Factors associated with suicidal phenomena in adolescents: A systematic review of population-based studies

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Received 18 October 2002; received in revised form 7 April 2004; accepted 19 April 2004

Abstract

Suicidal phenomena (suicide attempts, deliberate self-harm, and suicidal plans, threats and thoughts) are common in adolescents. Identification of factors associated with these phenomena could play an important role in the development of school or community-based prevention and intervention programs. In this article, we report the results of a systematic review of the international literature on population-based studies of factors associated with suicidal phenomena in adolescents. These factors encompass psychiatric, psychological, physical, personal, familial and social domains. The quantity of evidence in support of associations between suicidal phenomena and specific factors is compared with the quantity of evidence against such associations. We conclude with a summary of the findings, including identification of new or neglected areas, which require further investigation. Methodological considerations are highlighted and implications of the findings for clinicians and other professionals concerned with prevention of suicidal behavior by adolescents are discussed.

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Keywords: Adolescence; Suicide attempt; Suicidal ideation; Review

1. Introduction

Suicide is now the second or third most frequent cause of death among 15- to 24-year-olds in several countries (e.g. Centre for Disease Control and Prevention, 1995; Commonwealth Department of Health...
and Family Services, 1997). General population epidemiological surveys of adolescents indicate that such acts occur more frequently than suggested by hospital statistics (e.g. Choquet & Ledoux, 1994; Hawton, Rodham, Evans, & Weatherall, 2002). Such studies can also define the characteristics of adolescents who self-harm, or have suicidal ideas, which can assist in the early identification of ‘at risk’ adolescents and inform both prevention and intervention strategies.

A large number of factors which may contribute towards the occurrence of suicidal phenomena have been identified, including individual characteristics, such as depression, low self-esteem, family and social factors. The stress–diathesis model has been proposed to make causal sense of the wide range of factors contributing to suicidal behavior in psychiatric patients (Mann, Watemaux, Haas, & Malone, 1999). Diathesis reflects an increased long-term vulnerability to suicidal behavior because of, for example, being more impulsive and/or aggressive, and therefore more likely to act on suicidal feelings. Stresses may include factors such as parental divorce and other difficult life events and environmental factors.

We have conducted a systematic review of the evidence for specific risk and protective factors for suicidal phenomena in adolescents on the basis of findings of community studies. There has been considerable variation in the method of assessment of both suicidal phenomena and associated risk factors in community studies which results in what may appear to be contradictory findings. Our aim in conducting this review was to collate the findings from the international literature in order to identify factors that appear to be particularly strongly associated with specific suicidal phenomena. We also wished to highlight areas that should be the focus of future research.

2. Method

2.1. Identification of relevant trials

We carried out a literature search using the following databases (years covered): PsychLit (1971 to 2000), Medline (1966 to 2000), EMBASE (1980 to 2000), Sociological Abstracts (CSA) (1963 to 2000), ERIC (1966 to 2000), the Australian Education Index (1978 to 2000), and the British Education Index (1976 to 2000). The search terminology was as follows (* indicates truncation): (suicid* or parasuicid* or overdos* or self-harm* or self-cut* or self-poison* or self-injur*) and (youth or adolescen* or school or teen* or child*) and (survey or questionnaire or interview).

2.2. Inclusion criteria

We included studies in the review if they met the following criteria: (1) the study sample was population-based; (2) the majority (90% or over) of the participants were aged between 12 and 20 years (inclusive); (3) study participants had answered either a self-report questionnaire about suicidal phenomena, or answered similar questions presented at interview; and (4) a prevalence figure for suicidal phenomena was reported.

2.3. Grouping of studies

Studies were grouped according to the types of suicidal phenomena investigated, the time-frame covered and the survey methods employed. With regard to actual behaviors, we categorized the studies
into two groups: *attempted suicide* (death was the intended outcome of the behavior, e.g. ‘tried to kill yourself’, and ‘attempted suicide’); and *deliberate self-harm* (death was not necessarily the intended outcome, e.g. ‘tried to hurt or kill yourself’). We did not include studies of ‘casual thoughts’ of suicide, for example “thought about death or dying” (Andrews & Lewinsohn, 1992; p. 657), as these were not considered as clearly indicative of suicidal tendencies and were therefore not included in this review. More serious thoughts were categorized into three groups: *suicidal thoughts, suicide plans, and suicide threats*. While actual self-harm and suicide attempts were categorized separately (see above) as they are likely to represent different points on a continuum of suicidal phenomena, thoughts of self-harm and thoughts of suicide were not considered to differ greatly from each other in seriousness so were considered together.

2.4. Correlates of suicidal phenomena

The associations between suicidal phenomena and specific factors are considered in four sections:

1. Mental and physical health and well-being,
2. Other personal characteristics and experiences,
3. Family characteristics,
4. Social factors.

While we were unable to meta-Analyze the findings from separate studies, we have highlighted results from individual studies regarding whether associations between specific factors and suicidal phenomena appeared to be direct or indirect.

3. Results

3.1. Mental and physical health and well-being

3.1.1. Mental health

3.1.1.1. Any (or non-specific) mental health disorders and related phenomena. The association of suicidal phenomena with mental health disorders in general was investigated in five studies, all of which reported a significant association (Andrews & Lewinsohn, 1992; Canton, Gallimberti, Gentile, & Ferrara, 1989; Fergusson & Lysney, 1995; Patton et al., 1997; Reinherz et al., 1995). Separate Analyzes by gender shared was an association for both males and females (Andrews & Lewinsohn, 1992; Canton et al., 1989; Patton et al., 1997). Results from multivariate Analyzes were reported in two studies and in both the relationship between mental health problems and suicidal phenomena appeared to be direct for both genders (Patton et al., 1997; Reinherz et al., 1995).

3.1.1.2. Depressive disorders and related phenomena. Six studies examined depressive disorders using DSM-III-R criteria (Andrews & Lewinsohn, 1992; Fergusson & Lysney, 1995; Lewis, Johnson, Cohen, Garcia, & Velez, 1988; Meltzer, Harrington, Goodman, & Jenkins, 2001; Pilowsky, Wu, & Anthony, 1999; Reinherz et al., 1995) and in all but one the association with suicidal phenomena was significant.
Andrews and Lewinsohn (1992) found that a diagnosis of dysthymia (chronic low grade depression) was associated with suicide attempts in American adolescent females, but not males. This finding for males may have been due to inadequate power since few had this diagnosis, whereas it was present in twice as many females. Multivariate analyses in two of the studies of American adolescents showed a direct association in one (Pilowsky et al., 1999) but not the other—this included few adolescents with depression (Reinherz et al., 1995).

