Suicidal Ideation and Behavior among Youth in the Juvenile Justice System: A Review of the Literature

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September 2013

Suggested Citation: National Action Alliance for Suicide Prevention: Youth in Contact with the Juvenile Justice System Task Force. (2013). *Suicidal ideation and behavior among youth in the juvenile justice system: A review of the literature.* Washington, DC: Author.

Introduction

Despite significant concern over suicidal ideation and behavior among youth involved with the juvenile justice system, no systematic review of the literature on suicidal ideation and behavior among this population exists. In response, this paper was developed by the Youth in Contact with the Juvenile Justice System Task Force (http://actionalliancefor suicideprevention.org/task-force/juvenilejustice) of the National Action Alliance for Suicide Prevention (Action Alliance) (http://www.actionallianceforsuicide prevention.org/) to: a) provide a comprehensive review of the available research, b) assess what we know and identify existing gaps, and c) offer a series of recommendations for future research. This review explores the prevalence of recent and past suicidal ideation and suicide attempts among justice-involved youth; gender and ethnic differences; and variables associated with suicidal ideation and attempt.

Suicidal Ideation and Behavior among Youth in the Juvenile Justice System

Many youth today are at risk for suicide. Suicide is the second leading cause of death among individuals aged 10–18 (Centers for Disease Control and Prevention (CDC) 2012). Approximately seven of 100,000 adolescents aged 15–19 die by suicide each year. Suicides are associated with previous suicidal ideation and attempts (Brent et al. 1988; Kessler, Borges, & Walters 1999; Lewinsohn, Rohde, & Seeley 1996; Lewinsohn, Rohde, & Seeley 1994; Shaffer et al. 1996). A recent review estimated that 19.8–24.0 percent of youth have experienced suicidal ideation, and 3.1–8.8 percent have attempted suicide in their lifetime (Nock et al. 2008). The most recent study of youth aged 15–19, the 2011 Youth Risk Behavior Survey, estimated that 15.8 percent of youth seriously contemplated suicide, and 7.8 percent made at least one attempt in the past year (CDC National Center for Injury Prevention and Control (NCIPC) 2012). Rates of suicidal ideation and behavior vary according to gender and race/ethnicity. Adolescent females have higher rates of suicidal ideation and behavior than males (Beautrais 2002; Cannetto & Sakinofsky 1998; CDC NCIPC 2012; D'Eramo et al. 2004; Greenhill & Waslick 1997).

Background

Envisioning a nation free from the tragic experience of suicide, the Action Alliance was launched in 2010 by U.S. Department of Health and Human Services Secretary Kathleen Sebelius and former U.S. Department of Defense Secretary Robert Gates. This public-private partnership advances the *National Strategy for Suicide Prevention* (NSSP) by championing suicide prevention as a national priority, catalyzing efforts to implement high-priority objectives of the NSSP, and cultivating the resources needed to sustain progress. The Action Alliance's Youth in Contact with the Juvenile Justice System Task Force was established to focus attention on the needs of youth in the juvenile justice system. The task force was co-led by:

- Melodee Hanes, JD – Acting Administrator, Office of Juvenile Justice and Delinquency Prevention, Office of Justice Programs, U.S. Department of Juvenile Justice
- Joseph J. Cocozza, PhD – Director, National Center for Mental Health and Juvenile Justice, Policy Research Associates

The task force comprised four workgroups: Public Awareness and Education; Suicide Research; Suicide Prevention Programming and Training; and Mental Health and Juvenile Justice Systems Collaboration. Each workgroup developed products specific to its respective task.

Suicide Research Workgroup Members and Staff

- Denise Juliano-Bult, MSW (*workgroup lead*) – Chief, Systems Research Programs and Disparities in Mental Health Research Programs, National Institutes of Health
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Non-Hispanic whites have higher rates than African Americans and Hispanics (CDC NCIPC 2012; Harris et al. 2006; Kessler, Borges, & Walters 1999; Miller & Eckert 2009).

Suicides are more common among youth in the juvenile justice system than in the general population (Gray et al. 2002; Hayes 2009). In the first published national survey of completed suicide among incarcerated juveniles, the suicide rate was estimated at 57 per 100,000 in detention facilities, 4.6 times higher than youth in the general population (Memory 1989). More recently, the rate is reported to be 21.9 per 100,000 young people in juvenile justice facilities, approximately three times higher than peers in the general population (Gallagher & Dobrin 2006).

Risk factors for suicidal ideation and behavior are far more common among youth in the juvenile justice system than in the general population (Brown et al. 1999; Dube et al. 2001). For example, more than two-thirds of detained youth have a psychiatric disorder and/or a substance use disorder (Teplin et al. 2002; Wasserman et al. 2002). More than three-quarters of detained females and more than two-thirds of detained males have a history of physical abuse (King et al. 2011).[1] Because of these and other risk factors, youth in the juvenile justice system are at great risk for suicide.

Methods

To accomplish the goals of this paper, it was first necessary to identify criteria for inclusion of research studies, define key terminology, and establish a procedure for data extraction.

