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Kimberly K. McClanahan
University of Kentucky

Hatim A. Omar
University of Kentucky, hatim.omar@uky.edu

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Chapter 1

SUICIDE IN PREPUBERTAL CHILDREN

Kimberly K. McClanahan and Hatim A. Omar¹

University of Kentucky, US

INTRODUCTION

Suicide, while relatively rare in prepubertal children (Shaffer, et al., 2001; Gould, et al., 2003; Jackson and Nuttall, 2001; Pfeffer, et al., 1993), was the 6th leading cause of death in 5–14-year-old children in the USA (Pfeffer, 1997; Centers for Disease Control, 1997; Nock and Kazdin, 2002), but has recently moved to 5th place (Minino, et al., 2006). The Surgeon General's Call to Action to Prevent Suicide (1999) reported a 100% increase in suicide among 10-14-year-olds between the years of 1980 and 1996. While suicide among prepubertal children and young adolescents (ages 5–14) involved 292 deaths in 2004, the lowest age-specific mortality rate for suicide (0.7 per 100,000) for all ages (Minino, et al., 2006), the rise in suicide in the last several decades among young children is a matter of significant concern.

In the USA, ascertaining exact numbers for suicide in prepubertal children is impossible. First, the categorization of national statistics, with an age range of 5-14, includes numbers from early adolescence, that is, 13-14 years of age (Minino, et al., 2006), and most completed suicides within the 10-14-year-old group are 12-14 years old (Gould, et al., 2003), indicating that reported numbers of suicide in prepubertal children are inflated by the upsurge of suicide in adolescence. Second, death in 1–4 year olds is never attributed to suicide (Miller, et al., 2002). In 2003, the number one reported cause of death in 1-4 year olds was unintentional injury (Centers for Disease Control, 2003), which may mask some deaths with intention. Finally, there is no central reporting agency for suicide, making accurate numbers difficult to obtain (Moskos, et al., 2004).

Across all age groups, suicide is the 11th leading cause of death in the USA, third in youth ages 15-24 (Minino, et al., 2006), and fourth in 1-19 year olds (Hoyert, et al., 2006). Suicide across the pediatric age-span is a public health concern that warrants continued attention and, while much study has been given to adult and adolescent suicide, suicide in prepubertal

¹ E-mail: Hatim.Omar@uky.edu.

children has only recently become a significant focus for researchers and clinicians (Greene, 1994; Nock and Kazdin, 2002).

Given the significant increase in incidents of suicide in adolescence, with a peak in the mid-adolescent years (Shaffer, et al., 2001), studies have begun to look at precursors in prepubertal children. Childhood behaviors, attitudes, experiences and risk factors are associated with suicidal behavior in adolescents and young adults (Pfeffer, et al., 1993; Pfeffer, et al., 1994; Pfeffer, et al., 1998; Reinherz, et al., 1995). By studying and understanding the developmental processes of suicidal behavior and thinking, important information can be gleaned which will inform suicide prevention and intervention efforts. As Cynthia Pfeffer, one of the leading researchers in prepubertal suicidal behavior, has stated, "Suicidal behavior is a developmental process that begins at an earlier phase of the life cycle than when this behavior manifests" (Pfeffer, 1997, p. 560).

RISK FACTORS

Risk factors for suicidal thinking and behavior in prepubertal children span the range from individual to environmental influences and stressors, and there is consistent evidence for the association between prepubertal suicidal ideation and later adolescent suicide attempts (Pfeffer, et al., 1994; Jackson and Nuttall, 2001). Risk factors have been delineated into three areas: Personal/Individual Characteristics, Family Characteristics/Psychopathology, and Negative Life Stressors/Environmental Influences.

PERSONAL/INDIVIDUAL CHARACTERISTICS

Psychiatric Co-Morbidity

Psychopathology is a common finding with regard to risk factors for suicide in prepubertal children, with mood disorders, especially depression, being the most significant (Gould, et al., 2003; Pfeffer, 1997). In both inpatient (Pfeffer, et al., 1993; Pfeffer, et al., 1994; Pfeffer, et al., 1998; Nock and Kazdin, 2002) and outpatient (O'Leary, et al., 2006; Gould, et al., 1998; Jackson and Nuttall, 2001; Kovacs, et al., 1993) samples, depression has been significantly associated with suicidal ideation and behavior in prepubertal children.