In 20 studies depression was assessed using either a scale or a single item (Buddeberg, Buddeberg, Gnamm, Schmid, & Christen, 1996; Canton et al., 1989; Culp & And, 1995; Domènech, Canals, & Fernandez-Ballart, 1992; Howard-Pitney, LaFramboise, Basil, September, & Johnson, 1992; Ivarsson & Gillberg, 1997; Jones, 1991; Kashani, Reid, & Rosenberg, 1989; Kienhorst, De Wilde, VanDen Bout, Diekstra, & Wolters, 1990; Madianos, Gefou, & Stefanis, 1993; Manson, Beals, Dick, & Duclos, 1989; Martin, Rozanes, Pearce, & Allison, 1995; Mazza, 2000; Overholser, Adams, Lehner, & Brinkman, 1995; Pronovost, 1990; Rey Gex, Narring, Ferron, & Michaud, 1998; Rubenstein, Heeren, Hausman, Rubin, & Stechler, 1989; Stewart, Lam, Betson, & Chung, 1999; Swanson, Linskey, Quintero, Pumariega, & Holzer, 1992; Yuen et al., 1996). Results from the univariate analyses were all significant. Thus adolescents experiencing depressive symptoms are clearly at increased risk of suicidal thoughts and behaviors. Results from multivariate analyses were reported in 10 studies and in all depression made a significant and large additional contribution to the variance in suicidal thoughts and behaviors, even when a substantial number and varied range of factors were controlled for (Kienhorst et al., 1990; Martin, 1996; Martin et al., 1995; Mazza, 2000; Pilowsky et al., 1999; Rey Gex et al., 1998; Rubenstein et al., 1989; Stewart et al., 1999; Swanson et al., 1992; Yuen et al., 1996).

The association between hopelessness and suicidal phenomena was investigated in seven studies (Allison, Pearce, Martin, Miller, & Long, 1995; Cole, 1989; Howard-Pitney et al., 1992; Marcenko, Fishman, & Friedman, 1999; Overholser et al., 1995; Rubenstein et al., 1989; Simons & Murphy, 1985) and found to be positive in all but one (Marcenko et al., 1999). Multivariate analyses in two studies produced contradictory results hopelessness made a significant additional contribution to the variance in suicidal behavior in one study (Allison et al., 1995) but not in the other (Marcenko et al., 1999). Surprisingly, depression was not controlled for in either study.

3.1.1.3. Anxiety disorders and symptoms. Anxiety disorders were investigated in five studies (Andrews & Lewinsohn, 1992; Fergusson & Lyskey, 1995; Keane, Dick, Bechtold, & Manson, 1996; Mazza, 2000; Reinherz et al., 1995). Overall, there appeared to be an association between these disorders and suicide attempts (Andrews & Lewinsohn, 1992; Fergusson & Lyskey, 1995; Keane et al., 1996; Mazza, 2000; Reinherz et al., 1995) but it was unclear whether there was an association with suicidal ideation (Mazza, 2000; Reinherz et al., 1995). Multivariate analysis was reported in only one study (Reinherz et al., 1995). Specific early onset anxiety disorders (simple phobia, social phobia and PTSD) did not make an additional contribution to the variance in suicidal ideation when a wide range of risk factors from birth to age 14 were controlled.

In five studies anxiety was assessed using a scale or single item (Buddeberg et al., 1996; Canton et al., 1989; Choquet & Menke, 1989; Reinherz et al., 1995; Yuen et al., 1996), a significant association with suicidal phenomena being found in all but one (Reinherz et al., 1995). The results of multivariate analyses were reported in two studies, both from the USA (Reinherz et al., 1995; Yuen et al., 1996). Anxiety did not make a significant additional contribution to the variance in suicide attempts in either study.
3.1.1.4. Eating disorders and symptoms. The association between eating disorders (diagnosed using DSM-III-R criteria) and suicidal phenomena was investigated in one study. Andrews and Lewinsohn (1992) found a significant association between suicide attempts in the past year and eating disorders for American female adolescents aged 18 years, but not for males or younger females. Multivariate analysis was not performed.

Specific eating behaviors or symptoms were investigated in seven studies (Blum, Harmon, Harris, Bergeisen, & Resnick, 1992; Buddeberg et al., 1996; Kandel, Raveis, & Davies, 1991; Lanzi et al., 1997; Thompson, Wonderlich, Crosby, & Mitchell, 1999; Tomori, 1999; Wagman Borowsky, Resnick, Ireland, & Blum, 1999). There was a significant association between unhealthy eating behaviors or symptoms and suicide attempts and thoughts (Blum et al., 1992; Buddeberg et al., 1996; Tomori, 1999; Wagman Borowsky et al., 1999). Most associations were also found to be significant for females when analyses were conducted by gender (Kandel et al., 1991; Lanzi et al., 1997; Thompson et al., 1999; Wagman Borowsky et al., 1999). The association for males was less clear, probably reflecting their less often having eating disorders. Multivariate analysis in one study indicated that eating behaviors or symptoms did not make a significant additional contribution to the variance in suicide attempts, after controlling for emotional health (Wagman Borowsky et al., 1999).

3.1.1.5. Substance use disorders and substance use. Substance use disorders were investigated in three studies (Andrews & Lewinsohn, 1992; Fergusson & Lynskey, 1995; Reinherz et al., 1995). Most of the evidence was indicative of an association with suicide attempts. The association with suicidal ideation was investigated in only one study and while some significant associations were shown at the univariate level, none of the substance use disorders made an additional contribution to the variance in suicidal ideation in multivariate analysis (Reinherz et al., 1995).

Substance use (including alcohol, cigarettes and illicit drugs) was investigated in 33 studies (see below). However, comparability of the studies was limited due to the variation between studies in terms of: (1) the substances included; (2) how they were grouped; and (3) the definitions of substance use or abuse applied.

3.1.1.6. Smoking. Eight studies investigated the association between smoking cigarettes and suicidal phenomena (Bjarnason & Thorlindsson, 1994; Buddeberg et al., 1996; Choquet & Menke, 1989; Gartrell, Jarvis, & Derksen, 1993; Juon, Nam, & Ensminger, 1994; Kandel et al., 1991; Kaplan, Landa, Weinhold, & Shenker, 1984; Rey Gex et al., 1998). The results strongly indicated an association, with a significant relationship in seven of the studies. In two studies, where analyses were reported separately, there were positive associations with attempted suicide and suicidal thoughts for both genders (Bjarnason & Thorlindsson, 1994; Choquet & Menke, 1989).

Multivariate analyses in three of the studies (Bjarnason & Thorlindsson, 1994; Rey Gex et al., 1998; Vannatta, 1996) indicated a direct association between suicidal phenomena and smoking in two of them (Bjarnason & Thorlindsson, 1994; Rey Gex et al., 1998).

3.1.1.7. Alcohol use. Alcohol use was investigated in 25 studies (Bjarnason & Thorlindsson, 1994; Blum et al., 1992; Buddeberg et al., 1996; Choquet & Menke, 1989; Gartrell et al., 1993; Grossman, Milligan, & Deyo, 1991; Howard-Pitney et al., 1992; Juon et al., 1994; Kandel et al., 1991; Kaplan et al., 1984; Keane et al., 1996; Kienhorst et al., 1990; Kinkel, Bailey, & Josef, 1989; Madianos et al., 1993; Manson et al., 1989; Patton et al., 1997; Reinherz et al., 1995; Rey Gex et al., 1998; Rossow &
Wichström, 1994; Tomori, 1999; Vega, Gil, Zimmerman, & Warheit, 1993; Wagman Borowsky et al., 1999; Windle, Miller-Tutzauer, & Domenico, 1992; Wright, 1985; Zubrick et al., 1995). Overall, the results indicated an association between alcohol consumption and suicide attempts, particularly for high alcohol consumption and consumption of stronger alcoholic drinks such as spirits (Grossman et al., 1991). This was true for both males and females when separate analyses were conducted (Bjarnason & Thorlindsson, 1994; Reinherz et al., 1995; Wagman Borowsky et al., 1999; Windle et al., 1992).

