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Factors associated with suicide ideation in adults

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Abstract The study considers numerous factors potentially related to suicide ideation in adults, including life stress, stress perceptions, social support, personality, alcohol use, chronic conditions, distress symptoms and sociodemographic background. Using data from a health survey of 825 adult residents in the urban Reykjavik area of Iceland, the study finds that financial hardship, legal stress, family difficulties, stress perceptions and low material support are significantly related to thoughts of committing suicide. Multiple chronic conditions, frequent alcohol use and various forms of distress (e.g. depression, anxiety, hopelessness, pain) are also related to suicide ideation. Furthermore, low self-esteem and external locus of control (low sense of mastery) are both associated with suicidal thoughts. No significant relationships were found between sociodemographic background and suicide ideation. The meaning of the results, and their implications for continued theoretical and clinical work in this area, are discussed.

Introduction

The problem of suicide has long been of interest to scientists and clinicians, but the last 15 years have witnessed a sharp increase in research efforts. Most studies have focused on adolescents and young adults, reflecting an increase in suicide in this age group, although older men have the highest suicide rate in almost all western countries (Diekstra 1993; Maris 1985; Moscicki 1995).

Suicide research has primarily focused on completed suicides (e.g. Durkheim [1897] 1951; Fisher et al. 1993; Henry and Short 1954; Lester 1974; Pritchard 1996) or suicide attempts (e.g. Diekstra 1982; Maris 1981; Slap et al. 1989; Smith and Crawford 1986; Stack and Wasserman 1995). Relatively few studies have focused on thoughts of own death or suicide, or suicide planning. Nevertheless, there is a growing understanding that ideation and planning are important steps in a process of suicide, characterised by a stepwise hierarchy of actions with an underlying gradient of severity (Beck 1986; Bonner and Rich 1987; Diekstra 1993; Smith and Crawford 1986). Ideation precedes planning, which may result in an attempt leading to death. If nonfatal, the attempt may increase the likelihood of subsequent ideation, planning and attempt (see paths a–e in Fig. 1). It should therefore be of theoretical as well as clinical value to consider the risk factors associated with suicide ideation and planning.

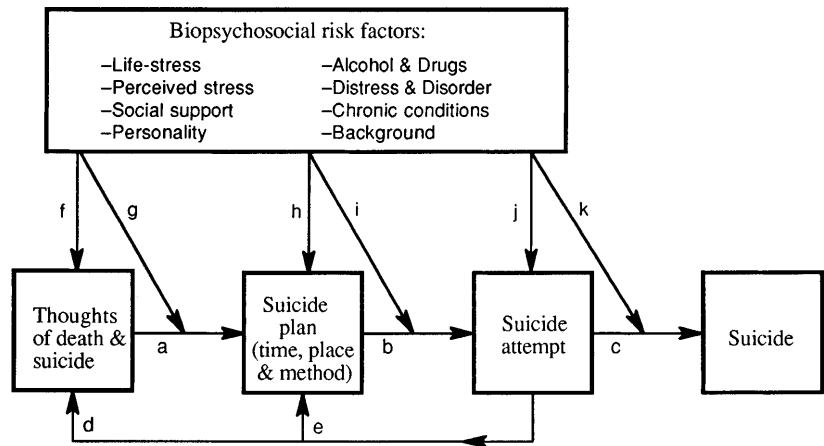
Risk factors

Prior research has associated suicides with older age, male gender, nonmarried status, unemployment (Durkheim [1897] 1951; Maris 1985; Pritchard 1992; Smith et al. 1988), major role losses and conflicts (Breault 1986; Maris 1981), serious mental disorder, specifically clinical depression and schizophrenia (Lester 1983; Pokorny and Kaplan 1976), alcohol and drug abuse, criminal behaviour (Beskow 1979; Maris 1981; Rossow 1994) and the choice of suicidal method (Andrus et al. 1991; Maris 1981). Nonfatal suicide attempts have been associated with younger age, female gender, nonmarried status, unemployment (Alderson 1974; Andrus et al. 1991; Palsson et al. 1991; Platt and Kreitman 1985; Sorenson and Rutter 1991; Stack and Wasserman 1995), negative life events or difficulties (Grossman et al. 1991; Maris 1981; Smith and Crawford 1986; Stanley and Barter 1970; Stein et al. 1974; Topol and Reznikoff 1982) and weak ties and low social support from relatives and

