempts and completed suicide as discrete phenomena, but tend to support the overlapping populations view (Linehan, 1986). The findings of the present study (I) suggest that comorbidity plays an important role in parasuicide. In future, various patterns of comorbidity should be taken into account when risk factors and appropriate treatment strategies for attempted suicide are sought.

9.3. Consultation vs. research diagnoses of mental disorders among suicide attempters

These findings (II) suggest that depressive syndromes, alcohol dependence or abuse, and the comorbidity of mental disorders often remain undiagnosed in routine psychiatric emergency consultations of suicide attempters. The comorbidity of mental disorders tended to have been ignored or not noticed in the routine clinical psychiatric emergency consultation of suicide attempters. The diagnoses of depressive syndromes and alcohol dependence or abuse were rather inconsistent between the emergency and research settings. However, the most important limitation of this study was that the diagnoses assigned in the psychiatric emergency consultation and after the research

interview were not totally independent. The contrast in the settings themselves might also have played some part in this inconsistency: the psychiatric emergency consultations were made soon after the suicide attempt, when drug intoxication was not necessarily over, and under the pressure of an emergency setting. The research interview took place days later when drug intoxication was over, the interview situation was calm and any immediate cathartic effect of the parasuicidal act was likely to have ended. It is understandable that consultants would concentrate on one principal problem or diagnosis to target management and after-care interventions. However, acting on a single principal diagnosis instead of multiple diagnoses may underestimate the contribution of some mental disorders. DSM-III-R Axis I and Axis II psychiatric comorbidity appears to be more common among suicide victims than living control subjects, and the relative risk of suicide in subjects with comorbidity has been found significantly higher than when a single disorder is present (Brent et al., 1993; Bukstein et al., 1993; Lesage et al., 1994; Cheng, 1995; Shaffer et al., 1996; Cheng et al., 1997). Also, it has been reported that psychiatric comorbidity increases the risk of suicide attempts above the risk of an uncomplicated Axis I disorder (Beautrais et al., 1996; Wetzler et al., 1997). Comorbidity, particularly with regard to certain diagnoses, is important in the clinical management of suicidality (Wetzler et al., 1997).

It seems probable that most psychiatric emergency consultation diagnoses, at least in Helsinki in 1990, were neither very sensitive nor specific; for most disorders specificity was better than sensitivity, and negative predictive value better than positive. The sensitivities for major depression, alcohol dependence or abuse, anxiety disorders and personality disorders were particularly low. For psychotic disorders, however, the sensitivity and specificity were better. Nevertheless, the aim of the psychiatric emergency consultation after the suicide attempt is to assess the suicide risk, diagnose mental disorders and arrange adequate aftercare. Assigning a psychiatric diagnosis in the emergency setting is strongly associated with the aftercare decisions (Khuri & Wood, 1984; Marson et al., 1988; Viinamäki et al., 1998). Malone et al. (1995b) found that a significant degree of past suicidal behaviour was not recorded during routine clinical assessment. Correct recognition and documentation of mental disorders and their possible comorbidity in the consultation situation is important for specific interventions and adequate clinical management of suicide attempters. The psychiatric consultation form should provide a comprehensive assessment of the indicators of risk for future suicide, including psychiatric disorders and their comorbidity. It is particularly vital that outpatient clinicians responsible for aftercare and follow-up be aware of mental disorders and the degree of suicide risk in

order to provide adequate treatment. Better recognition of comorbid mental disorders (particularly depression with substance use disorders or personality disorders) and better documentation of relevant diagnostic information might improve the quality of treatment received by suicide attempters and promote suicide prevention.

In much of the previous research on parasuicide the lack of well-defined diagnostic criteria for mental disorders may have led to underestimates of the overall psychopathology of suicide attempters. It is obviously possible to improve the diagnostic assessment of suicide attempters and to achieve good to excellent reliability of psychiatric diagnoses, as shown by van Heeringen et al. (1993). Well-defined diagnostic criteria for mental disorders and standardized interviews should be used in future studies of mental disorders among suicide attempters. Careful assessment of comorbidity of mental disorders is also necessary.

9.4. Suicide intent, hopelessness and impulsiveness among suicide attempters with major depression, alcohol dependence, both of these disorders, or neither

Suicide attempts of subjects with major depression, alcoholism, or both disorders seem to be different in terms of impulsiveness and suicide intent. Contrary to initial expectations, suicide intent among attempters with comorbid major depression and alcohol dependence appeared to be no more serious than in either condition alone. Suicide attempters with major depression were found to have more serious suicide intent than those with alcohol dependence. As expected, suicide attempts among subjects with nondepressive alcohol dependence seemed to be more impulsive than nonalcoholic attempts with major depression.