There was also a significant association between suicidal ideation and alcohol use (Bjarnason & Thorlindsson, 1994; Choquet & Menke, 1989; Garrrell et al., 1993; Howard-Pitney et al., 1992; Juon et al., 1994; Kandel et al., 1991; Kaplan et al., 1984; Reinherz et al., 1995; Windle et al., 1992; Wright, 1985; Zubrick et al., 1995).

The results of multivariate analyses were reported in nine studies. In five, the alcohol consumption variables were found to make a significant independent contribution to the variance in suicidal phenomena (Bjarnason & Thorlindsson, 1994; Gartrell et al., 1993; Juon et al., 1994; Rossow & Wichström, 1994; Wagman Borowsky et al., 1999). In three studies the association was indirect when account was taken of factors such as depression, hopelessness, general psychiatric morbidity, violence and sexual activity (Kienhorst et al., 1990; Patton et al., 1997; Vannatta, 1996) and in one there was a direct association with consumption of hard liquor (Grossman et al., 1991).

3.1.1.8. Illicit drug use.

Illicit drug use was investigated in 24 studies (Bjarnason & Thorlindsson, 1994; Buddeberg et al., 1996; Fergusson & Lynskey, 1995; Gartrell et al., 1993; Harrison & Luxenberg, 1995; Howard-Pitney et al., 1992; Jones, 1991; Juon et al., 1994; Kandel et al., 1991; Kaplan et al., 1984; Kienhorst et al., 1990; Kinkel et al., 1989; Madianos et al., 1993; Marcenko et al., 1999; Patton et al., 1997; Reinherz et al., 1995; Rey Gex et al., 1998; Rossow & Wichström, 1994; Shaffer et al., 1990; Wagman Borowsky et al., 1999; Wright, 1985; Yuen et al., 1996; Zubrick et al., 1995). The results indicated an association with suicide attempts, the association being strongest for hard drugs (e.g. cocaine). The association between suicidal ideation and illicit drug use also appeared to be fairly strong. On the basis of multivariate analyses, the balance of evidence indicated a direct association with suicidal phenomena.

3.1.1.9. Behavioral disorders, juvenile offending and other antisocial behaviors.

Disruptive behavior disorders were investigated in three studies (Andrews & Lewinsohn, 1992; Fergusson & Lynskey, 1995; Joffé, Offord, & Boyle, 1988), with evidence of an association with suicidal phenomena. The association with specific disruptive or antisocial behaviors was investigated in 15 studies (Buddeberg et al., 1996; Caldwell & Smith, 1995; Canton et al., 1989; Choquet & Menke, 1989; Dubow, Kausch, Blum, Reed, & Bush, 1989; Fergusson & Lynskey, 1995; Jones, 1991; Juon et al., 1994; Kandel et al., 1991; Patton et al., 1997; Reinherz et al., 1995; Rey Gex et al., 1998; Rubenstein et al., 1989; Simons & Murphy, 1985; Thompson et al., 1999). A significant association was found between suicide attempts and various antisocial behaviors (Buddeberg et al., 1996; Caldwell & Smith, 1995; Dubow et al., 1989; Fergusson & Lynskey, 1995; Jones, 1991; Juon et al., 1994; Rey Gex et al., 1998; Thompson et al., 1999). A similar association was reported for suicidal ideation (Buddeberg et al., 1996; Canton et al., 1989; Choquet & Menke, 1989; Dubow et al., 1989; Jones, 1991; Juon et al., 1994; Kandel et al., 1991; Simons & Murphy, 1985). This association appeared to be stronger for females (Reinherz et al., 1995). Multivariate analyses were reported in four studies. Juon et al. (1994) found hostility made a significant independent contribution to the variance in suicide attempts and suicidal ideation, but Rubenstein et al. (1989) found
no association between ‘acting out’ and DSH. In the two other studies antisocial behaviors were
generally found to make a significant independent contribution to the variance for females but not males
(Patton et al., 1997; Reinherz et al., 1995).

3.1.1.10. Self-esteem. Self-esteem was investigated in five studies. In two, adolescents who had made
suicide attempts had significant lower self-esteem than other adolescents (Fergusson & Lyskney, 1995;
Overholser et al., 1995), and in three studies adolescents who had experienced suicidal ideation had
significantly lower self-esteem than other adolescents (Marcenko et al., 1999; Overholser et al., 1995;
Simons & Murphy, 1985). Reinherz et al. (1995) found that this was true for females but not for males.
Multivariate Analyzes were conducted in two of the studies, both of American adolescents. However,
the results were contradictory, which may be a function of the different ways in which self-esteem
was measured.

3.1.1.11. Sleep difficulties and related problems. Sleep difficulties and related problems (e.g. tiredness
and nightmares) were investigated in four studies and significant associations with suicidal phenomena
were reported in all of them (Choquet & Menke, 1989; Gartrell et al., 1993; Rey Gex et al., 1998;
Vignau et al., 1997). Multivariate analysis was conducted in one study: sleep problems made a
significant additional contribution to the variance in suicide attempts (Rey Gex et al., 1998).

3.1.2. General physical health and well-being
Physical health was investigated in 14 studies (Buddeberg et al., 1996; Choquet & Menke, 1989;
Dubow et al., 1989; Gartrell et al., 1993; Grossman et al., 1991; Kandel et al., 1991; Kelly, 1991;
Madianos et al., 1993; Pronovost, 1990; Reinherz et al., 1995; Rey Gex et al., 1998; Stewart et al., 1999;
Tomori, 1999; Wagman Borowsky et al., 1999). The majority of studies focused on general physical
health but, in some, specific physical health problems were investigated. Madianos and colleagues
reported no significant association with current physical illness for their sample and Reinherz and co-
workers reported no association with failing a hearing test at age 5 and health problems at age 9 for
females (but the associations for males were significant). The associations in all other studies were
significant. Multivariate Analyzes were conducted in seven studies. Poor health was found to make an
additional contribution to the variance in suicidal phenomena in four of them (Dubow et al., 1989;
Gartrell et al., 1993; Grossman et al., 1991; Rey Gex et al., 1998).

The association between physical disability and suicide attempts was investigated in only two studies
and in both a significant positive relationship was found (Rey Gex et al., 1998; Wagman Borowsky et
al., 1999). Multivariate Analyzes from these studies produced contradictory results.

3.2. Other personal characteristics and experiences

3.2.1. Sexual orientation
The association between sexual orientation and suicidal phenomena was investigated in only one of
the studies included in this review (Wagman Borowsky et al., 1999). Homosexual orientation in both
genders and bisexual orientation in females were associated with suicide attempts. Males and females
who thought sexually about members of the same sex were more likely to report suicide attempts, as
were females (but not males) who thought about members of both sexes. In multivariate analysis, sexual
orientation was not directly associated with attempted suicide after controlling for suicidal behavior in
family and friends, alcohol and drug use, physical and sexual abuse, and communication with family and friends.