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Fig. 1 The process of suicide



friends (Smith and Crawford 1986; Stanley and Barter 1970; Topol and Reznikoff 1982). Attempts are also more likely among people who have low self-esteem and external locus of control, i.e. a low sense of mastery, (Topol and Reznikoff 1982; Wenz 1976), and are depressed, hopeless, or have drinking or drug problems (Beck et al. 1975; Maris 1981; Minkoff et al. 1973; Palsson et al. 1991; Slap et al. 1989; Smith and Crawford 1986; Sorenson and Rutter 1991; Topol and Reznikoff 1982). Finally, there are indications that people suffering from persistent pain such as headache or stomach pain, (Breslau 1992; Ingersoll et al. 1993) and chronic physical conditions (see Lester 1983) are more likely to attempt suicide.

The above studies implicate sociodemographic, situational and personal factors in both suicide attempts and suicidal deaths. Although some factors (most notably age, gender and serious mental disorder) relate to the two outcomes in different ways, the difference in risk factors is often mainly a matter of degree (see Diekstra 1993). Less is known, however, about the factors influencing initial steps in the process of suicide. Available studies of suicide ideation suggest a variety of risk factors, most of which have been identified in previous research on suicidal behaviour and deaths. Thoughts of suicide appear to be unrelated to gender (Craig and Senter 1972; Friedman et al. 1987; Murray 1973; Sorenson and Rutter 1991; but see Paykel et al. 1974) and educational attainment (Kinkel et al. 1988; Paykel et al. 1974; Sorenson and Rutter 1991), but may be more prevalent among nonmarried and younger individuals (Sorenson and Rutter 1991; Zimmerman et al. 1995). Individuals who have low self-esteem (de Man et al. 1992) and limited problem-solving ability (Dixon et al. 1994; Priester and Clum 1993) are more likely to think about suicide, although the latter relationship may be indirect. Those who are depressed, dissatisfied, pessimistic and hopeless (Breslau 1992; Kandel et al. 1991; Kinkel et al. 1988; Paykel et al. 1974; Smith and Crawford 1986; Sorenson and Rutter 1991), experience frequent pains such as stomach pain or headache or migraine (Breslau 1992; Ingersoll et al. 1993; Paykel et al. 1974) or abuse alcohol or drugs, or engage in illegal

activities (Kandel et al. 1991; Kinkel et al. 1988) are also more likely to think about suicide. Furthermore, life stress in general, and family stress in particular (in the form of negative events and persistent difficulties), are associated with suicide ideation (de Man et al. 1992; Kandel et al. 1991; Paykel et al. 1974; Smith and Crawford 1986). Finally, lack of social interaction and support from relatives and friends is implicated in suicide ideation (de Man et al. 1992; Kandel et al. 1991; Kinkel et al. 1988; Paykel et al. 1974; Smith and Crawford 1986).

Comparison of research findings suggests that ideation shares a number of risk factors with other outcomes in the suicidal process, primarily suicide attempts. Common risk factors supposedly include life stress, social support, self-esteem, alcohol use, depression, hopelessness/pessimism and frequent pain. However, sociodemographic differences tend to be weak or non-existent in the case of suicidal ideation, although age and marital status differences have been reported. It is unclear whether other factors related to suicide attempts or suicides are involved at the ideational stage, such as chronic physical conditions, certain personality factors (such as overall sense of mastery), forms of distress (e.g. anxiety) and aspects of life stress (e.g. role loss and financial and legal stress). Since individual studies of suicide ideation consider only a limited number of independent variables, the evidence of ideational risk is scattered and inconclusive.

The present study focuses on factors related to suicide ideation in an adult general population. It contributes to research in this area by considering numerous correlates previously found or proposed to predict suicidal thoughts, intentions, attempts or deaths. These include life stress, stress perceptions, social support, personality, alcohol use, chronic conditions, distress symptoms and sociodemographic background. Thus, the study aims both at providing a comprehensive assessment of the biopsychosocial context of suicide ideation, and at probing the extent to which risk factors for ideation may overlap with risk factors for other suicidal outcomes previously identified in the literature.