Suicide intent, hopelessness and impulsiveness have not been previously studied among suicide attempters with major depression, alcoholism, or both disorders. However, to the author's knowledge no detailed analyses of the reliability and validity of the Suicidal Intent Scale (SIS) (Beck et al., 1974a) or of the Hopelessness Scale (HS) (Beck et al., 1974b) for the Finnish population have been made, although both SIS and HS have been translated into Finnish and are widely used here. The reliability and validity of the Beck Depression Inventory (BDI) (Beck et al., 1961) for the Finnish population have been studied (Raitasalo, 1977).

Patients with non-comorbid major depression were found to be more hopeless than subjects without depression or alcoholism. In some studies (Dyer & Kreitman, 1984; Salter & Platt, 1990) the Hopelessness Scale was modified by presenting it in the past tense in order to focus on the time of attempted suicide. In this study (III) it was not modified, so it is not possible to be sure if it measured hopelessness at the time of the suicide attempt or at interview. One possible, but controversial, explanation is the postulated cathartic effect of a suicide attempt (Van Praag & Plutchik, 1985; Bronisch, 1992), the suggestion being that this effect may be restricted to an attempt in severe major depression or to a violent suicide attempt (Bronisch, 1992). The influence of a cathartic effect on these results cannot be excluded, but it seems unlikely.

The finding that subjects with a diagnosis of major depression scored highest on the Suicide Intent Scale accords with a review of the literature in which the author states that there appears to be little or no consensus on how suicide intent should be measured (Linehan, 1986). Many investigators rely on Beck's Suicide Intent Scale (SIS), while some have used the medical consequences as an indirect measure of the individual's intent to die. In many previous studies the diagnostic criteria for "depression" are not defined, or depression is defined as high scores on Beck's Depression Inventory Scale (BDI), or the Hamilton Rating Scale for depression (HRS). Based on previous studies of suicidal ideation and completed suicides (Cheng, 1995; Cornelius et al., 1995), the initial hypothesis in the present studies was that suicide intent would be more serious among suicide attempters with comorbid major depression and alcohol dependence than in nonalcoholic attempts with major depression, or in nondepressed patients with alcohol dependence, but unexpectedly this hypothesis was not confirmed. However, the present findings (III) do accord with a Danish study, where patients diagnosed according to DSM-III-R as being alcohol dependent had significantly lower scores on the Suicide Intent Scale than other patients, although the role of depression was not reported (Nielsen et al., 1993), and with a study by Power et al. (1985) where parasuicidal intent scores were found to be significantly lower for those who habitually used or abused alcohol. Only a few studies have compared suicide intent in different diagnostic groups. Silver et al. (1971), for example, reported higher suicidal intent scores in affective disorders than in alcoholism. The role of comorbidity has not been reported.

Studies of suicide intent among attempters have generally not disclosed major differences between males and females (Linehan, 1986), but age has correlated positively with intent (Linehan, 1986). The present findings remained unchanged when gender, age and previous suicide attempts were controlled for. Impulsiveness
and hopelessness were found to be significant factors affecting the suicide intent. Although items measuring impulsiveness were excluded from the Suicide Intent Scale in analyses, circular conclusions about these findings cannot be excluded. The finding that hopelessness seems to be an important mediating variable in suicide intent accords with previous studies (Minkoff et al., 1973; Beck et al., 1975; Beck et al., 1976; Wetzel, 1976; Wetzel et al., 1980; Dyer & Kreitman, 1984; Salter & Platt, 1990).

It is generally accepted that many acts of deliberate self-harm are impulsive (Evans et al., 1996), but there is no coherent conceptual framework for understanding impulsiveness (Gerbing et al., 1987). Impulsiveness can be regarded as a personality trait, while another possibility is to define it as an impulsive act. However, most recent studies have investigated impulsiveness from the viewpoint of biological markers. A diversity of scales exists for measuring impulsiveness (Gerbing et al., 1987). In Finnish studies impulsive crimes have been classified as unpremeditated and unprovoked (Linnoila & Virkkunen, 1992; Nielsen et al., 1994), and likewise impulsiveness was defined as an impulsive act.