3.2.2. Sexual activity and related variables

Evidence from the few studies which investigated this association indicated that sexually active adolescents were significantly more likely to report suicidal phenomena than other adolescents (Patton et al., 1997; Rey Gex et al., 1998). The results from multivariate analyses did not, however, clarify whether or not this association is direct.

3.2.3. Physical and sexual abuse

The results from three studies indicated an association between physical abuse and suicidal behavior (Blum et al., 1992; Grossman et al., 1991; Wagman Borowsky et al., 1999). Multivariate analysis results from the first two indicate that the association is likely to be direct. However, no association was found with suicidal ideation (Wright, 1985).

The association with sexual abuse was investigated in seven studies (Bensley, Van Eenwyk, Spiker, & Schoder, 1999; Blum et al., 1992; Buddeberg et al., 1996; Grossman et al., 1991; Jones, 1991; Rey Gex et al., 1998; Wagman Borowsky et al., 1999) and a strong association was found, with all reporting significant findings. Multivariate analyses were reported in three studies and indicated that sexual abuse made a significant independent contribution to the variance in suicide attempts (Grossman et al., 1991; Rey Gex et al., 1998; Wagman Borowsky et al., 1999).

3.2.4. Suicidal behavior in others

3.2.4.1. Family members. Thirteen studies indicated an association between suicidal phenomena and suicide in family members (Blum et al., 1992; Buddeberg et al., 1996; Eskin, 1995; Gartrell et al., 1993; Grossman et al., 1991; Harkavy-Friedman, Asnis, Boeck, & DiFiore, 1987; Larsson, Melin, Breitholtz, & Anderson, 1991; Manson et al., 1989; Marcenko et al., 1999; Rey Gex et al., 1998; Rubenstein et al., 1989; Wagman Borowsky et al., 1999). Furthermore, in multivariate analyses a family history of suicide attempts made a significant independent contribution to the variance in adolescents suicidal phenomena (Eskin, 1995; Grossman et al., 1991; Rey Gex et al., 1998; Rubenstein et al., 1989; Wagman Borowsky et al., 1999). A family history of completed suicide was not directly associated, but this may reflect the relative rarity of this (Eskin, 1995; Marcenko et al., 1999).

3.2.4.2. Friends. The association between having a friend with suicidal behavior and experiencing suicidal thoughts or behavior was investigated in 10 studies (Bjarnason & Thorlindsson, 1994; Blum et al., 1992; Buddeberg et al., 1996; Grossman et al., 1991; Harkavy-Friedman et al., 1987; Kinkel et al., 1989; Manson et al., 1989; Rey Gex et al., 1998; Rubenstein et al., 1989). These mostly indicated a significant association. The results of multivariate analyses were mixed. Overall, they indicate a possible direct association with suicide attempts but not completed suicide by friends (Bjarnason & Thorlindsson, 1994; Grossman et al., 1991; Rey Gex et al., 1998; Rubenstein et al., 1989). This may also reflect the relative rarity of suicide.

3.2.4.3. Media. Somewhat surprisingly, the association between exposure to suicide in the media and adolescent suicidal phenomena was investigated in only one study (Martin, 1996). Exposure to suicide
on television was significantly associated with deliberate self-harm. This persisted in both univariate and multivariate analysis after controlling for gender, depression, television viewing habits, life events (real and on television), risk taking, and alcohol and drug use.

3.2.5. Religious beliefs

It is unclear whether religiosity serves a protective role against suicidal thoughts and behaviors in adolescents. The majority of the studies indicated no association with a decreased risk for suicidal thoughts and behaviors (Benda & Corwyn, 1997; Eskin, 1995; Kandel et al., 1991; Wagman Borowsky et al., 1999). Indeed the results of one study suggested that religiosity may be associated with an increased prevalence of suicidal ideation (Stewart et al., 1999). Any association that may exist is likely to be indirect (Eskin, 1995; Grossman et al., 1991; Stewart et al., 1999; Wagman Borowsky et al., 1999). None of the studies included in this review examined cultural differences in the association between religiosity and suicidal phenomena. This is clearly an area for further research.

3.3. Family characteristics

3.3.1. Socio-economic characteristics of the family

There was little evidence of an association between family socio-economic status and suicidal thoughts and behaviors in adolescents (Andrews & Lewinsohn, 1992; Dubow et al., 1989; Eskin, 1995; Fergusson & Lynskey, 1995; Garrison, Addy, Jackson, McKeown, & Waller, 1991; Gartrell et al., 1993; Grossman et al., 1991; Joffe et al., 1988; Juon et al., 1994; Kienhorst et al., 1990; Lewis et al., 1988; Meltzer et al., 2001; Monck & Graham, 1988; Reinherz et al., 1995; Roberts, Chen, & Roberts, 1997; Rubenstein et al., 1989; Stewart et al., 1999; Wagman Borowsky et al., 1999). However, two specific characteristics of socio-economic status may have relevance to suicidal phenomena in adolescents: father’s level of education (Andrews & Lewinsohn, 1992; Dubow et al., 1989) and stress or worry about the family’s economic situation (Roberts et al., 1997; Rubenstein et al., 1989).

3.3.2. Family structure

The association between parents’ cohabitational status and suicidal phenomena has been investigated in many studies but the results appear to be inconclusive (Andrews & Lewinsohn, 1992; Bjarnason & Thorlindsson, 1994; Buddeberg et al., 1996; Choquet & Menke, 1989; Eskin, 1995; Fergusson & Lynskey, 1995; Garrison et al., 1991; Gartrell et al., 1993; Grossman et al., 1991; Kaltiala, Rimpela, Marttunen, Rimpela, & Rantanen, 1999; Kienhorst et al., 1990; Madianos et al., 1993; Martin et al., 1995; Meltzer et al., 2001; Monck & Graham, 1988; Patton et al., 1997; Pronovost, 1990; Reinherz et al., 1995; Rossow & Wichström, 1994; Stewart et al., 1999; Tomori, 1999; Wagman Borowsky et al., 1999). Overall, the results from multivariate Analyzes indicated that if a significant association does exist the relationship is indirect (Bjarnason & Thorlindsson, 1994; Eskin, 1995; Grossman et al., 1991; Kaltiala et al., 1999; Kienhorst et al., 1990; Meltzer et al., 2001; Patton et al., 1997; Stewart et al., 1999; Wagman Borowsky et al., 1999). In a small number of these studies the absence of either the mother or father was specifically investigated, but mixed results were reported.

Living apart from both parents was associated with an increased prevalence of suicidal phenomena in the two studies in which this was investigated (Kaltiala et al., 1999; Rey Gex et al., 1998). Multivariate Analyzes were conducted in both studies and showed that this made a significant independent contribution to the variance in suicidal phenomena. Surprisingly, however, there did not appear to be an
association between suicidal phenomena and losing one or both parents due to death (Eskin, 1995; Grossman et al., 1991; Madianos et al., 1993; Manson et al., 1989; Reinherz et al., 1995).