Criteria for Inclusion

For this review, MEDLINE/PubMed, PsycINFO, and PsycARTICLES databases for epidemiologic studies were searched using the following words: "suicidal ideation and juvenile justice," "suicide attempts and juvenile justice," "suicidal behavior and juvenile justice," "suicide and juvenile justice," "suicide and youth incarceration," and "suicidality and juvenile justice." Only publications written in English and published between 1990 and 2012 were considered. Reference lists from these publications were then manually searched for relevant studies, i.e., those that examined either suicidal ideation or behavior. Studies were excluded if they: (1) provided only case reports or commentaries; (2) did not use well-validated screening measures; (3) reported scale means instead of prevalence rates; (4) were not conducted in the United States; or (5) assessed only non-suicidal self-injury (e.g., cutting), where a person does not intend to die. For studies with multiple publications examining the same sample (e.g., Esposito & Clum 1999; Esposito & Clum 2002), only the most recent publication was included.

Definitions of Terms

Terminology for the literature search and in this paper was adopted from the CDC (Crosby, Ortega, & Melanson, 2011). "Suicidal ideation" is defined as thoughts of engaging in behavior intended to end one's life. "Suicidal behavior" refers to nonfatal, self-directed potentially injurious behavior with any intent to die as a result of the behavior. A "suicide attempt" may or may not result in injury. In the juvenile justice system, "suicidal behavior" and "suicide attempts" are often used interchangeably.

[1] Additional risk factors are available within the task force's *Need to Know: A Fact Sheet Series on Juvenile Suicide* (http://actionallianceforsuicideprevention.org/JJFactSheets)

Extraction of Data

Two reviewers independently identified relevant studies, extracted data, and assessed the quality of the study, resolving disagreement by consensus. In addition to obtaining information on suicidal ideation and behavior, the following information was reviewed and extracted: (1) sample characteristics (size, location, and demographic features); (2) measures of risk for suicide; and (3) assessment of risk factors for suicide.

Findings from the First National Survey of Juvenile Suicide in Confinement

The first national survey on juvenile suicide in confinement (Hayes, 2009) identified 110 juvenile suicides occurring between 1995 and 1999 and analyzed the 79 of those cases for which complete data were available. Findings from the survey include the extent and distribution of juvenile suicides; provide descriptive data on the characteristics of victims, incidents, and juvenile facilities; and, most importantly, highlight critical gaps in current knowledge and programming, suggesting areas for future research to develop evidence-based prevention strategies. The resulting recommendations are as follows:

- Possible precipitating factors for suicide were identified in only slightly more than one-third of the cases. Improved reporting in this area is critically important to informing the development of effective suicide prevention strategies.
- Approximately half of juveniles who committed suicide were under room confinement at the time of their deaths, and the majority of those died during waking hours. In addition, the timing of suicides was evenly distributed over the length of confinement, with the same number of deaths occurring in the first few days as occurred over many months of confinement. These findings should inform the structure and timing of prevention programming to be tested for maximum impact in improving outcomes.
- Suicide prevention strategies were uneven across the facilities examined, underscoring the need for improved resources to support relevant programming and training in juvenile justice settings. It is critical that the strategies employed have been developed and tested for effectiveness specifically in juvenile justice populations.

Source: Hayes, L. M. (2009). Juvenile Suicide in Confinement—Findings from the First National Survey. *Suicide and Life-Threatening Behavior*, *39*: 353–363. doi: 10.1521/suli.2009.39.4.353

Results

A total of 27 studies that examined recent or lifetime suicidal ideation and behavior among youth involved in the juvenile justice system were discovered. Based on the aforementioned exclusion criteria, 11 studies were omitted: eight did not use well-validated screening measures (Abrantes, Hoffmann, & Anton 2005; Battle, Battle, & Tolley 1993; Corcoran & Graham 2002; Evans et al. 1996; Freedenthal et al. 2007; Penn et al. 2003; Rohde, Seeley, & Mace 1997; Voisin et al. 2007) and three reported scale means, not prevalence rates (Butler, Loney, & Kistner 2007; Sanislow et al. 2003; Timmons-Mitchell et al. 1997).

This paper reviews the remaining 16 studies (see Appendix A). Most of these studies examined history of both suicidal ideation and attempts via self-report (Abram et al. 2008; Archer et al. 2004; Chavira et al. 2010; Esposito & Clum 2002; Morris et al. 1995; Nolen et al. 2008; Rohde, Mace, & Seeley 1997; Wasserman & McReynolds 2006). Of note, recent attempts may or may not have occurred in a correctional setting. Overall, sample sizes ranged from 51 (Kempton & Forehand 1992) to 70,423 (Vincent et al. 2008). Studies sampled youth at various points of contact within the juvenile justice system: post-arrest (Nolen et al. 2008), pre-adjudicated intake to detention (Abram et al. 2008; Archer et al. 2004; Cauffman 2004; Chapman & Ford 2008), in detention (Esposito & Clum 2002; Goldstein et al. 2003; Kempton & Forehand 1992; Morris et al. 1995; Rohde, Mace, & Seeley 1997; Shelton 2000), post-adjudication (e.g., probation intake, juvenile court supervision) (Mallett et al. 2012; Wasserman & McReynolds 2006), and combined points of contact: intake, detention, and secure post-adjudicated corrections (Vincent et al. 2008; Wasserman et al. 2010). In the 11 studies that reported the age of participants, the mean age was approximately 15 years. Racial/ethnic minorities comprised between 17 percent (Rohde, Mace, & Seeley 1997) to 84 percent (Abram et al. 2008). Overall, most studies examined only males or included a relatively small proportion of females. One study included only females (Goldstein et al. 2003) and another included only males (Kempton & Forehand 1992).