In a follow-up study of prepubertal children 6–8 years after initial hospitalization, Pfeffer, et al. (1993) found that prepubertal suicide attempters were six times more likely and that prepubertal suicidal ideators were three times more likely than nonpatients to attempt suicide during the follow-up period. The strongest factor for recurrence of a suicide attempt was impairment in social adjustment immediately prior to the attempt. Children who reported an attempt in the follow-up period were four times more likely to have poor social adjustment and 3.5 times more likely to have a mood disorder than non-attempters.

Gould, et al. (1998), using a probability sample of 9–17-year-olds, found that mood and anxiety disorders were significant independent correlates of suicide attempts in participants 12 years or younger and that disruptive behavior disorders independently increased the risk of suicidal ideation in that age group. In a prospective study using a prepubertal, nonclinical

sample, O'Leary, et al. (2006) measured suicidal ideation and found that 14.5% of the 131 children reported suicidal ideation associated with depressive symptoms.

In a longitudinal study, self-report of depressed mood in urban first-graders predicted later suicidal ideation (Ialongo, et al., 2001). In a follow-up study of 6- to 15-year-olds diagnosed with major depression, depressed children were five times more likely to have attempted suicide than their nondepressed peers 10 years later, and 7% committed suicide in later life (Weissman, et al., 1999). Kovaks, et al. (1993), in a longitudinal investigation, found that depression in prepubertal children gave a four to five times higher likelihood for a suicide attempt than for children without depression.

Jackson and Nuttall (2001), in an outpatient mental health sample of 5-12-year-olds, asked children to self-report suicidal behavior and found that 42% had one or more suicidal behaviors. Depression was the most frequent diagnosis, but no specific diagnosis was significantly associated with suicidality, suggesting that factors other than diagnosis be considered in determining suicidality. This is consistent with findings by Nock and Kazdin (2002) who studied 6-13-year-old inpatients. They found that depression was significantly associated with suicidal ideation, the presence of a current suicide attempt, and suicidal intent. However, they also found that, when depression was statistically controlled, negative automatic thoughts, hopelessness and anhedonia (lack of pleasure in activities and play) remained significantly associated with the presence of a current suicide attempt. Hopelessness also remained significantly associated with suicidal intent, suggesting that these three variables provide unique information about suicidal behavior beyond a diagnosis of depression. Of particular note is the finding that those children who had a current suicide attempt were distinguished from all other children by higher scores on a measure of anhedonia and by a higher number of past suicide attempts. Luby, et al. (2003), in a study of depression in preschool children, found anhedonia to be a highly specific symptom of depression, suggesting that a preschool child presenting with anhedonia is extremely likely to be clinically depressed. Thus, the presence of anhedonia at an early age may be a predictor of suicidal behavior in prepubertal children.

While depression is the most common disorder associated with suicidality in prepubertal children, other disorders have also been linked to it. Studies of community and psychiatric samples suggest that dysthymia, disruptive disorders (including attention deficit hyperactivity disorder, oppositional defiant disorder and conduct disorder), schizophrenia and developmental disorders are correlated highly with childhood suicidal tendencies (Pfeffer, et al., 1993; Pfeffer, 1997). Additionally, prepubertal psychiatrically hospitalized children with psychotic symptoms are at risk for suicidal behavior (Livingston, 1992).

Prior Suicide Attempts

The axiom that past behavior predicts future behavior appears to hold true with suicide. Previous suicide attempts predict the higher probability of future suicide attempts (Gould, et al., 2003; Shaffer, et al., 2001). Nock and Kazdin (2002), in their sample of 6-13-year-old inpatients, found that those who had a current suicide attempt reported a higher number of suicide attempts in the past year than those who had no current suicide attempt. This is consistent with work demonstrating that past attempts predict additional attempts in adolescents, and it appears to hold true with children as well (Cohen-Sandler, et al., 1982).

Gender

In prepubertal children, no difference in suicidal behavior between males and females has been found (Pfeffer, et al., 1986), although Pfeffer, et al. (1993) noted that prepubertal girls were more likely than boys to make multiple suicide attempts as they became adolescents. Nock and Kazdin (2002) found that, as children near early adolescence, girls become more likely to make a suicide attempt than are boys, and as adolescence progresses, girls are twice as likely as boys to attempt suicide. Adolescent boys however are much more likely to complete suicide than are girls, with an approximate ratio of 5.5:1 in 15-24-year-olds (Shaffer, et al., 2001).