The association between suicidal phenomena and number of siblings, and/or birth order was investigated in six studies (Andrews & Lewinsohn, 1992; Eskin, 1995; Juon et al., 1994; Kienhorst et al., 1990; Meltzer et al., 2001; Reinherz et al., 1995), no associations being found in univariate analyses in five. However, Reinherz et al. (1995) found that American females who were third or later born were significantly more likely to experience suicidal ideation than females who were either first or second born. The relationship between birth position/number of siblings and suicidal phenomena was investigated with multivariate analysis in five studies but no independent contribution was found.

3.3.3. Family relationships

The findings from several studies indicated a significant relationship between suicidal phenomena and communication with family members: good communication with, and feeling understood by family members was associated with a lower prevalence of suicidal thoughts and behaviors (Blum et al., 1992; Kandel et al., 1991; Martin et al., 1995; Rey Gex et al., 1998; Shaffer et al., 1990; Stewart et al., 1999; Tomori, 1999; Wagman Borowsky et al., 1999; Wagner, Cole, & Schwartzman, 1995). The majority of studies reported a significant association for both males and females but further research is needed to clarify whether there are particular characteristics of communication which are more important for each gender. It is unclear whether the relationship between communication with family members and suicidal thoughts and behaviors is direct because the findings from multivariate analyses were mixed.

The findings from several studies suggested that there was a significant association between suicidal phenomena and family discord (Bjarnason & Thorlindsson, 1994; Fergusson & Lynskey, 1995; Pearce, Martin, & Wood, 1995; Reinherz et al., 1995; Rey Gex et al., 1998; Rubenstein et al., 1989; Stewart et al., 1999; Wagman Borowsky et al., 1999; Wright, 1985). In terms of gender this association only appeared to hold for females (Bjarnason & Thorlindsson, 1994; Pearce et al., 1995; Reinherz et al., 1995; Stewart et al., 1999; Wagman Borowsky et al., 1999). The majority of the evidence from meta-analyses indicated that the relationship between family discord and suicidal phenomena is a direct one (Bjarnason & Thorlindsson, 1994; Rey Gex et al., 1998; Rubenstein et al., 1989; Wagman Borowsky et al., 1999). There was some evidence to suggest that family harmony has a stronger effect on reducing the risk of suicidal behavior than family discord does on increasing it (Rubenstein et al., 1989).

There was a clear association in both genders between suicidal thoughts and behaviors and several aspects of the emotional relationship with parents (Allison et al., 1995; Dubow et al., 1989; Eskin, 1995; Fergusson & Lynskey, 1995; Jones, 1991; Kaltiala et al., 1999; Kandel et al., 1991; Manson et al., 1989; Martin et al., 1995; Rubenstein et al., 1989; Simons & Murphy, 1985; Stewart et al., 1999; Wagman Borowsky et al., 1999; Wagner et al., 1995; Wright, 1985; Yuen et al., 1996). Overall, the results from multivariate analysis indicated that having unsupportive parents is directly associated with suicidal phenomena.

On the basis of the findings from six studies there appears to be an association between suicide attempts and parents providing too much or too little supervision (Allison et al., 1995; Bjarnason & Thorlindsson, 1994; Martin et al., 1995; Stewart et al., 1999; Wagner et al., 1995; Wright, 1985), but this relationship does not appear to be direct.

The association between family activities and suicidal thoughts and behaviors was investigated in a small number of studies (Bjarnason & Thorlindsson, 1994; Dubow et al., 1989; Wagner et al., 1995). Spending free time with parents and engaging in family activities was associated with a decreased risk of
both suicide attempts and suicidal ideation. In the one study where the association was investigated using multivariate analyses by gender a direct association was found just for males (Bjarnason & Thorlindsson, 1994).

3.3.4. Family health and problems

The association between physical health of other family members and suicidal phenomena in adolescents was only investigated in three studies and the results were inconclusive (Madianos et al., 1993; Pronovost, 1990; Rubenstein et al., 1989). Interestingly, where a significant association was reported, the relationship was negative, i.e. adolescents’ from families in which there was illness were significantly less likely than other adolescents to engage in suicidal behavior (Rubenstein et al., 1989). There was more conclusive evidence of an association between family mental health and suicidal phenomena (Eskin, 1995; Joffe et al., 1988; Madianos et al., 1993; Meltzer et al., 2001; Rubenstein et al., 1989; Wright, 1985), but it is unlikely that this association is direct (Eskin, 1995; Joffe et al., 1988; Rubenstein et al., 1989). There was some evidence for an association between drug and alcohol use by family members and an increased prevalence of suicidal phenomena in adolescents (Fergusson & Lynskey, 1995; Grossman et al., 1991; Howard-Pitney et al., 1992; Joffe et al., 1988; Madianos et al., 1993; Wagman Borowsky et al., 1999; Wright, 1985), but again this association appeared to be indirect, factors such as family dysfunction and parental criminal behavior explaining the association (Joffe et al., 1988; Wagman Borowsky et al., 1999). Parental offending history was significantly associated with suicide attempts in the two studies in which this association was investigated (Fergusson & Lynskey, 1995; Joffe et al., 1988) and multivariate analysis indicated that this association was direct (Joffe et al., 1988).

3.4. Educational and social factors

3.4.1. School achievement and performance

The association with school achievement was investigated in 10 studies (Bjarnason & Thorlindsson, 1994; Dubow et al., 1989; Grossman et al., 1991; Jones, 1991; Kandel et al., 1991; Lewis et al., 1988; Reinerherz et al., 1995; Rey Gex et al., 1998; Rubenstein et al., 1989; Wagman Borowsky et al., 1999). Overall, there appeared to be a significant but indirect association between poor academic achievement and suicide attempts.

Poor school attendance was positively associated with both suicide attempts and suicidal ideation (Bjarnason & Thorlindsson, 1994; Choquet & Menke, 1989; Jones, 1991; Kandel et al., 1991; Lewis et al., 1988; Reinerherz et al., 1995; Madianos et al., 1993; Tomori, 1999; Wagman Borowsky et al., 1999). Multivariate analyses were reported in three studies but the relationship did not appear to be direct (Bjarnason & Thorlindsson, 1994; Reinerherz et al., 1995; Wagman Borowsky et al., 1999).

Having a negative attitude towards school and school work was associated with an increased prevalence of suicidal phenomena (Buddeberg et al., 1996; Dubow et al., 1989; Howard-Pitney et al., 1992; Juon et al., 1994; Kinkel et al., 1989; Stewart et al., 1999; Tomori, 1999; Wagman Borowsky et al., 1999), although some non-significant findings were reported (Dubow et al., 1989; Grossman et al., 1991; Kandel et al., 1991; Lewis et al., 1988; Stewart et al., 1999). Multivariate analyses were reported in four studies (Grossman et al., 1991; Juon et al., 1994; Stewart et al., 1999; Wagman Borowsky et al., 1999), one of which found the school variable to make an independent contribution to the variance in suicidal phenomena (Juon et al., 1994).
Misconduct in school was associated with an increased prevalence of suicidal phenomena (Jones, 1992; Reinherz et al., 1995; Vannatta, 1996; Wagman Borowsky et al., 1999) but the results of multivariate analyses were inconclusive (Vannatta, 1996; Wagman Borowsky et al., 1999).