Suicidal Ideation and Behavior

Findings from the available research on the prevalence rates of suicidal ideation and suicide attempts of youth in contact with the juvenile justice system are reviewed below. (Details of the reviewed studies are provided in Appendix A.) For the purposes of this review, "recent" is defined as occurring within the past 6 months. Methodological differences in sampling and measurement are also noted, including the racial/ethnic composition, number of females, and the point of contact in the system from which the sample was obtained (e.g., CDC NCIPC 2012; Wasserman et al. 2010).

Suicidal Ideation

Prevalence rates of suicidal ideation within recent months, during the past year, and over the youth's lifetime were gathered from the studies included in this review.

Recent Suicidal Ideation

As noted in Appendix A, prevalence rates of recent suicidal ideation in juvenile justice youth ranged from 3 percent to 52 percent (Abram et al. 2008; Archer et al. 2004; Cauffman 2004; Esposito & Clum 2002; Goldstein et al. 2003; Nolen et al. 2008; Rohde, Mace, & Seeley 1997; Vincent et al. 2008; Wasserman & McReynolds 2006). Differing assessment tools, as well as demographic differences within samples, may contribute to the varying prevalence rates. Esposito and Clum (2002), who reported the highest rate of 52 percent, used a measure designed specifically to assess suicidal ideation: The Modified Scale for Suicidal Ideation. The other studies assessed suicidal ideation using a diagnostic or screening tool (e.g., Massachusetts Youth Screening Instrument-Second Edition (MAYSI-2), Diagnostic Interview Schedule for Children (DISC)). Because Esposito and Clum used a suicide-specific assessment tool, its findings may not be comparable to those of studies using a diagnostic or screening tool. Archer and colleagues (2004) used a screening battery, which included the MAYSI-2 and an unstructured interview; however, they did not specify which tool was used to assess current suicidal ideation. Thus, it is unclear whether a standardized screening tool was used. Goldstein and colleagues: a) did not specify a definitive assessment period and b) analyzed suicidal ideation in an all-female sample (2003). Rohde, Mace, & Seeley (1997) studied only 60 participants, most of whom were non-Hispanic white (83 percent).

In sum, methodological differences may contribute to inconsistencies across studies and bias estimates of suicidal ideation. Given the limitations of the literature, the best estimates of recent suicidal ideation among youth in juvenile justice settings ranges from 8 percent to 21 percent (Abram et al. 2008; Cauffman 2004; Nolen et al. 2008; Vincent et al. 2008; Wasserman & McReynolds 2006).

Past-Year Suicidal Ideation

Prevalence rates of past-year suicidal ideation ranged from 10.0 percent to 29.2 percent (Chapman & Ford 2008; Chavira et al. 2010; Morris et al. 1995; Shelton 2000). All studies except Chapman and Ford (2008) assessed suicidal ideation using a diagnostic screening tool (e.g., MAYSI-2, DISC). Chapman and Ford used the Suicidal Ideation Questionnaire (SIQ). The SIQ uses clinical cut-off scores to classify juveniles into "suicidal ideation risk" and "no-risk" groups; this may result in estimates that are more conservative. If the study by Chapman and Ford is excluded, the best estimate of suicidal ideation in the past year is 19.0–29.2 percent.

Lifetime Suicidal Ideation

Only two studies (Archer et al. 2004; Rohde, Mace, & Seeley 1997) reported lifetime prevalence rates of suicidal ideation. There are substantial methodological differences between them. Rohde and colleagues reported a lifetime rate of 35 percent; however, their sample of 60 detainees limits the study's ability to estimate reliable rates. Archer and colleagues included over 700 youth detainees; they reported a rate of 13.9 percent. In sum, a definitive estimate of lifetime suicidal ideation is not yet available.

Suicidal Behavior

Prevalence rates of suicide attempts within recent months, during the past year, and over the youth's lifetime were also noted in this review.

Recent Suicide Attempts

Prevalence rates of recent suicide attempts range from 1.4 percent to 8.5 percent (Abram et al. 2008; Esposito & Clum 2002; Nolen et al. 2008; Wasserman & McReynolds 2006; Wasserman et al. 2010). Esposito and Clum (2002) reported the highest prevalence of suicide attempts and used a sample that was primarily non-Hispanic white. The remaining studies, which included a larger proportion of minority youth, reported lower rates, ranging from 1.4 percent to 3.0 percent.

Past-Year Suicide Attempts

Studies that examined suicide attempts in the past year had methodological limitations. Esposito and Clum (2002) used a sample that was primarily non-Hispanic white. They reported that 9.5 percent of their sample had attempted suicide in the past year. Morris and colleagues (1995) found that 15.5 percent of their sample reported an attempt in the past year. This study's rate may be higher because the sample includes youth in both short-term and long-term detention facilities. Deeper involvement in the juvenile justice system (i.e., long-term detention) is associated with increased suicide attempts (Wasserman et al. 2010). Due to these methodological differences, a definitive estimate of the prevalence rate of past-year suicide attempts is not available.