Subjects and methods

Population and sample

The study uses data from the first wave of a postal health survey based on a random sample of 1200 adult residents of the Reykjavik area of Iceland. The area is by far the largest urban area in the country, including 58% of a total population of 262,000. In 1986, 70.3% of a Reykjavik area labour force of 66,700 worked in public and private services, 4.2% in agricultural and fish industries, and 25.6% in other production industries. The study questionnaire assessed physical and mental health, health-related behaviours, life stress, personality, supportive relationships and use of health services. Construction of the questionnaire and administration of the survey were based on the Total Design Method (TDM), a comprehensive mail survey methodology yielding considerably higher response rates than traditional mail survey approaches (Dillman 1978, 1983). The methodology involves mailing a specially designed booklet questionnaire, followed by a reminder/thank you card and, in the case of nonresponse, two additional mailings including the study questionnaire. In addition to the TDM procedures, nonrespondents were called 5 weeks after the first mailout and asked to complete and return the questionnaire. At the conclusion of the survey in May 1987, 72% of the subjects (852 individuals) had filled out and returned their questionnaire. Twenty-seven questionnaires had extensive missing data and were subsequently excluded from the analysis, resulting in a final sample of 825 individuals. Hence, the crude response rate was 69%, and the adjusted response rate 73% (excluding those who had died, moved out of the area, or were institutionalised at the time of the survey). Respondents' age ranged from 20 to 70 years, with an average of 40.5 years. Fifty-three percent were female, 62% married, 30% single and 8% widowed or separated. Twenty percent had completed elementary school education, 69% secondary, and 11% university-level education. The average annual individual income (in 1986 US dollars) was \$14,137 (Vilhjalmsson 1993a). No significant differences were observed between the sample and population in terms of gender and age distributions or average income (Vilhjalmsson 1993a).

Variables

Variables potentially related to suicide ideation pertain to life stress, stress perceptions, social support, personality, alcohol use, chronic conditions and distress symptoms, as well as sociodemographic background.

Life stress includes both negative life-events during the past 6 months, and persistent (ongoing) difficulties occurring "often" or "almost always" (Vilhjalmsson 1993a). The study considers total life stress, as well as specific stress due to divorce/separation, loss of a loved one (i.e. spouse, other family member or friend), financial stress (nine items, e.g. financial loss, decrease in wages, business loss, and often having difficulty in meeting monthly payments), family stress (nine items, e.g. often doing more housework than you can handle, often not being able to meet the conflicting demands of your family, often having difficulties controlling your child), and legal stress (i.e. charged with committing crime, involved in law suit, went to jail, arrested). Stress is in each case measured as the number of events experienced and/or persistent difficulties. The total life-stress measure is trichotomised (no events/difficulties, one event/difficulty, two or more events/difficulties), and the specific life-stress measures only dichotomised (no event/difficulty, one or more events/difficulties) because of limited numbers.

Two items assess the level of perceived stress. One asks how much stress subjects have recently experienced "due to events or circumstances" in their lives (from 0 = no stress to 4 = extreme stress), and the second asks whether the stress subjects have experienced is greater, about the same, or less than the stress generally experienced by other people they know (from

0 = same or less to 2 = much greater). The correlation between the two items is 0.63. The items are standardised (item score divided by standard deviation for the item) and added. The summary score is empirically trichotomised to create approximately equal-sized groups of low (<0.97), medium (0.97–2.29) and high (≥ 2.30) perceived stress.

Social support is assessed by the Support Exchange Questionnaire. The SEQ includes 48 questions tapping different aspects and functions of supportive social relationships. Previous research based on the Reykjavik area survey indicates that the instrument has acceptable reliability and construct and criterion validity (Vilhjalmsson 1993a,b). The present study uses a part of the SEQ relating to receivable (perceived) support from others (spouse/cohabitant, relative or friend). Previous confirmatory factor analysis (Vilhjalmsson 1993a,b) identified four support functions (factors), i.e. emotional support (confiding, encouragement), task support (practical assistance), material support (loans of money or material items), and informational support (suggestions, advice). Factor reliabilities range from 0.62 to 0.79. Factor scores created for each factor are dichotomised at the median into high and low support.