3.4.2. Peer relationships

Peer relationships were investigated in 12 studies (Bjarnason & Thorlindsson, 1994; Buddeberg et al., 1996; Eskin, 1995; Howard-Pitney et al., 1992; Kaltiala et al., 1999; Kandel et al., 1991; Manson et al., 1989; Reinherz et al., 1995; RossoW & Wichström, 1994; Stewart et al., 1999; Tomori, 1999; Yuen et al., 1996). There was a strong relationship between poor relationships and suicidal ideation. For suicide attempts, there was an association with problems in relationships with peers, but not with degree of peer support. The results of multivariate analyses, reported in four studies (Bjarnason & Thorlindsson, 1994; RossoW & Wichström, 1994; Stewart et al., 1999; Yuen et al., 1996), reflected a similar pattern. In the two studies in which a significant association was reported negative aspects of peer relationships (loneliness and breaking-up with friends) were investigated, whereas in the studies in which no direct association was found positive aspects of peer relationships were investigated (peer acceptance and peer support). These latter findings suggest that poor peer relationships may be a risk factor for suicidal phenomena but that good peer relationships do not necessarily have a protective effect.

3.4.3. Social support

Social support was specifically investigated in five studies (Dubow et al., 1989; Grossman et al., 1991; Howard-Pitney et al., 1992; Kaltiala et al., 1999; Wagoon Borowsky et al., 1999). The findings were inconclusive.

3.4.4. Leisure activities

There was some evidence of a significant (though not direct) association between suicidal phenomena and increased participation in sports for females, but it was less clear whether this applied to males (Baumert, Henderson, & Thompson, 1998; Bjarnason & Thorlindsson, 1994; Oler et al., 1994; Tomori, 1999; Wagoon Borowsky et al., 1999).

4. Discussion

In conducting this review we have used a systematic procedure to identify as fully as possible the international research literature on suicidal phenomena in community samples of adolescents. The results show that a wide range of demographic, personal, familial and social characteristics are associated with risk of suicidal thoughts and behaviors. Many of these associations are in line with the findings from studies of adults and hospital-based studies of adolescents.

4.1. Methodological considerations

A wide range of possible risk and protective factors was assessed in the studies included in this review. While we have grouped these factors into specific categories there was often considerable variation within them. Where the relationship between suicidal phenomena and the independent
variables was not clear we have attempted to ascertain whether there were any specific themes within each broad type of factor that were more strongly associated with the suicidal phenomena.

In several studies, the association between suicidal phenomena and many variables was investigated but information on only some of these variables was made available to the reader. Statistically significant findings would be more likely to be reported than non-significant findings. Furthermore, some researchers concluded that the relationship was causal when only a correlational relationship had been established. This was frequently associated with the use of incorrect statistical methods (e.g. path-Analyzes).

In studies in which multivariate Analyzes were conducted, variables that were not associated with suicidal phenomena in univariate Analyzes were usually subsequently excluded from the Analyzes. It would be better to include those which are likely to be associated on apriori grounds because important associations are sometimes only identified in multivariate Analyzes. In this review we have attempted to provide an overview of the results of multivariate Analyzes of the studies. When making cross-study comparisons we have taken into account the variables entered into the multivariate Analyzes and have placed more emphasis on studies in which a more comprehensive range of variables has been included.

In most of the studies included in this review, psychological and psychiatric characteristics were usually assessed at the time of the survey. It is likely, however, that these will often have differed from those present at the time of self-harm or suicidal thoughts. One would therefore expect the findings of these studies to underestimate the true extent of the association between such characteristics and suicidal phenomena. Lastly, it should be emphasised that most of the research studies we have reviewed were conducted in the Western World, especially in North America. Care is needed in extrapolating the findings to other countries and cultures.

4.2. Correlates of suicidal phenomena

A strong and direct relationship between depression and suicidal phenomena was found in many of the studies. This is in keeping with the high prevalence of depressive disorders found in adolescents presenting to hospitals following deliberate self-harm (Burgess, Hawton, & Loveday, 1998; Kerfoot, Dyer, Harrington, Woodham, & Harrington, 1996) and in those who have died by suicide (Brent, Perper, Kolko, & Zelenak, 1988; Gould et al., 1996; Houston, Hawton, & Shepherd, 2001). Many other mental health problems such as anxiety and low self-esteem are co-morbid with depression. Associations found on univariate analysis may reflect the co-occurrence of such difficulties rather than a direct relationship. It is therefore especially important to consider the results of multivariate Analyzes when attempting to identify possible pathways to suicidal phenomena.

There was reasonable evidence for an association between suicidal phenomena and hopelessness, but it is unclear whether this association is direct. Sleep problems and feeling tired are also common symptoms of depression and both were found to be associated with suicidal phenomena in the few studies in which they were investigated. Impaired self-esteem was found to have a significant independent association with suicidal phenomena. This is not surprising as low self-esteem is both a symptom of depression (Beck, 1967) and increases an individual’s vulnerability to becoming depressed (McGee & Williams, 2000).

In several studies a significant association was found for female adolescents between suicidal phenomena and both poor body image and unhealthy eating behaviors. A strong association has been
found between suicidal phenomena, low self-esteem and eating problems (especially bulimia) in studies of psychiatric populations (McGee & Williams, 2000; Tomori & Rus-Makovec, 2000).

Anxiety disorders and symptoms were associated with adolescent suicide attempts, in keeping with findings that in adolescents who present to hospitals because of deliberate self-harm (Burgess et al., 1998; Kerfoot et al., 1996). However, this association did not appear to be direct.

Various criteria were used to identify antisocial behaviors in the studies included in this review. Overall, there was a significant and direct association for females but the association for males was less clear. Studies of both adolescent suicides (Brent et al., 1993; Houston et al., 2001; Shaffer et al., 1996) and suicide attempters presenting to hospitals (Hawton, O’Grady, Osborn, & Cole, 1982; Kerfoot et al., 1996) have indicated that suicidal behavior is strongly linked to antisocial behaviors.

Smoking, drinking, and drug taking were assessed in many of the studies in the review. Smoking was associated with suicide attempts and suicidal ideation but it is unclear whether this association was direct and whether there are any gender differences. Drinking was associated with suicidal phenomena and it is likely that this association is direct. For attempted suicide certain characteristics of alcohol consumption appeared to be predictive of an association, such as high consumption and strong alcoholic drinks. Drug taking appears to increase risk of suicide attempts and probably suicidal ideation. The association with harder drug use was direct. Substance abuse disorders in general were found to be significantly associated with suicide attempts but it is less clear if there was an association with suicidal ideation. The findings for alcohol and drugs are in keeping with those of studies of adolescent suicides (Brent et al., 1993; Shaffer et al., 1996) and suicide attempters presenting to hospital (Kerfoot et al., 1996).