Lifetime Suicide Attempts

As noted in Appendix A, rates of lifetime suicide attempts range from 10.0 percent to 36.7 percent (Abram et al. 2008; Archer et al. 2004; Chavira et al. 2010; Esposito & Clum 2002; Kempton & Forehand 1992; Mallett et al. 2012; Nolen et al. 2008; Rohde, Mace, & Seeley 1997; Wasserman & McReynolds 2006; Wasserman et al. 2010). Studies with smaller samples sizes ($n \leq 60$) reported lifetime rates above 30 percent (Kempton & Forehand 1992; Rohde, Mace, & Seeley 1997). Studies with larger sample sizes reported lower rates, ranging between 11.0 percent and 15.5 percent (Abram et al. 2008; Archer et al. 2004; Chavira et al. 2010; Esposito & Clum 2002; Mallett et al. 2012; Nolen et al. 2008; Wasserman & McReynolds 2006; Wasserman et al. 2010).

Gender and Ethnic Disparities in Suicidal Ideation and Behavior

The examination of the 16 studies included in this review also focused on the impact of gender and ethnicity on rates of suicidal ideation and behavior.

Recent Suicidal Ideation

Gender and racial/ethnic differences in recent suicidal ideation varied across studies (see Appendix A). Most studies (Abram et al. 2008; Cauffman 2004; Vincent et al. 2008) found that females had higher rates of recent suicidal ideation than males. Esposito and Clum (2002), however, did not find any significant differences between males and females. Findings also varied in terms of racial/ethnic differences. Two studies found that non-Hispanic whites had higher prevalence rates than African Americans and Hispanics (Cauffman 2004; Vincent et al. 2008). Abram and colleagues (2008) found that racial differences varied by gender. Among males, non-Hispanic whites had higher rates of recent suicidal ideation than African Americans. Among females, Hispanics had higher rates of ideation than African Americans. Esposito and Clum (2002) did not find any significant racial/ethnic differences. Differences in sampling composition and measurement may account for the varying findings. The sample studied by Esposito and Clum, for example, was mostly white; they also used a measure designed specifically to assess suicidal ideation.

Past-Year Suicidal Ideation

One study examined racial/ethnic and gender differences in past-year rates of suicidal ideation (Morris et al. 1995). Females had higher prevalence rates than males. Non-Hispanic whites had higher prevalence rates than African Americans and Hispanics. Notably, this study included juveniles in short-term and long-term facilities; however, the researchers did not examine if rates differed by facility. Deeper involvement in the juvenile justice system is associated with higher rates of suicidal behavior specifically (Wasserman et al. 2010); therefore, including juveniles in long-term facilities may have skewed the findings for ideation. Neither study (Archer et al. 2004; Rohde, Mace, & Seeley 1997) examined racial/ethnic or gender differences in lifetime suicidal ideation rates.

Recent Suicide Attempts

Findings for past-month suicide attempts were consistent across studies (Wasserman & McReynolds 2006; Wasserman et al. 2010). Females had higher prevalence rates than males. In addition, non-Hispanic whites had higher prevalence rates than Hispanics and African Americans.

Past-Year Suicide Attempts

Similar to rates of recent suicide attempts, prevalence rates for past-year suicide attempts were higher for females than for males (Morris et al. 1995). In addition, non-Hispanic whites, American Indians, and individuals classified as “other” minority had higher prevalence rates than Hispanics and African Americans (Morris et al. 1995).

Lifetime Suicide Attempts

Findings related to gender differences in lifetime suicide attempts were similar to findings regarding recent and past-year suicide attempts. Females had higher lifetime prevalence rates of previous suicide attempts than males (Abram et al. 2008; Esposito & Clum 2002; Morris et al. 1995; Nolen et al. 2008; Rohde, Mace, & Seeley 1997; Wasserman & McReynolds 2006).

Racial/ethnic differences in prevalence rates varied slightly across studies. Two studies (Morris et al. 1995; Wasserman & McReynolds 2006) found that non-Hispanic whites had higher prevalence rates than Hispanics and African Americans. Nolen and colleagues (2008) found that non-Hispanic whites and Hispanics had higher lifetime prevalence rates of suicide attempts than African Americans. Abram and colleagues (2008) examined racial/ethnic differences separately for males and females. Among females, non-Hispanic whites and Hispanics had higher prevalence rates of suicide attempts than African Americans. Among males, non-Hispanic whites had higher prevalence rates than both Hispanics and African Americans. Esposito and Clum (2002) and Rohde, Mace, and Seeley (1997) did not find any differences among racial/ethnic groups. Differences in sampling composition may account for the inconsistent findings for racial/ethnic differences. Studies that found no racial/ethnic differences had small samples that were predominantly non-Hispanic white.

Variables Associated With Suicidal Ideation and Behavior

The reviewed studies also explored variables associated with increased risk of suicidal ideation and behavior. Psychopathology was the most commonly studied variable (Abram et al. 2008; Chavira et al. 2010; Goldstein et al. 2003; Kempton & Forehand 1992; Mallett et al. 2012; Nolen et al. 2008; Rohde, Mace, & Seeley 1997; Wasserman & McReynolds 2006). Depression significantly increased the risk for both suicidal ideation and behavior in all studies. Substance use (Chapman & Ford 2008; Morris et al. 1995) or substance use disorder (Chavira et al. 2010; Kempton & Forehand 1992; Mallett et al. 2012; Nolen et al. 2008; Rohde, Mace, & Seeley 1997; Wasserman & McReynolds 2006) were also studied; findings were inconsistent. Both substance use and substance use disorder were associated with an increased risk for suicidal ideation and behavior (Chapman & Ford 2008; Mallett et al. 2012; Morris et al. 1995; Nolen et al. 2008; Rohde, Mace, & Seeley 1997; Wasserman & McReynolds 2006). Other studies (Chavira et al. 2010; Kempton & Forehand 1992), however, did not find a significant association. Kempton and Forehand's (1992) sample did not include females. Chavira and colleagues (2010) did not separately examine rates of suicidal ideation and attempt. Findings are inconclusive because of these methodological differences.