Risk factors for suicide vary by gender. Reinherz, et al. (1995), in assessing children at ages 5, 9, 15 and 18, found that psychosocial risk factors from as early as age 5 proved a significant risk for suicidal ideation in mid-adolescence, but the risk factors varied by gender. For males, the risk factors were early health problems, childhood behavior and emotional problems, and the early onset of psychiatric disorder. For females, the risk factors were family issues, early behavior and emotional problems, poor self-perceptions, and early onset of psychiatric disorder. Early gender-specific risks for suicidal ideation in adolescence included emotional and behavioral problems contrary to gender expectations. Specifically, young girls with aggression and hyperactivity and young boys with anxiety and dependence were more likely to have suicidal ideation in adolescence than those children who exhibited more traditional gender roles in early childhood.

Cognitive Development and Maturity

The variability of children's cognitive maturity through prepuberty has implications for their understanding of the seriousness and finality of suicide. Although the 6–12-year-old age group may include children at a number of Piagetian stages (preoperations, concrete operations and formal operations [Jacobsen, et al., 1994]), most will have predominantly concrete operational levels of cognitive development (Pfeffer, 1997). As such, they tend to think concretely, utilize a present orientation and view choices as black or white. They have limited ability to project into the future and may not perceive the long-range implications of current decisions (Monasterio, 2003). Thus, prepubertal children may not appreciate the finality of a suicidal act (Shaffer, et al., 2001), although they will usually have some concept of death (Mishara, 2003).

Young children's understanding of death may be akin to death in fairy tales or cartoons, where the protagonist is ultimately revived. Two-thirds of children, by age 6-7, understand that everyone dies (Mishara, 2003), but some studies suggest that only by age 9 or 10 do children begin to understand death as final and permanent (Jacobsen, et al., 1994). Also, by age 10, most children know what suicide means (Pfeffer, 1997). Regardless of prepubertal children's level of cognitive maturity, young children are capable of implementing a suicide plan successfully, with younger children using less complex and more easily available methods (Shaffer, et al., 2001).

Genetics

Evidence suggests a genetic component to suicidal behavior (Pfeffer, et al., 1994). Family studies, including first-degree relatives and twin studies, show a genetic vulnerability to suicide. Agerbo, et al. (2002), found youth suicide to be nearly five times more likely in children of mothers who had completed suicide and twice as common in children of fathers who completed suicide. Additional evidence for the heritability of suicidality is found in a meta-analysis of twin data. This showed that first-degree relatives of people who completed suicide have more than twice the risk of suicide than the general population, with relative risk increasing among identical co-twins of a completed suicide to about 11 times that of the general population (McGuffin, et al., 2001).

Much research is ongoing regarding abnormalities of serotonin function in suicidal individuals (Gould, et al., 2003), some of which has been carried out on suicidal adolescents (Bennett, et al., 2000). There is speculation that this research will determine a genetic link regarding suicidality in relatives, but to date, results have been inconsistent (Gould, et al., 2003).

FAMILY CHARACTERISTICS/PSYCHOPATHOLOGY

Family factors increase risk for suicidal behavior in prepubertal children. Family discord, lack of family cohesion, poor family behavioral control, and parental loss due to separation or divorce and/or death, especially the death of a parent before the child reaches the age of 12, are all associated with an increased risk of suicidal behavior in prepubertal children (Pfeffer, 1997; Pfeffer, et al., 1993). Parental psychopathology is also a risk factor. In a follow-up study of prepubertal children 6–8 years after initial hospitalization, Pfeffer, et al. (1994) assessed their relatives. Suicidal behavior in children was associated with suicidal behavior in their families, notably mothers, with 50% of mothers of suicide attempters reporting a history of suicide attempts. Additionally, more first-degree relatives of child suicide attempters, mostly fathers, compared to first-degree relatives of control children, had antisocial personality disorder, assaultive behavior, and substance abuse. Pfeffer, et al. (1998), in further assessment of the cohort of children referenced above, found that family discord, suicide attempts by mother, and substance abuse by mothers and fathers were significantly more prevalent among adolescents with a lifetime history of a suicide attempt. Klimes-Dougan, et al. (1999) found that young children of unipolar depressed mothers were more likely to report suicidal thoughts or behaviors than children of well mothers.

NEGATIVE LIFE STRESSORS/ENVIRONMENTAL INFLUENCES

Brown, et al. (1999), in a study beginning when children were five years of age through to adulthood, looked at the effects of childhood neglect, physical abuse and sexual abuse. They found that adolescents and young adults with a history of childhood maltreatment were three times more likely to become depressed or suicidal when compared to individuals with no maltreatment history. Both childhood physical and sexual abuse were associated with later

depression and suicidality, with sexual abuse carrying the greatest risk for suicide. Pfeffer, et al. (1993) found that prepubertal children with poor social adjustment have a four times greater risk for a suicide attempt in adolescence than children with good social adjustment. Exposure to violence and distress in response to witnessing violence are also associated with suicidal ideation in prepubertal children (O'Leary, et al., 2006).