Surprisingly, hardly any population-based studies have focused on the association between suicidal phenomena and sexual orientation in adolescents. In the one study in this review where this was examined, homosexual orientation in both genders and bisexual orientation in females were found to be associated with suicide attempts (Wagman-Borowsky et al., 1999). This is in keeping with the findings from research on gay populations (Herrell et al., 1999; van Heeringen & Vincke, 2000). In a recent review of the clinical and epidemiological literature, Bagley and Tremblay (2000) found elevated rates of suicidal behavior in gay, lesbian and bisexual youths. Data from the larger surveys indicated that the risk for a serious suicide attempt is at least four times greater than for heterosexual adolescents. Depression, low self-esteem and experiencing suicidal behavior in someone close have been identified as risk factors for suicidal phenomena in homosexual youths (van Heeringen & Vincke, 2000). Additional risk factors such as rating homosexual friendships as less satisfactory (van Heeringen & Vincke, 2000) and homophobic persecution in schools (Bagley & Tremblay, 2000) have also been linked to the elevated rates of suicidal phenomena in homosexual youths.

There was limited evidence from this review suggesting that adolescents who are sexually active or who feel stressed due to sexual behavior and sexuality issues are more likely to report suicidal phenomena than their peers. In studies of young adolescents, sexual intercourse had been found to be significantly associated with suicidal phenomena (Benson & Torpy, 1995; Walter et al., 1995).

There was considerable evidence for a strong and direct association between sexual abuse and suicidal phenomena, consistent with findings from other types of study (Chandy, Blum, & Resnick, 1996; Coll, Law, Tobias, Hawton, & Tomàs, 2001). Although most previous research has focused on sexual abuse in females, the effect may be even more profound for males: Choquet, Darves-Bornoz, Ledoux, Manfredi, and Hassler (1997) found that 52% of male rape victims had attempted suicide compared to 2% of controls (for females, the corresponding figures are: 22% and 12%, respectively). In addition, Darves-Bornoz, Choquet, Ledoux, Gasquet, and Manfredi (1998) found that reactions to sexual assault differed
by gender: females were more likely to be affected by medico-psychological symptoms (e.g. nightmares and somatic complaints), whereas males expressed symptoms (e.g. repeated suicide attempts and substance use). An important mediating factor in the relationship between sexual abuse and suicidal behavior may be low self-esteem (Romans, Martin, & Mullen, 1996).

There also appears to be a direct association between physical abuse and suicidal phenomena, in line with findings from other studies. For example, Straus and Kantor (1994) found that retrospective recall of ‘corporal punishment’ during adolescence was associated with later life suicidal ideation. However, the association may be dependent on the severity of the suicidal phenomena, there being an association with more serious suicidal phenomena, such as suicide attempts, but not with suicidal ideation. There may also be differences depending on the perpetrator of the abuse and its severity and duration. Furthermore, serious abuse by parents may be associated with additional risk factors, such as family history of mental health problems or drug and alcohol abuse. This should be investigated in future research.

There was a significant association between suicidal phenomena and exposure to suicide attempts in family members, in line with findings in adults (Statham et al., 1998). Particularly strong and direct links were found between suicidal behavior and exposure to suicidal acts by friends. The strong modelling influence in adolescents of suicidal behaviors by peers is also shown by the clustering of suicides that can occur in this age group (Gould, Petrie, Kleinman, & Wallenstein, 1994; Gould, Wallenstein, & Davidson, 1989). Surprisingly, the association between suicidal phenomena and exposure to suicide in the media was investigated in only one study. A significant direct association with suicide attempts (but not suicidal ideation) was found for television viewing of suicides, surgery and funerals. There is now substantial evidence that newspaper reporting of suicidal behavior can be a contributory factor in suicidal behaviors, especially in young people (Hawton & Williams, 2001; Pirkis & Blood, 2001; Schmidtke & Schaller, 2000).

Overall, the risk of suicidal phenomena does not appear to reflect the socio-economic characteristics of families of adolescents. The absence of a clear socio-economic effect is in keeping with the lack of a marked social class skew in adolescents attending hospital as the result of suicide attempts (Hawton et al., 1982) This is in contrast to adults, in whom rates of attempted suicide are elevated in lower socio-economic groups (Platt, Hawton, Kreitman, Fagg, & Foster, 1988).

Certain aspects of family structure appear to be linked to suicidal phenomena. One is living apart from both parents, which was found to have a direct association. There was evidence that parental divorce and the presence of a step-parent was associated with suicide attempts and ideation. There was also a suggestion of an association with absence of fathers but not mothers. However, it may have been that too few adolescents were living apart from their mothers for any impact on suicidal phenomena to be detected. In a recent review, Kelly (2000) reported that marital conflict is a stronger predictor than divorce. Many of the problems experienced by children in families in which parents subsequently divorce can be observed long before separation and the intensity and frequency of conflict are predictors of child adjustment. In this review, conflicts and arguments within the home were clearly and directly associated with the prevalence of suicidal phenomena, whereas family harmony and cohesion appeared to have a protective effect. These associations appeared to be stronger for females.

Emotional aspects of the parental relationship were also relevant. A stronger association was found for female adolescents. Having unsupportive parents was directly associated with suicidal phenomena. It is unclear whether the associations with other emotional aspects of the relationship between adolescents and their parents are direct. Too little or too much (i.e. over protectiveness) parental supervision was
associated with an increased prevalence of suicidal phenomena, as was poor general family functioning. Both good communication with and feeling understood by family members appear to reduce risk.

Returning to the stress–diathesis model (Mann et al., 1999) outlined earlier, through this review we have identified some factors which clearly contribute to vulnerability (diathesis) to suicidal phenomena in adolescents, and others that act as stress factors. In addition, there are some factors which may act in either way, depending on their temporal association with suicidal phenomena. We have shown these associations in Table 1, limiting them to those for actual self-harm or attempted suicide, and grouping them into those for which the evidence is very strong, and those for which the evidence is suggestive of an association and which would benefit from further research.

Very few studies have focused on the factors which may protect against suicidal phenomena. For some factors the inverse of risk factors may be viewed as protective factors. For example, while mental health problems and parental divorce would be described as risk factors, their opposites (e.g. mental well-being and family stability) could be considered as protective. However, this is not the case for all factors. For example, worry and stress associated with low socio-economic status appears to be a risk factor for suicidal phenomena, but wealth over a certain threshold does not appear to be a protective factor. The factors that were found to have particularly strong protective effects against suicidal phenomena were good communication with family members and involvement in family activities.