Three aspects of personality are considered in relation to suicide ideation. Shyness is assessed by two items constructed by the first author pertaining to shyness in interaction with strangers and "people I know" (scale of both items: 0 = strongly disagree to 3 = strongly agree). The correlation between the two items is 0.65. The items are standardised, added, and the summary scores empirically trichotomised (low = < 1.6; medium = 1.6 – 3.0; high = > 3.0). Self-esteem is assessed by the ten-item Rosenberg (1965) scale (Chronbach's $\alpha = 0.84$). The items are standardised, added and empirically trichotomised (low = < 21.5; medium = 21.5–25.1; high = > 25.1). Locus of control (sense of mastery) is measured by the seven-item short-form Rotter scale (see Pearlin et al. 1981; Chronbach's $\alpha = 0.73$). The items are standardised, added and empirically trichotomised (low = < 13.6; medium = 13.6–16.6; high = > 16.6).

Alcohol use was assessed by asking respondents how frequently they drank alcoholic beverages. Levels of alcohol use were distinguished by trichotomising responses into low (less than once a week), moderate (one to two times a week), and high (three times a week or more).

The measure of chronic illness used is adapted from a US community study (Mechanic et al. 1980). Subjects are asked whether they have suffered any of 29 conditions in the past 12 months (e.g. allergy, cancer, heart disease, high blood pressure, gastric ulcer, liver disease, pneumonia, rheumatism). Different levels of burden are distinguished by trichotomising the number of conditions reported (no conditions, one to two conditions, three or more conditions).

Six aspects of distress are assessed. Pain is measured by five questions about whether subjects have experienced headache, chest pain, back pain, soreness of muscles or tingling in parts of their body during the past 7 days. Based on the responses, a single dichotomous measure is created indicating presence or absence of pain. A panel subsample of the Reykjavik area health survey ($n = 705$; Vilhjalmsson 1994), yielded a 1-year test-retest correlation (Φ) of 0.39 for the dichotomous pain measure ($P \leq 0.001$). Fatigue is indicated by two items about weariness in parts of the body, and a heavy feeling in arms or legs during the past 7 days. A dichotomous measure is created based on the items (no fatigue, at least some fatigue). The dichotomous measure has a 1-year test-retest correlation (Φ) of 0.45 ($P \leq 0.001$). Hopelessness is a dichotomous measure based on a single question asking whether or not the respondent had felt hopeless about the future during the past week. The measure has a 1-year test-retest correlation (Φ) of 0.51 ($P \leq 0.001$). Loneliness is also a dichotomous measure based on a single question asking whether or not the respondent had felt lonely during the past week. The measure has a 1-year test-retest correlation (Φ) of 0.55 ($P \leq 0.001$). Depression is measured on a 12-item scale from the SCL-90 symptom checklist (Derogatis 1977; Derogatis et al. 1973; Chronbach's $\alpha = 0.92$). Following other authors (Comstock and Helsing 1976), high distress is defined as

the upper 20% of distress scores. Hence a dichotomised measure of depression is created separating high from medium or low scores (<6.0 vs ≥ 6.0). Anxiety is measured on a ten-item scale, also from the SCL-90 checklist (Chronbach's $\alpha = 0.90$), and the total score is dichotomised separating high (upper 20%) from medium or low scores (<4.0 vs ≥ 4.0).

Six background variables are considered: gender, age (five groups, from 20–29 to 60+ years), education (elementary, secondary, university level), personal income in the previous year ($< \$10,000$, $\$10,000$ – $24,999$, and $\geq \$25,000$), marital status (married/cohabiting vs not married/cohabiting) and employment (some employment vs no employment).

In order to assess suicide ideation, respondents were asked to what extent they had “thought about committing suicide” during the past 7 days. Previous work indicates that questions of this sort validly measure thoughts of suicide at an early stage in the suicidal process (Kandel et al. 1991). Response categories are “not at all” ($n = 799$), “a little of the time” ($n = 13$), “some of the time” ($n = 8$), “most of the time” ($n = 1$), and “almost all of the time” ($n = 4$). Since the study focuses on the presence versus absence of ideation, the variable is dichotomised (no ideation, at least a little ideation). The dichotomous measure has a 1-year test-retest correlation (Φ) of 0.46. Based on this measure, 3% of the total sample reported thoughts about committing suicide during the previous 7 days.