In the present study (III) suicide attempts among subjects with "pure" alcohol dependence were found to be more impulsive than among subjects with "pure" major depression. Moreover, impulsiveness was associated with low suicide intent. It has been suggested that greater premeditation is associated with more serious suicidal intent (Hawton & Osborn, 1984) and, moreover, that the seriousness of intent of a parasuicide is related to the tendency to completed suicide at a later date (Linehan, 1986). In contrast, the biological markers of impulsiveness have been found to predict completed suicide after a previous attempt (Åsberg et al., 1976; Nordström et al., 1994).

In conclusion, the present findings (III) suggest qualitative differences in suicide attempts by different diagnostic groups, which may imply varying diagnosis-specific treatment strategies in future suicide prevention.

9.5. Treatment received for major depression before and after attempted suicide

Major depression and attempted suicide are both important risk factors for suicide (Harris & Barraclough, 1997), and a recent suicide attempt in mood disorders predicts a particularly high risk (Nordström et al., 1995). Suicide attempters with major depression should thus be a high priority subgroup for treatment. Several previous studies have examined attempted suicide and depression. These studies have found differences between depressive suicide attempters and depressive subjects without suicide attempts or non-affective suicide attempters, in terms of sex, age, marital status, comorbid axis I, axis II and axis III diagnoses, age of first affective episode, impulsivity, suicidal ideation, family history of suicide or suicide attempt (Bulik et al., 1990; Vieta et al., 1992; Roy, 1993; Malone et al., 1995a). In contrast, neither overall severity of clinical depression nor the presence of psychotic symptoms distinguished suicide attempters from nonattempters (Malone et al., 1995a).

In the present study (IV) most subjects had received psychiatric outpatient or inpatient treatment at some time, and during the month before the suicide attempt 65% had been treated in health care. The undertreatment of depression has been reported previously (Weissman et al., 1981; Keller et al., 1982; Roberts & Vernon, 1982; Keller et al., 1986; Theret et al., 1989; Lehtinen et al., 1990b; Brugha & Bebbington, 1992; Isometsä et al., 1994), and it came as no surprise to us to observe the same before the suicide attempt here, despite improvements in the pharmacotherapy of major depression from 1989 to 1995 in psychiatric outpatient care in Finland (Sorvaniemi et al., 1998).

Against original expectations, subjects with major depression did not receive adequate treatment for depression after the suicide attempt; 17% were receiving antidepressants in adequate doses, 22% weekly psychotherapy and none ECT. There are at least two possible explanations for this inadequacy. Firstly, although the majority of subjects referred to psychiatric consultation and aftercare were usually recognized as having depressed mood, a diagnosis of major depression was made, and treatment offered, in only a minority of cases. This is in line with the findings concerning completed suicides (Murphy, 1975). Secondly, the subjects of this study (IV) suffered comorbid disorders, particularly alcohol abuse or dependence. None of those subjects who received antidepressants in adequate doses after attempted suicide had comorbid alcohol abuse or dependence. The possible influence of comorbid personality

disorders could partly explain the low levels of treatment, since the initial decision to err on the side of caution in diagnosing specific disorders might have led to underestimation of personality disorders. However, in the univariate analyses made for this study, comorbid personality disorder was not found to be statistically significant in explaining the low levels of treatment. Non-compliance with aftercare seemed not to be important in explaining the low levels of treatment for depression.

It seems that few suicide attempters with major depression receive adequate treatment for depression before the attempt, and despite the well known high risk of suicide in this patient group the treatment situation is not necessarily any better soon after the attempt. The findings of the present study (IV) suggest that the recognition of depression and the quality of treatment for major depression among suicide attempters both before and after the attempt should be investigated, and probably improved in order to promote suicide prevention. Appropriate measures might include not only training of health care professionals in diagnostic procedures, but also particular attention to feasible treatment strategies for major depression among subjects with comorbid disorders.

9.6. Clinical characteristics and treatment received by alcohol dependent suicide attempters

These findings of the present study (V) suggest that treatment received by subjects with alcohol dependence does not change much after their attempted suicide.