Traumatic experiences were significantly associated with suicidal ideation and behavior (Chapman & Ford 2008; Chavira et al. 2010; Esposito & Clum 2002; Morris et al. 1995). Sexual abuse history was consistently associated with suicidal ideation and behavior (Chavira et al. 2010; Esposito & Clum 2002; Morris et al. 1995). Only Chavira and colleagues found a significant association between physical abuse history and suicidal ideation and behavior; however, it did not emerge as an independent predictor. Differing definitions of physical abuse may account for this inconsistency. Esposito and Clum (2002) used a measure that only counted physical abuse if the following criteria were met: "physical marks, breaks to the skin, bruises, or injury that warranted medical treatment regardless of whether it was received." Chavira and colleagues (2010), however, used the Child Trauma Questionnaire, which uses less stringent criteria (e.g., does not require that the abuse warrant medical treatment). While there seems to be a strong relationship between suicidal ideation and behavior and sexual abuse history, the relationship is less clear for physical abuse.

Discussion

The literature review reveals that suicidal ideation and behavior are extremely prevalent in juvenile justice youth. Rates varied widely because of methodological differences across studies; nonetheless, rates within the observed ranges are cause for concern. For example, 8–21 percent of juvenile justice-involved youth experience past-six-month suicidal ideation; 19–29 percent report suicidal ideation in the past year. In addition, 1.4–3.0 percent have attempted suicide in the past month and 9.5 percent to 15 percent have attempted suicide in the past year. Finally, between 10.0 percent and 36.7 percent report having attempted suicide in their lifetime.

Even the lowest prevalence rates in the ranges found for suicidal ideation and behavior among youth in the juvenile justice system are higher than those among youth in the general population. For example, the Youth Risk Behavior Surveillance System (YRBSS) study, conducted by the CDC's National Center for Injury Prevention and Control (2012), found that 15.8 percent of youth attending high schools reported suicidal ideation in the past year; the rates in juvenile justice populations seem to fall between 19 percent and 29 percent. Between 11 percent and 15.5 percent of youth in the juvenile justice system reported suicide attempts in their lifetime, compared with 3 percent and 8.8 percent in the general population (Nock et al. 2008). Consistent with the general population (Beautrais 2002; Cannetto & Sakinofsky 1998; D'Eramo et al. 2004; Greenhill & Waslick 1997), prevalence rates of suicidal ideation and behavior were higher among females in the juvenile justice system than males. Most studies found non-Hispanic whites to have higher rates when compared with African Americans and Hispanics (CDC NCIPC 2012).

Prevalence rates, however, varied considerably among studies for four reasons.

- First, demographic characteristics of the samples varied substantially. The percentage of females included in studies ranged from 12 percent (n = 1,801) to 36 percent (n = 1,829). Because there are significant gender differences in rates of suicidal ideation and behavior, the gender composition of the samples may affect overall rates. Similarly, racial/ethnic composition of samples differed across studies. The percentage of African Americans included in each sample ranged from 15 percent (n = 232) to 74 percent (n = 704).
- Second, the point in the juvenile justice process at which samples were obtained (e.g., intake, detention, juvenile assessment center) varied across studies. Stressors may vary depending on the point of contact of juvenile justice system involvement (World Health Organization 2007). Deeper involvement in the juvenile justice system has been correlated with an increase in suicidal ideation and behavior (Wasserman et al. 2010).
- Third, studies used different assessment tools, including screening, diagnostic, and suicide-specific assessments.
- Fourth, studies were conducted at different juvenile justice centers. Juvenile justice centers have different procedures and services, which may affect the risk for suicide.

Several variables were consistently associated with suicidal ideation and behavior. Youth with a history of depression or sexual abuse were found to be at increased risk. These findings are comparable to the general population (Fergusson & Woodward 2002; Polusny & Follette 1995; Shaffer et al. 1996; Weissman et al. 1999). Findings were inconsistent regarding the impact of physical abuse. Differing definitions of physical abuse may account for this inconsistency. Substance use and disorder were also explored as risk factors; findings were inconsistent across studies. Differences in sampling may account for these disparate findings. Most studies that found an association between suicidal ideation and behaviors and substance use had larger samples. Studies with smaller sample sizes may not have detected the relationship between suicidal ideation and substance use due to lack of statistical power.

Recommendations for Future Research

Based on the findings of this review, the following strategies for future research are recommended.