An environmental influence associated with suicidality in children is the media (Mishara, 2003). Media coverage of suicide or the fictional representation of suicide in the media is associated with suicide in vulnerable teenagers (Shaffer, et al., 2001).

Problems of Reporting Prepubertal Suicides

There are a number of reasons for the probable under-reporting of suicidal death in prepubertal children. As noted earlier, no death in a child under the age of 5 is classified as suicide (Miller, et al., 2002), although there have been documented cases of suicidal children as young as three years of age (Greene, 1994). In older prepubertal children, death may be more likely attributed to an accident rather than suicide (Patros and Shamoo, 1989), possibly because parents and authorities refuse to admit that young children kill themselves (Workman and Prior, 1997; Greene, 1994).

Furthermore, suicide carries with it a tremendous stigma with which parents must contend and, if suicide is ruled as the cause of death rather than some natural source, people tend to be more blaming of the parents (Jacobsen, et al., 1994). As a result, a family physician may withhold information from authorities to save the family from the shame and confusion that a determination of suicide might cause (Workman and Prior, 1997).

Finally, parents consistently underestimate their children's suicidal thinking and are significantly less likely to report the presence of suicidal ideation or a history of suicide attempts in their children than are the children themselves (Breton, et al., 2002; Jacobsen, et al., 1994). Thus, given that parents are unaware, under aware, or in denial about their children's suicidal thinking and intent, if no suicide note is found, the death may not be ruled a suicide, but instead as undetermined or an accident (Workman and Prior, 1997).

Methods of Suicide in Prepubertal Children

In the USA, firearms have been the leading method used to commit suicide across all age groups, including prepubertal children (Roche, et al., 2005), although this has recently changed in the 10-14-year-old age group. Beginning in 1997, among children ages 10-14, suffocation surpassed firearms as the most common suicide method (Centers for Disease Control, 2004). Suffocation suicides began occurring with increasing frequency in the 1990s and, by 2001, a total of 1.8 suffocation suicides occurred for every firearm suicide among 10-14-year-olds, with poisoning as the third most common suicide method (Centers for Disease Control, 2004).

Although suicidal death by firearm has decreased in the 10-14-year-old age group, firearms remain a significant means of violent death among USA children 5-14 years old and, from the period of 1988-1997, 1,588 firearm suicides were documented (Miller, et al., 2002). Children were seven times more likely to die from a firearm suicide if they lived in a state

with high versus low gun levels. The relationship between guns and violent death remained statistically significant even after controlling for state-level poverty, education and urbanization (Miller, et al., 2002), suggesting that access to guns is a serious risk variable in child suicide. Other methods for suicide attempts in the 6-12 year age group include severe self-hitting and head banging (Jackson and Nuttall, 2001), jumping from heights, drowning, running into traffic, ingesting poison, hanging, stabbing and burning (Pfeffer, 1986; Shaffer, et al., 2001).

Cross-Cultural Considerations

In a comparison of the USA with 26 other industrialized countries between the years of 1990-1995, USA children ages 1-14 had a suicide rate twice that of other countries combined (0.55 vs. 0.27), and suicide by firearm in the USA was almost 11 times the rate for other countries combined (0.32 vs. 0.03). In 5-14 year olds, nonfirearm-related suicides were the same among children in the USA and other countries (0.35 vs. 0.35), but firearm-related suicide rates were 10 times greater for USA children (0.49 vs. 0.05) (U. S. Department of Justice, 2000; Centers for Disease Control, 1997). The high rate of suicide by firearms in the USA appears to be a cultural phenomenon reflecting the high degree of access children in the USA have to guns (Miller, et al., 2002).

Pritchard and Hansen (2005), utilizing World Health Organization data from 1974-1999, found cross-cultural differences in rates of suicide in children aged 5-14. In general, they found that child suicide rates were statistically low, and that Canadian male children had the highest rate of suicide at 15 per million, followed by the USA and the Netherlands at 12 and 8 per million, respectively. Lowest rates of child suicide were reported for England and Wales, Italy, and Spain, at 1, 2, and 3 per million, respectively.

Across cultures, suicide rates differ and are intimately tied to the mores and customs of a given country or region of the world. Religious beliefs, taboos against or acceptance of suicide, laws, access to means, poverty and level of industrialization are just a few of the cultural considerations that impact suicide rates in different countries (Maharajh and Abdool, 2005).