4.3. Implications of the findings for clinicians and other professionals working with adolescents

The results of this review have implications for prevention of suicidal behavior in adolescents. These include strategies to modify factors which might predispose individuals to suicidal phenomena (primary prevention), those targeted at individuals who have been identified as ‘at risk’ but who have not as yet

<p>| Table 1 |
| Factors associated with adolescent self-harm (attempted suicide) according to whether they appear to be vulnerability (diathesis) or stress factors, or both |</p>
<table>
<thead>
<tr>
<th>Vulnerability factors</th>
<th>Stress factors</th>
<th>Vulnerability/stress factors</th>
</tr>
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<tbody>
<tr>
<td><strong>Strong evidence for an association</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family suicidal behavior</td>
<td>Depression</td>
<td>Living apart from parents</td>
</tr>
<tr>
<td></td>
<td>Alcohol abuse</td>
<td>Antisocial behavior (especially in females)</td>
</tr>
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<td></td>
<td>Use of hard drugs</td>
<td>Sexual abuse</td>
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<td></td>
<td>Mental health problems</td>
<td>Physical abuse</td>
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<tr>
<td></td>
<td>Suicidal behavior by friends</td>
<td>Unsupportive parents</td>
</tr>
<tr>
<td></td>
<td>Family discord (especially for females)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poor peer relationships</td>
<td></td>
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<tr>
<td><strong>Suggestive evidence for an association</strong></td>
<td></td>
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</tr>
<tr>
<td>Poor communication with family</td>
<td>Hopelessness</td>
<td>Low self-esteem</td>
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<td></td>
<td>Eating disorders</td>
<td>Poor physical health</td>
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<tr>
<td></td>
<td>Smoking</td>
<td>Physical disability</td>
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<td></td>
<td>Drug use</td>
<td>Sexual activity</td>
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<tr>
<td></td>
<td>Sleep difficulties</td>
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<td></td>
<td>Media exposure to suicide</td>
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made a suicide attempt (*secondary prevention*), the provision of help for individuals who have made a suicide attempt, and endeavouring to limit the impact of suicidal behavior on others, especially peers (*tertiary prevention*).

### 4.3.1. Primary prevention

The findings in this review indicate a likely association between suicidal phenomena and many school related variables (e.g. poor academic achievement, poor school attendance and having a negative attitude towards school and schoolwork). As intervention programs aimed at parents have often focused on children’s academic performance, they may well have an impact on suicidal phenomena. In the USA, one such study (Schweinhart, 2003) was found to have a dramatic impact on many aspects of the children’s lives, including mental health. Children who did not take part in the program (control group) were twice as likely to receive treatment for mental impairment later in life than children who were involved in the program. Although (as far as we are aware) suicide or attempted suicide has not been used as an outcome measure in these studies, it would be logical to conclude that there may well be an impact on such behaviors given their strong association with mental health problems.

In this review antisocial and problem behaviors were found to be associated with suicidal phenomena. In a review of parent-training, Barlow (1999) showed that they had a positive impact on behavior problems in children aged 3 to 10 years. As problem behaviors tend to be relatively stable over time and usually have a poor prognosis (Barlow, 1999), effective early intervention could have a significant impact on both problem behaviors and suicidal phenomena. However, the longest follow-up period from the studies included in Barlow’s (1999) review was 3 years so it remains to be seen whether such intervention have a long-lasting effect.

The studies included in this review have demonstrated a strong link between many aspects of mental health and suicidal thoughts and behaviors. In a recent review of high-quality studies of universal approaches to mental health promotion (which target all adolescents, not just those at risk), Wells, Barlow, and Stewart-Brown (2001) found that most mental health promotion have had a positive impact on mental health. There was some evidence from their review to advocate the use of whole-school approaches rather than approaches which only aim to have an impact on the behavior or mental health of pupils. Several findings from the present review would support the use of a whole-school approach, which may increase school staff openness and confidence in dealing with sensitive issues, adolescents’ awareness of the appropriate person to seek help from, and their willingness to communicate about their difficulties.

An association was found between media exposure to suicide and suicide phenomena in adolescents. Although this was based on the results of only one study, it is in line with previous extensive findings from other types of research and has clear implications for the media portrayal and reporting of suicide and suicide attempts. Sensitive reporting of suicides within the media is particularly pertinent to adolescence as this age group seem to be most vulnerable to the ‘contagious’ influence of suicide (Hawton & Williams, 2001; Pirkis & Blood, 2001).

### 4.3.2. Secondary prevention

Secondary prevention, which should primarily be targeted at schools (Shaffer & Gould, 2000), involves, first, the identification of adolescents who are ‘at risk’ and, second, strategies to prevent these individuals from going on to make a suicide attempt. The initial identification of ‘at-risk’
individuals can be achieved in several ways, including self-identification, peer identification, teacher identification, or screening. However, if adolescents are to self-identify or be able to identify their peers they must be aware of warning signs and risk factors and a primary intervention program or educational program may be necessary to achieve this. With regard to teacher-identification, some teachers may not think it is their role to deal with mental health issues or they may feel ill-equipped to deal with the difficulties that are identified. An issue for all such identification procedures is that some adolescents who are ‘at risk’ will go unidentified and others may be falsely identified as at risk. This review has identified some specific factors that may be particularly useful in the identification of those at risk: mental health difficulties (particularly depression), abuse history (sexual or physical), having a friend or family member who has attempted suicide, recent contact with friends who have engaged in suicidal behavior, poor relationships with parents and poor school attendance or performance.

Once individuals who are ‘at risk’ have been identified, several courses of action may be taken. Teachers could monitor the progress of the adolescents, adolescents could be referred to a mental health or counselling facility for further investigation and therapy as appropriate, and parents might be advised of the potential problem and advised to seek help.

4.3.3. Tertiary prevention

Adolescents seem to be particularly vulnerable to the ‘contagious’ influence of suicide, as indicated by the findings of several studies in this review in which a strong association of suicidal phenomena with suicidal behavior by peers. Professionals who are involved with adolescents in the school setting must be aware that a suicide or suicide attempt within the school may have an impact on other pupils and that appropriate support mechanisms should be put in place for those who may also be at risk. This could involve the implementation of primary and/or secondary prevention strategies. For example, a crisis hotline could be established or ‘at risk’ individuals could be identified and support provided. Hazell (1991) implemented postvention strategies in schools after pupils had committed suicide. The strategies involved adolescents who were considered most at risk and those who were closest to the deceased being asked to participate in a group discussion reflecting on the deceased and what they knew and how they had responded to the event. The difficulty of predicting suicide was explained with the aim of alleviating guilt. Symptoms of mental health problems were described and the importance of seeking help from a responsible adult was emphasised, with certain members of the school staff agreeing to take responsibility for monitoring those most at risk. School staff reported that pupils were more prepared to present their difficulties to them in the subsequent months. They also seemed more willing to identify other pupils who appeared to be at risk.

Tertiary prevention strategies can also be implemented at a wider level. The Department of Health (1998) in England has introduced a policy whereby all psychiatric patients with either a current or recent history of mental illness and/or deliberate self-harm will be followed-up by a face-to-face interview with a mental health professional within 7 days of discharge from hospital. There has been a paucity of evaluative studies of aftercare for adolescents who have attempted suicide or deliberately self-harmed. Family problem solving has been shown to be an acceptable approach, although no impact on repetition of deliberate self-harm by adolescents has been demonstrated (Harrington et al., 1998). There is preliminary evidence that group therapy for adolescents who have repeated deliberate self-harm may be effective (Wood, Trainor, Rothwell, Moore, & Harrington, 2001). This is an area for further work in order that treatments of known effectiveness can be made available on a wide scale.
Suicidal behavior in adolescents presents a major challenge. The findings of this review have indicated a range of risk factors, awareness of which can be utilized in developing prevention strategies based on sound evidence. The main tasks are now the implementation and evaluation of a range of preventative strategies.

References