1. **Determine the incidence of suicide among juvenile justice youth**

   Few studies have determined the incidence of suicide in juvenile justice-involved youth (Gallagher & Dobrin 2006; Memory 1989). The most widely cited study used data collected in 1978–1979 (Memory 1989). A more recent study (Gallagher & Dobrin 2006) used data collected in 2002. Rates varied widely between these two studies (21.9 per 100,000 – 57 per 100,000). New research studies should be conducted to reliably determine a more current rate of suicide among youth involved in the juvenile justice system. One opportunity may be to further explore data from the National Violent Death Reporting System (NVDRS) which does have the ability to capture information on involvement in the juvenile justice system, and further educate local jurisdictions within participating states to submit this information to NVDRS.

2. **Incorporate variables on suicidal ideation and attempts in studies of juvenile justice populations**

   Although many studies examine incarcerated youth populations (e.g., detention, residential placement), few focus on the prevalence and consequences of suicidal ideation and attempts. Future epidemiologic surveys of juvenile justice-involved youth should address suicidal ideation and behaviors (e.g., number of attempts, preparatory acts, methods of attempt, etc.). This strategy would garner important information on the prevalence of suicidal ideation and behaviors, related outcomes, and demographic and environmental differences.

3. **Further examine mutable risk and protective factors in order to develop effective preventive interventions**

   Psychopathology, alcohol use, and traumatic experiences (e.g., sexual and/or physical abuse) are the most commonly studied risk factors for suicidality in juvenile justice; however, very little research has focused on the development and testing of preventive interventions in this population. Establishing the effectiveness of such interventions may be expedited by targeting variables relevant to suicidality and prevention in the general population, including social support, family history of suicide, problem-solving skills, housing structures, parent-child relationships, and access to and use of mental health services (Beautrais 2000; Beautrais, 2003; Brent 1995; Borowsky, 1999; Evans, Hawton, & Rodham 2004; Wasserman, 2003). In addition, factors unique to individuals in juvenile justice, such as type of crime committed or length of previous incarceration(s), may be important for personalizing interventions for certain subpopulations (Hayes, 2009). Better understanding of the contributions of specific risk and protective factors can inform intervention strategies at individual, staff, clinician, and organizational levels. Future research must provide the empirical basis to develop effective and informed intervention programs.

4. **Sample youth at different points of contact in the juvenile justice system**

   Stressors on youth involved with the juvenile justice system vary, depending on the point of contact, whether arrest, intake, detention, or post-adjudication (Wasserman et al. 2010; World Health Organization 2007). Individuals who are more deeply involved with the justice system may be at greater risk. Future studies must identify when individuals may be most vulnerable to suicide.

5. **Evaluate the effectiveness of preventive interventions**

   A number of preventive interventions have been developed, such as Question, Persuade, Refer (QPR) (http://www.qprinstitute.com/); Applied Suicide Intervention Skills Training (ASIST) (http://www.livingworks.net/programs/asist/); the Chester County (Pennsylvania) Juvenile Detention Center Program (http://www.paspi.org/Chester_County.php); safeTALK (http://www.livingworks.net/programs/safetalk/); and Shield of Care (http://www.tn.gov/mental/recovery/shieldcare.shtml). However, little has been done to empirically test the effectiveness of these interventions in reducing risk among justice-involved youth. This is an important area for future research.

   The first step in this process is to implement randomized clinical control trials to assess the effectiveness of currently existing programs. Secondly, studies should examine the effectiveness of recent guidelines designed to reduce suicide issued by the National Commission of Correctional Health Care (2009). The third step of the process is to encourage study of the adaptability of successful preventive interventions used in other high-risk populations to juvenile justice youth. Modifications may be needed. Finally, future studies should identify institutional and operational characteristics that create safer detention centers.

6. **Further evaluate screening tools and procedures to detect suicidal ideation and behavior in the juvenile justice system**

   The critical nature of identifying suicidal ideation and behavior among youth in the juvenile justice system demands careful evaluation of the tools and procedures used to perform this on-going activity. Although there are many tools available to screen for suicide risk, few have been validated for juvenile justice populations. Researchers must also determine the most effective way to administer them. Currently, there are no standardized procedures for the use of suicide screens within juvenile justice settings. Some detention centers use a qualified mental health professional to screen for suicide; others do not (Hayes 2009). Finally, standard cut-off points should be empirically tested. To date, no studies have investigated whether clinical cut-offs based on general populations are valid for youth in the juvenile justice system.

The Youth in Contact with the Juvenile Justice System Task Force sets forth these six recommendations in response to the gaps it discovered during its review of the research on suicide among youth involved in the juvenile justice system. Each year, more than 1.9 million youth are arrested (Puzzanchera & Adams 2011). On an average day, approximately 71,000 youth are in custody in detention centers (Office of Juvenile Justice and Delinquency Prevention 2011). Based on findings of this review, between 13,500 and 20,600 detainees may have considered suicide in the past year and 11,000 delinquent youth may have attempted suicide in the past year. With proper screening and intervention, these estimates can be lessened and the risk of suicide among this vulnerable population can be minimized. Collaboration between juvenile justice professionals and researchers is strongly recommended to increase the safety, and improve the mental health, of delinquent youth.