The vast majority of alcohol dependent suicide attempters had received psychiatric or substance abuse treatment at some time, and during the final month before the suicide attempt half had been treated in health care. One month after the event, two thirds were being treated in health care. Previous suicide attempts seemed not to affect the treatment received after the index attempt. Only a minority of subjects received disulfiram-treatment (11% and 14%) or psychotherapy (6% and 9%) both preceding and following the suicide attempt, respectively. It has been stated that the disinhibition produced by intoxication probably facilitates suicidal ideas and increases the likelihood of suicidal thoughts being put into action, often impulsively; and furthermore, that the use of alcohol as part of the attempt itself adds the danger of an overdose (Hawton et al., 1989). For suicide prevention in alcoholism, the goal of treatment should be maintaining abstinence (Wolk-Wasserman, 1987; Hawton et al., 1989; Murphy et al., 1992; Wasserman, 1993). Although there were few specific

treatments for alcohol dependence at the time of this study (V), at present there is accumulating evidence that psychotherapy and psychosocial treatments, as well as disulfiram, naltrexone and acamprosate, may be helpful in reducing drinking (O'Connor & Schottenfeld, 1998), although the effect of these methods has not been properly studied among alcohol dependent suicide attempters.

Non-compliance with out-patient aftercare is very high in patients who have attempted suicide (Morgan et al., 1976; Kreitman, 1979; O'Brien et al., 1987; Brauns & Berzewski, 1988; Möller, 1989; Van Heeringen, 1992). In the present study (V) an association between active referral and better compliance with recommended aftercare among alcohol dependent suicide attempters was found. This finding can be explained in two ways, possibly with simultaneous influence. Firstly, the association may be due to selection factors. Secondly, it is also possible that active referral had an effect on compliance. However, this question cannot be solved without randomized clinical studies. Our findings are in accordance with previous studies involving samples of diagnostically unselected suicide attempters, in which fixed aftercare appointments (Möller & Geiger, 1981; Möller, 1989), continuous therapeutic relationships (Torhorst et al., 1987) and home visits (Hawton et al., 1981; Van Heeringen et al., 1995) have improved compliance among suicide attempters, although the risk of repetition has not necessarily decreased. Other studies have shown that attitudes of health care professionals toward patients who attempt suicide (Hawton & Catalan, 1987; Suokas & Lönnqvist, 1989) and toward alcoholism (Knox, 1971; MacDonald & Patel, 1975) are often negative or indifferent. However, more active referral to aftercare might improve compliance among alcohol dependent suicide attempters.

The majority of alcoholics committing suicide had recently been drinking heavily (Murphy et al., 1992). In this study (V) half of the subjects had been drinking heavily and the majority (88%) had used alcohol just before the suicide attempt. It was previously reported that suicide attempters who used alcohol shortly before, or at the time of the parasuicidal act were less often referred to psychiatric consultation and more often left without arranged aftercare compared with those who had not consumed alcohol (Suokas & Lönnqvist, 1995). Only a few of the subjects in our study sample had reportedly communicated their intention to kill themselves to health care personnel. The majority did not know or remember the reason for the suicide attempt, or had done it on a sudden impulse or as a consequence of interpersonal problems. Thus it seems that alcohol dependent subjects who attempt suicide represent a special challenge for health care and for suicide prevention.

The findings of the present study (V) suggest that the quality and activity of treatment offered to suicide attempters with alcohol dependence should be improved. The goal of treatment should be maintaining abstinence.

9.7. Conclusions and recommendations

The majority of suicide attempters was found to suffer from mental disorders; in 98% of the subjects at least one DSM-III-R Axis I diagnosis was assigned. Depressive syndromes were found to be more common among females than males, and alcohol dependence more common among males than females. A major proportion of suicide attempters suffered from comorbid mental disorders. However, depressive syndromes, alcohol dependence or abuse, and the comorbidity of mental disorders often remain undiagnosed in the routine psychiatric emergency consultation of suicide attempters. Further education on assessing and diagnosing mental disorders among suicide attempters is needed. It has been suggested that the use of semistructured screening instruments (including well-defined criteria in the assessment form) may improve documentation, and that interviewers could be better trained in the assessment procedure (Van Heeringen et al., 1993; Malone et al., 1995b). Semistructured interview schedules might be helpful in the routine psychiatric consultation situation for improving the psychiatric assessment of parasuicide patients. It is recommended that particular attention should be paid to the assessment of depressive syndromes, alcohol abuse and dependence, and comorbidity of mental disorders among suicide attempters in the psychiatric consultation.

Well-defined diagnostic criteria for mental disorders and standardized interviews, rather than diagnoses based on hospital records or clinical diagnoses, should be used in future studies of mental disorders among suicide attempters. Careful assessment of comorbid mental disorders is also necessary.