Identification, Prevention and Intervention

While suicide completion rates are low in prepubertal children, suicidal thinking and behavior are not all that uncommon. Furthermore, evidence suggests that prepubertal suicidality is linked to more lethal suicidal behavior in adolescence and young adulthood (Pfeffer, et al., 1993). Thus, identification of prepubertal children at risk for suicidal thinking and behavior is an important component of both prevention and intervention activities and programs.

IDENTIFYING AT-RISK PREPUBERTAL CHILDREN

Identification of young children at-risk for suicide may be increased by considering the risk factors identified as associated with potential suicidal behavior. These include psychiatric disorders, most notably depression, past suicide attempts, family history of first-degree relatives having attempted suicide, especially mothers, parental substance abuse, child abuse, family discord, parental loss and other negative life experiences. However, many children have some or all of these risk factors and do not become suicidal, so it is important to consider characteristics that have been found to be predictive of suicidality independent of the above-mentioned risk factors.

Nock and Kazdin's (2002) finding that the presence of anhedonia, negative automatic thoughts and hopelessness predicted suicidal thinking and behavior independent of depression has implications for assessment of suicidality in prepubertal children. The presence of anhedonia, in particular, was highly associated with children's current suicide attempts and, given that anhedonia has also been found to be a highly specific symptom of depression in preschool children (Luby, et al., 2003), it seems reasonable to consider anhedonia as a potential "red flag" for suicidal thinking in at-risk children. There are also screening tools available to assess suicidal ideation and intent in young children (Pfeffer, et al., 2000).

The majority of suicidal prepubertal children will probably not come to the attention of mental health professionals, so formal assessment of symptoms will not occur on a regular basis. Primary care and pediatric physicians are more likely to see these children, and suicidality will rarely be assessed. When surveyed, fewer than half of pediatric and primary care physicians reported that they routinely screen their adolescent patients for suicide risk (Frankenfield, et al., 2000). It seems even less probable that preadolescent screening would occur. Jellinek (2006) suggests that pediatricians feel overwhelmed and unlikely to use mental health screening tools because they will not be reimbursed. Furthermore, he states that many primary care physicians and pediatricians are not trained to interview school-age children about suicidal ideation.

Pediatricians and primary care physicians, as front-line professionals dealing with young children, should be given training in mental health issues in general, and suicidality in particular. Voelker (1999) found that 72% of 600 family physicians and pediatricians in his study had prescribed an SSRI for a child or adolescent patient, but only 8% said they had received adequate training in the treatment of childhood depression, and only 16 % reported that they felt comfortable treating children for depression.

PREVENTION

Most prevention programs for suicidality are focused on adolescents (Moskos, et al., 2004; Gould, et al., 2003), but that may be too late for the at-risk child. Mishara (2003) suggests that school-based primary prevention programs may have significant beneficial effects and could be used to prevent suicidal behavior in prepubertal children. Further, he suggests that these programs should be implemented at an early age, prior to the onset of suicidal thinking if possible (Mishara, 2003). Evidence also suggests that certain kinds of prevention programs work better than others. Horowitz and Garber (2006) performed a meta-

analytic review of prevention programs for depression in children and found that selective prevention programs (programs given to members of a subgroup of a population whose risk is deemed above average) are more effective than universal ones (programs administered to all members of the target population). Thus, prevention efforts targeted to at-risk children may be more effective than global ones, and screening needs to occur to identify at-risk children prior to implementation of a prevention program aimed at reducing suicidality. Jackson and Nuttall (2001) suggest that teachers, parents and school counselors need to be trained to screen for suicidality in children.

INTERVENTION AND TREATMENT

Shaffer, et al. (2001) outlines appropriate treatment options for prepubertal suicidal children. If actively suicidal, they should be hospitalized until the acute crisis has passed. Hospitalization may be followed by partial hospitalization, if deemed necessary. Outpatient treatments are appropriate if the child is not actively suicidal and if there are sufficient supports at home. Different methods of treatment have been found to be useful and include cognitive-behavioral therapy which seeks to change the way the child thinks, interpersonal therapy which addresses interpersonal problems of the child, and family therapies. Clearly, when family discord, poor communication, lack of cohesion, parental conflict and parental psychopathology are contributors to suicidality in a child, family treatment is likely to be the best treatment format because the child's primary system of support is targeted for intervention. No formal studies of psychopharmacological interventions have been completed with regard to prepubertal children.

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