Appendix A

Studies of Prevalence of Suicide Ideation and Behavior among Youth in the Juvenile Justice System—Studies of Youth Sampled at Post-Arrest (n = 1)

Author	Sample: Size/Type	Sample: Race/ Ethnicity, %[2]	Sample: Age	Sample: Female, %	Suicide Measures	Suicide Variable: Ideation	Suicide Variable: Attempts	Study Limitation: Small Female N[3]	Study Limitation: Race/Eth. not rep.	Results for Suicidal Ideation & Behavior[4]	Did study explore variables associated with suicidal ideation and behavior?
Nolen et al./2008	n=1,012 (Juvenile Assessment Center Site: Orange County, FL	B=54 W=31 H=15	x=15	24.5	*V-DISC*	X	X			• Ideation (PM): 8% • Attempt (PM): 1.4% • Attempt (LT): 10% • Attempts (LT): Females > Males • Attempts (LT): nHW and H > B	YES: age; living situation; arrest charge; prior juvenile justice experiences; psychopathology (only associated with lifetime suicide attempts)

[2] AA indicates Asian American (or Pacific Islander); AI, American Indian (or Native American); B, African American; H, Hispanic; MR, mixed race; nHW, non-Hispanic white; O, other.
[3] Small female sample defined by proportion of females < 20 percent of overall sample.
[4] PM indicates past month; PY, past year; P2W, past 2 weeks; LT, lifetime.

Studies of Prevalence of Suicide Ideation and Behavior among Youth in the Juvenile Justice System—Studies of Youth Sampled at Intake to Detention (n = 4)

Author	Sample: Size/Type	Sample: Race/ Ethnicity, %2	Sample: Age	Sample: Female, %	Suicide Measures	Suicide Variable: Ideation	Suicide Variable: Attempts	Study Limitation: Small Female N3	Study Limitation: Race/Eth. not rep.	Results for Suicidal Ideation & Behavior4	Did study explore variables associated with suicidal ideation and behavior?
Chapman & Ford /2008	n=405 Site: Connecticut	B=39 W=36 H=24	x=14	31	*Suicidal Ideation Questionnaire* (SIQ)	X				• Ideation (PY): 10% scored positive for suicide risk	YES: trauma; alcohol and drug used
Abram et el./2008	n=1,829 Site: Cook County Juvenile Temporary Detention Center/ Chicago, IL	B=55 H=29 W=16 O=0.2	x=15	35.9	*DISC 2.3*	X	X			• Ideation (P6M): 10%; 4% thought about death a lot • Attempt (P6M): 3% • Attempt (LT): 11% • Ideation (P6M): Females > Males • Ideation (P6M): Females: H > B • Ideation (P6M): Males: nHW > B • Attempts (P6M, LT): Females > Males • Attempts (LT): Females: nHW, H > B • Attempts (LT): Males: nHW > H, B	YES: psychopathology (recent attempts only)
Archer et al./20044	n=704 Sites: Hampton & Newport News, VA	B=74 W=25 H=1	x=16	22	*MAYSI-2* Questions on intake interview	X	X			• Ideation ("current")[5]: 3.0% • Ideation ("past history"): 13.9% • Attempts ("past history"): 12.4%	NO
Cauffman/ 2004	n=18,607 Sites: 15 detention centers/ PA	B= 44 W=44 H= 10 O= 5	x=15	18	*MAYSI-2*	X		X		• Ideation (recent): 21% • 18% males and 33% females scored above clinical cut-off on suicidal ideation scale • Ideation (recent): nHW > H > B	NO

[5] Archer et al. (2004) specified rates as either "current" or having a "past history of." Specific classification of PM, PY, LT was not provided.

Studies of Prevalence of Suicide Ideation and Behavior among Youth in the Juvenile Justice System—Studies of Youth Sampled in Detention (n = 6)

Author	Sample: Size/Type	Sample: Race/ Ethnicity, %2	Sample: Age	Sample: Female, %	Suicide Measures	Suicide Variable: Ideation	Suicide Variable: Attempts	Study Limitation: Small Female N3	Study Limitation: Race/Eth. not rep.	Results for Suicidal Ideation & Behavior4	Did study explore variables associated with suicidal ideation and behavior?
Goldstein et al. /2003	n=232 Sites: 2 detention centers/MA	W=58 B= 15 H=18 AA=2.5 O=6	12–14, 27% 15–18, 73%	100	*MAYSI* *Millon Adolescent Clinical Inventory* (MACI)	X			X	• Ideation (recent)[6]: 36.2% (on at least one measure of ideation)	YES: anxiety, depressed mood, internalizing and externalizing behavior problems
Esposito & Clum/2002[7]	n=200 Sites: 3 detention centers/unspecified location	W=65 B= 27 O=7	x=15.7	29.5	*Modified Scale for Suicidal Ideation* (MSSI) *Scale for Suicidal Behavior* (SSB)	X	X		X	• Ideation (P2W): 52 % • Attempts (PM): 8.5% • Attempts (PY): 9.5% • Attempts (LT): 15.5% • Attempts: Females > Males • Ideation and attempts: No significant racial/ethnic differences	YES: child physical abuse, sexual abuse (ideation and attempts), social support & problem-solving (moderate relationship among both ideation and behaviors under high abuse related stress)
Shelton/ 2000	n=350 Site: Maryland Department of Juvenile Justice	B=57 W=26 O=17	range: 12–20 82% (15–17)	19	*Child Health and Illness Profile: Adolescent Edition* (CHIP-AE)	X		X		• Ideation (PY): 19%	NO

[6] Goldstein et al. (2003) did not specify a timeframe for suicide assessment (current, past two weeks, past month, past few months), but based on the measures used, it is assumed to be "recent" (i.e., up to 6 months).