Suicide attempters with major depression without comorbid alcohol dependence were found to have higher suicide intent and lower impulsiveness compared to attempters with alcohol dependence without major depression. Suicide attempts seem to differ between subjects with major depression, alcoholism or both disorders, in terms of impulsiveness and suicide intent. Overall, there appear to be qualitative differences in suicide attempts according to different diagnostic groups, which may imply varying diagnosis-specific treatment strategies in future suicide prevention. Only a few suicide attempters with major depression were found to have received adequate treatment for depression before the suicide attempt, yet despite their well known high risk of suicide the treatment situation was not necessarily any better one month after the attempt. During the final month before the suicide attempt, 16% of the subjects had received antidepressants in adequate doses, 16% weekly psychotherapy, and none ECT. Although following the suicide attempt almost all patients complied with the recommended aftercare, after one month only 17% were receiving antidepressants in adequate doses, 22% weekly psychotherapy, and none had begun ECT. Furthermore, the treatment received by subjects with alcohol dependence did not change much after their attempted suicide. Only a minority of subjects received disulfiram-treatment or psychotherapy both preceding and following the suicide attempt.

It has been suggested that improving services and developing effective interventions for suicide attempters is likely to prove the best high-risk suicide prevention strategy (Lewis et al., 1997). Furthermore, careful assessment of the risk factors for suicide, and recognition and treatment of mental disorders, are suggested to be the most important methods of preventing suicide (Kurz & Möller, 1995; Rihmer, 1996; Hirschfeld & Russell, 1997). Consequently, treatment of suicide attempters with major depression or alcohol dependence should be based on recommendations from evidence-based medicine. Psychopharmacological and psychotherapeutic treatment strategies, alone or combined, should be used in the treatment of major depressive and alcohol dependent suicide attempters. ECT in particular should be considered more often as the treatment of choice among suicidal major depressive patients. Overall, more active referral to aftercare and more active diagnosis-specific treatment for suicide attempters might be helpful in suicide prevention. Research on the efficacy of specific treatment interventions in well-defined subgroups of suicide attempters is needed.

10. SUMMARY

The present thesis forms part of the WHO/EURO Multicentre Study on Parasuicide in Finland. The purpose of the present studies was to investigate mental disorders and treatment received in a sample of 114 suicide attempters in Helsinki between 1 January and 31 July 1990.

The prevalence and comorbidity of mental disorders according to DSM-III-R were investigated among male and female suicide attempters. Of this systematic sample of 114 suicide attempters, 73 received a psychiatric consultation in an emergency room or department. Possible discrepancies were investigated between diagnoses made in the routine clinical emergency psychiatric consultation situation and carefully assigned research diagnoses based on comprehensive structured interviews and all other available information. Any differences in terms of hopelessness, impulsiveness and suicide intent between 114 suicide attempters with either major depression, alcohol dependence, both of these disorders, or neither, were examined. The treatment received by 43 suicide attempters with major depression before and after the index attempt was investigated. Finally, the clinical features and treatment received by 47 suicide attempters with alcohol dependence were examined.

Altogether, 114 suicide attempters during the study period were comprehensively interviewed according to a structured schedule. Psychiatric and medical records, including psychiatric consultation forms were also available. After the interviews the current best-estimate diagnoses according to DSM-III-R were assigned. The details of clinical history, treatment received, recommended aftercare, prescribed drug treatment and follow-up information were based on all available information, including interview responses, psychiatric and medical records and psychiatric consultation forms.

One or more diagnosis on axis I was assigned to 98% of the suicide attempters. Depressive disorders and alcoholism were the most common disorders. Depressive syndromes were more common among females (85%) than males (64%), and alcohol dependence more common among males (64%) than females (21%). Psychotic disorders were diagnosed in 11% of the cases. The proportion of suicide attempters with a diagnosis on axis II (personality disorders) was 40%, and with a diagnosis on axis III (physical conditions) was 34%. A clear majority of suicide attempters (82%) suffered from comorbid mental disorders.

One or more diagnosis on Axis I was made for 70 suicide attempters (96%) in the psychiatric emergency consultation and for 71 subjects (97%) after the research interview. A depressive syndrome was diagnosed more often after the research interview (78%) than in the consultation situation (58%). A diagnosis of alcohol dependence or abuse was also more often assigned after the research interview (51%) than in the consultation (36%). More diagnoses per subject were made after the research interview than in the consultation situation, suggesting that comorbid disorders are often not diagnosed in routine psychiatric emergency consultation after attempted suicide.

Suicide attempts among subjects in the four different diagnostic groups were found to differ from each other in terms of suicide intent, hopelessness and impulsiveness. Suicide attempters with major depression without comorbid alcohol dependence had higher suicide intent and lower impulsiveness compared to attempters with nondepressive alcohol dependence.