Results

Table 1 presents bivariate relationships between predictor variables and the weekly prevalence of suicide ideation. Total life stress, financial stress, family difficulties and legal stress are all associated with higher prevalence of ideation ($P \leq 0.01$), though divorce/separation and loss of a loved one are not significantly associated. The strongest association is with legal stress: 20% of subjects experiencing one or more legal stressors (such as arrest or jail term) thought about committing suicide. Perceived stress is also significantly associated with suicide ideation ($P \leq 0.001$). Table 1 also shows that those who have access to material support (monetary or other material loans) are less likely to think about suicide ($P \leq 0.01$). Other support functions are not significantly associated. Personality factors are also involved. Low self-esteem and external locus of control are associated with suicide ideation ($P \leq 0.001$), whereas shyness is not. Alcohol use also correlates with ideation, in that people who drink alcohol three times a week or more have a higher prevalence than others ($P \leq 0.001$). Furthermore, Table 1 shows that chronic physical conditions are related to ideation ($P \leq 0.001$). Interestingly, the prevalence is raised only when three or more conditions are experienced. Also, the different aspects of distress – pain, fatigue, hopelessness, loneliness, depression and anxiety – are all related to suicide ideation at the 0.05 or lower significance level. The strongest association is with hopelessness consistent with previous research results (Beck 1986), but associations with loneliness, depression and anxiety are also noteworthy. Finally, Table 1 shows that none of the sociodemographic background variables are related to suicide ideation at the 0.05 level.

Discussion

The majority of suicide studies have focused on people attempting or committing suicide. These studies have identified numerous biopsychosocial risk factors. Few studies have focused on thoughts of own death or suicide, or intentions or plans to commit suicide, and little is known about their risk factors.

The present study of suicide ideation in adults finds that people in highly stressful domestic, financial, and particularly legal, circumstances, who experience extensive physical health problems and who perceive their lives as stressful are more likely to contemplate suicide. Psychosocial resources to face and overcome difficulties are also clearly involved. Highly supported individuals, particularly in material terms, and individuals who have high self-esteem and believe that they are in control of their lives are clearly less likely to have suicidal ideas. Alcohol abuse and distress, particularly hopelessness, are also distinct correlates. There are, however, no detectable sociodemographic differences in the distribution of suicidal thoughts. This is consistent with previous research suggesting that sociodemographic differences are less decisive at initial as compared to subsequent steps in the suicidal process. Sociodemographic background apart, significant risk factors in this study have also been identified as risk factors in suicide attempts or suicides in previous studies. This suggests that the same risk factors tend to operate at different steps in the process of suicide, although their level or magnitude may differ across steps (see Diekstra 1993).

What do the results tell us in general terms about people considering ending their life? We suggest they indicate that thoughts of suicide emerge from breakdown experiences creating negative expectations and feelings. Externally, negative economic and domestic events and ongoing difficulties are sometimes overtaxing and debasing. If problems persist, people may become overwhelmed, lose hope, feel nothing is worthwhile anymore, engage in deviant lifestyles and contemplate or attempt suicide (see e.g. Beck 1986). We suggest also that internal breakdown experiences may produce the same results, whether organic or psychological. This would explain why people with chronic health problems and physical pain are more likely to consider suicide. The overwhelming or demoralising effects of breakdown experiences are offset by people's resources. At the psychological level, self-esteem and locus of control (sense of mastery) should enable the individual to manage and get through such experiences. At the social level, support from significant others contributes to coping and survival.

The absence of sociodemographic differences in suicide ideation, in contrast to previously reported sociodemographic differences in other suicidal behaviours, may be explained in different ways. The difference may to some extent result from the fact that the dependent variable – suicidal ideation in the previous 7 days – is

Table 1 Factors associated with weekly prevalence of suicidal ideation ($n = 825$)

Variable	Prevalence		
	%	n	P
<i>Life stress</i>			
Total life stress			
High (≥ 2 events/difficulties)	5.9	(17/290)	
Medium (1 event/difficulty)	1.5	(3/204)	0.004
Low (no events/difficulties)	1.8	(6/331)	
Divorce			
Yes	4.8	(3/63)	
No	3.0	(23/762)	0.446
Loss of a loved one			
Yes	5.4	(9/168)	
No	2.6	(17/657)	0.067
Financial stress			
High (≥ 1 events/difficulties)	5.2	(12/230)	
Low (no events/difficulties)	1.8	(10/568)	0.007
Family stress			
High (≥ 1 difficulties)	7.1	(18/255)	
Low (no difficulties)	1.4	(7/502)	0.000
Legal stress			
High (≥ 1 event)	20.0	(3/15)	
Low (no events)	2.8	(23/810)	0.000
<i>Perceived stress</i>			
High (≥ 2.30)	7.6	(21/277)	
Medium (0.97–2.29)	1.3	(3/229)	0.000
Low (< 0.97)	0.6	(2/319)	
<i>Social support</i>			
Emotional support			
Low (< 6.75)	4.1	(14/340)	
High (≥ 6.75)	2.5	(12/485)	0.184
Task support			
Low (< 5.54)	4.0	(17/420)	
High (≥ 5.54)	2.2	(9/405)	0.134
Material support			
Low (< 8.47)	6.4	(11/173)	
High (≥ 8.47)	2.3	(15/652)	0.007
Informational support			
Low (< 5.71)	4.3	(16/376)	
High (≥ 5.71)	2.2	(10/449)	0.097
<i>Personality</i>			
Self-esteem			
Low (< 21.53)	7.0	(19/272)	
Medium (21.53–25.11)	1.5	(4/273)	0.000
High (> 25.11)	1.1	(3/280)	
External locus of control			
High (< 13.56)	6.8	(18/266)	
Medium (13.56–16.58)	1.6	(4/251)	0.000
Low (> 16.58)	1.4	(4/308)	
Shyness			
High (> 3)	4.9	(13/268)	
Medium (1.58–3)	2.0	(6/306)	0.131
Low (< 1.58)	2.8	(7/251)	
<i>Alcohol use</i>			
3 times per week or more	23.8	(5/21)	
1–2 times per week	1.4	(2/140)	0.000
Less than once a week	2.9	(19/659)	
<i>Chronic physical conditions</i>			
3 or more	6.9	(19/276)	
1 or 2	1.3	(5/374)	0.000
None	1.1	(2/174)	
<i>Distress</i>			
Pain			
Yes	4.0	(24/598)	
No	0.9	(2/227)	0.021

Table 1 (*Continued*)

Variable	Prevalence		
	%	n	P
Fatigue			
Yes	9.9	(12/121)	
No	2.0	(14/704)	0.000
Hopelessness			
Yes	18.2	(10/55)	
No	2.1	(16/770)	0.000
Loneliness			
Yes	12.5	(21/168)	
No	0.8	(5/657)	0.000
Depression			
High (≥ 6.0 , highest 20%)	13.8	(23/167)	
Medium or low (< 6.0)	0.5	(3/658)	0.000
Anxiety			
High (≥ 4.0 , highest 20%)	14.9	(23/154)	
Medium or low (< 4.0)	0.4	(3/671)	0.000
<i>Background</i>			
Gender			
Male	3.4	(13/386)	
Female	3.0	(13/439)	0.739
Age (years)			
20–29	2.6	(6/231)	
30–39	3.8	(8/209)	
40–49	4.2	(6/142)	0.832
50–59	2.3	(3/129)	
60+	2.6	(3/114)	
Education			
Primary education	3.7	(13/357)	
Secondary education	2.4	(9/377)	0.436
Technical college/university	4.7	(4/86)	
Annual individual income			
High ($\geq \$25,000$)	2.8	(3/107)	
Medium ($\$10,000$ – $24,999$)	2.2	(8/365)	0.318
Low ($< \$10,000$)	4.2	(12/283)	
Marital status			
Married/cohabiting	3.4	(22/648)	
Nonmarried	2.3	(4/174)	0.463
Employment			
Yes	2.8	(20/706)	
No	6.4	(5/78)	0.088

highly skewed (i.e. number of cases is low) and associations attenuated. It is also possible that the self-report survey approach we use somehow misses sociodemographically distinct cases of ideation. On the other hand, one could argue that suicidal ideas are different from other suicidal behaviours in that they are much more frequent in the population (see Paykel et al. 1974), arise in situations which need not be extreme, and occur across sociodemographic groupings.

Suicide has been described as a process of different stages, starting with thoughts of death and suicide and ending in self-afflicted death. Conceptualising suicide in this way is important when considering prevention. Most efforts to prevent suicide have been directed at people who are on the verge of making a suicide attempt (secondary prevention) or who have already made an attempt (tertiary prevention; Lester 1989). Primary prevention involves preventing suicidal thoughts and intentions in the first place. Such prevention should probably emphasise helping the individual cope with serious financial and family events and difficulties by

enhancing self-esteem, mastery and support (if needed), and by offering treatment if alcohol abuse or serious distress are present. However, as Lester (1989, p 139) aptly notes, because knowledge of direct causes is scattered and suicidal outcomes rare, primary prevention efforts essentially support measures that lead to increase in psychological health in society in general.