During the final month before the suicide attempt, 16% of the suicide attempters with current unipolar major depression had received antidepressants in adequate doses, 16% weekly psychotherapy, and none ECT. Although following the suicide attempt almost all patients complied with the recommended aftercare, after one month only 17% were receiving antidepressants in adequate doses, 22% weekly psychotherapy, and none had begun ECT.

The majority (83%) of the suicide attempters with a diagnosis of current alcohol dependence had a life-time history of psychiatric treatment, and the same proportion (83%) had a history of substance abuse treatment. During the final month before the attempt half of these suicide attempters (51%) had been treated in health care; 11% had received disulfiram-treatment and 6% psychotherapy. Subjects complied with recommended aftercare more often when actively referred; after one month 64% were being treated in health care, although only a minority were receiving disulfiram-treatment (14%) or psychotherapy (9%).

The majority of suicide attempters seem to suffer from comorbid mental disorders. However, only a minority of suicide attempters with major depression or alcohol dependence received adequate treatment for these disorders. Well-defined diagnostic criteria for mental disorders and standardized interviews should be used in future studies of mental disorders among suicide attempters. Psychiatric and somatopsychiatric comorbidity need to be taken into account when analyzing the relationship between attempted suicide and mental disorders and in planning feasible treatment strategies for suicide attempters in clinical practice. As there appear to be qualitative differences in suicide attempts according to different diagnostic groups, there may be need for a variation in diagnosis-specific treatment strategies in future suicide prevention. Research on the efficacy of specific treatment interventions in well-defined subgroups of suicide attempters is required.

11. ACKNOWLEDGEMENTS

This work was carried out at the Department of Mental Health and Alcohol Research of the National Public Health Institute. I wish to express my gratitude to the Director General, Professor Jussi Huttunen, M.D., Ph.D. for the facilities and help provided.

I am most grateful to my supervisors, Docent Erkki Isometsä, Chief of Research on Depression and Self-Destructive Behaviour at the Department of Mental Health and Alcohol Research, and Professor Jouko Lönnqvist, Head of the Department of Mental Health and Alcohol Research, who introduced me to suicidology and scientific research. I am deeply indebted to Erkki Isometsä for his experienced guidance, encouragement and friendly interest in my research, without which it would never have been completed. And to Professor Lönnqvist, who created the superb facilities for suicidological research in which I have been privileged to participate. They have both been tireless sources of inspiration and strength.

Special thanks to Markus Henriksson, M.D., Ph.D., who has always been willing to help me in my work with his vast knowledge in suicidology, and who has spent numerous hours discussing, supporting and commenting on my efforts. I greatly appreciate his assistance in scientific writing and his valuable comments on the manuscript of this thesis.

I wish also to warmly thank my co-author Jaana Suokas, M.D., Ph.D. for her important and friendly collaboration on the original studies I and II of this thesis, for her helpful comments on the present manuscript, and most of all for her warm support.

Sincere thanks, too, to my co-author Aini Ostamo, M.A., Lic.Soc.Sc., for helping me with many work-related issues, and for her support and encouragement. I am also thankful for her comments on my manuscript.

I am very grateful to the official referees of the dissertation, Professor Heimo Viinamäki and Docent Tero Taiminen, both of whom promptly gave their most valuable comments and constructive criticism on the manuscript.

I am greatly indebted to Richard Burton, B.Sc., who revised the language of the original manuscripts I-V and of this thesis, for his most skilful and valuable linguistic assistance.

My sincere thanks to Sirkka Laakso, Tiina Hara and Olli Kiviruusu for their warm, helpful competence. Many thanks also to statistician Kimmo Vehkalahti for his invaluable assistance and comments.

I am grateful to the following for the financial support for the study: The Jalmari and Rauha Ahokas Foundation, The Finnish Medical Foundation, The Finnish Psychiatric Association, The Foundation for Psychiatric Research in Finland, The Academy of Finland, Wyeth Lederle Finland, Oy H. Lundbeck Ab, and Roche Oy.

Sincere thanks are due to all the interviewers in Helsinki: Veikko Granström, Sinikka Heinonen, Ulla Mustonen, Aini Ostamo, Liisa Rantanen, Marja-Leena Rasanen, Ilkka Sovijärvi and Tarja Viirre. I am also grateful to the personnel of the research units for their co-operation.

Finally, I express my deepest appreciation to all those who gave their consent to participate in this study. I sincerely hope that this work will help prevent unnecessary deaths and suffering in years to come.

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