It should be stressed that suicide ideators tend not to go through subsequent steps in the suicidal process. In fact, ideations rarely result in distinct plans, and even if they do, a majority of the plans are not carried out (Friedman et al. 1987; Paykel et al. 1974). Research also shows that a clear majority of suicide attempters (over 60%) have tried to kill themselves at least once before (Friedman et al. 1987; Slap et al. 1989), and only a very small fraction (about 1%) of the attempts result in death (Weissman 1974). Thus, although one step may lead to another, relationships are weak. This suggests that suicide ideation should most often be regarded as a “normal”, nonpathological reaction to seemingly intolerable conditions. Consistent with this proposition, the panel subsample of the Reykjavik area health survey (Vilhjalmsson 1994) found that a majority (52%) of time 1 suicide ideators did not consider suicide at time 2 (1 year later), and a majority (52%) of time 2 ideators had not considered suicide at time 1.

Health professionals intending to provide secondary and tertiary suicide prevention are faced with the challenge of distinguishing between transitory suicidal ideas and the more persistent and serious ideas resulting in suicide attempts. Although various approaches and tests are available for assessing suicidal risk (see Beck et al. 1975; Clum and Yang 1995; Lester 1989, pp 82–87; Tuckman and Youngman 1968), key elements include previous suicide attempts and methods, previous or current suicide preparations or plans, strong suicidal desire, perceived capacity of making an attempt, high psychological distress, particularly depression and hopelessness, high life stress, alcohol abuse, and poor psychosocial resources. Following identification of high risk suicide ideators using multiple (perhaps combinational) criteria, preventive efforts can involve various forms of aid, including counseling, cognitive, behavioural and drug therapies, alcohol treatment, supportive network intervention, financial and housing assistance, and removal of the available means for suicide (e.g. Barraclough et al. 1971; Beck et al. 1979; Liberman and Eckman 1981; Montgomery and Montgomery 1984). The different ways of combatting suicide reflect the fact that the suicidal process develops in a variety of unbearable circumstances within a complex biopsychosocial context.

Several empirical and clinical issues need further consideration in future research on suicide ideation. Firstly, since our study is cross-sectional it does not provide definite causal evidence. Some risk factors may have overlapping or spurious effects, or may not even precede ideation in time. For example, stress may affect both drinking habits and suicide ideation, and thus explain the drinking-ideation relationship (spuriousness). Also, dif-

ferent components of perceived support are highly inter-related (overlap), and their net effects may be lower than the bivariate associations, or may even be unidentifiable because of collinearity. Different components of distress may also coexist with suicidal ideation, but not precede it causally. As these examples suggest, multivariate longitudinal studies are needed to establish causal relationships. Secondly, establishment of risk also needs to move beyond individual factors to consider certain constellations of internal and external conditions and resource limitations. For example, individuals with negative role stress, poor support, and low self-esteem, or with multiple chronic conditions and pains and low sense of mastery (external control beliefs), may be particularly ideation prone. Investigation of risk factor constellations may help identify high-risk subgroups of ideators, and thus have considerable clinical value. Thirdly, recent and long-term ideations should be distinguished through longitudinal research. Some factors may contribute to the formation and reversal of suicidal thinking, and others to its maintenance. For example, negative life events may prompt people to think about suicide, but ongoing life strains (perhaps following the events) may sustain such thinking.

Finally, we need to understand better why some people only think about suicide, whereas others translate such thinking into suicide plans and attempts. A key theoretical and clinical issue concerns the individual factors or factor constellations affecting the transition of suicide ideators from one step to another in the suicidal process (see paths *g*, *i* and *k* in Fig. 1).

In summary, we find that suicide ideation is related to numerous risk factors within a complex biopsychosocial context. Internal and external events and difficulties may be overwhelming or debasing, creating negative expectations and feelings, particularly if resources are poor or lacking. Distress experienced in such circumstances may either coexist with or precede suicide ideation. Multivariate longitudinal research is needed to disentangle causal connections in the formation and maintenance of suicidal thinking, and to identify constellations of factors constituting high risk of suicide ideation and attempts.

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