[7] Esposito & Clum (1999) was not included due to using the same sample of detainees as Esposito & Clum (2002), which replicated the current suicidal ideation prevalence rate of 52 percent.

Studies of Prevalence of Suicide Ideation and Behavior among Youth in the Juvenile Justice System—Studies of Youth Sampled in Detention (n = 6) (continued)

Author	Sample: Size/Type	Sample: Race/ Ethnicity, %2	Sample: Age	Sample: Female, %	Suicide Measures	Suicide Variable: Ideation	Suicide Variable: Attempts	Study Limitation: Small Female N3	Study Limitation: Race/Eth. not rep.	Results for Suicidal Ideation & Behavior4	Did study explore variables associated with suicidal ideation and behavior?
Morris et al./1995	n=1,801 Sites: 39 detention centers and prisons in U.S.	B=46 W=27 H=19 AI=8 AA=2 O=4	x=15	12	*United States Centers of Disease Control Youth Risk Behavior Surveillance System* (YRBSS)	X	X	X		• Ideation (PY): 21.8% seriously considered suicide • Attempts (PY): 15.5% • Ideation and attempts: Females > Males • Ideation and attempts: nHW > AI & O > H, AA, B	YES: age, substance use, sexual abuse, sexually transmitted disease history (attempts only), gang membership (attempts only)
Rohde, Mace, & Seeley/1997	n=60[8]	W=83 H=7 AI=5 B=1.7 AA =1.7 O=1.7	x=14.9	27	*Schedule for Affective Disorders and Schizophrenia for School-Aged Children* (K-SADS)	X	X		X	• Ideation (P2W): 18% • Ideation (LT): 35% • Attempts (LT): 36.7% • Ideation and attempts: Females > Males • Ideation and attempts: No significant racial/ethnic differences • Suicidal intent: low = 11% of attempters, medium = 48% of attempters, high = 42% of attempters	YES: substance use, psychopathology (only attempts)
Kempton & Forehand/ 1992	n=51[7] Site: Youth Detention Center in Georgia (juvenile prison)	B=71 W=29	range: 11–18	0	*DISC*		X	X		• Attempts (LT): 31% • Attempts (LT): nHW 3.5x > B	YES: substance use, psychopathology

[8] n ≤ 60

Studies of Prevalence of Suicide Ideation and Behavior among Youth in the Juvenile Justice System—Studies of Youth Sampled Post-Adjudication (n = 2)

Author	Sample: Size/Type	Sample: Race/ Ethnicity, %2	Sample: Age	Sample: Female, %	Suicide Measures	Suicide Variable: Ideation	Suicide Variable: Attempts	Study Limitation: Small Female N3	Study Limitation: Race/Eth. not rep.	Results for Suicidal Ideation & Behavior4	Did study explore variables associated with suicidal ideation and behavior?
Mallett et al./2012	n=433 (juvenile court supervision) Sites: 1 urban and 1 rural county in U.S. Midwest state	W=35.8 O=64.2	x=15.2	30	*Juvenile Court Case Records*		X			• Attempts (LT): 12.2%	YES: psychopathology, child welfare involvement, mental health service utilization; juvenile court involvement and disposition
Wasserman & McReynolds/ 2006	n=991 (probation intake) Sites: 8 counties in TX	H=51.5 B=28.5 W=19.9	x=14.7	20	*DISC-IV*	X	X			• Ideation (PM): 12.7% • Attempts (PM): 2.9% • Attempts (LT): 13.2% • Attempts (PM & LT): Females > Males • Attempts (PM): nHW > H & B • Attempts (LT): no significant ethnic differences	YES: major depressive disorder, substance use disorder (only recent and lifetime attempts)

Studies of Prevalence of Suicide Ideation and Behavior among Youth in the Juvenile Justice System—Studies of Youth Sampled at Different Points of Contact in the Juvenile Justice System (n = 2)

Author	Sample: Size/Type	Sample: Race/ Ethnicity, %2	Sample: Age	Sample: Female, %	Suicide Measures	Suicide Variable: Ideation	Suicide Variable: Attempts	Study Limitation: Small Female N3	Study Limitation: Race/Eth. not rep.	Results for Suicidal Ideation & Behavior4	Did study explore variables associated with suicidal ideation and behavior?
Wasserman et al./2010	n=9,819 (intake, detention, secure post adjudica-tion) Sites: 57 juvenile justice sites	W=41 B=35 H=19 AI=3 O=2	x=16	23.5	*Voice-DISC* (V-DISC)		X		X	• Attempts (PM): 2.4% • Attempts (LT): 14.4% • Attempts (PM & LT): Females > Males • Attempts (LT): nHW > H or B • Intake: 1.9% (PM); 10.8% (LT) • Detention: 3.7% (PM); 17.7% (LT) • Adjudicated: 2.5% (PM); 16.3% (LT)	NO
Vincent et al./2008[9]	n=70,423 (intake, detention, secure correction) Sites: 19 U.S. states	W=39 B=34 H=24 A=1 O=3	12–14, 29% 15–17, 71%	22	*Massachusetts Youth Screening Instrument* (MAYSI-2)[10]	X			X	• Ideation (recent): 18% • 15% males and 29% females above the caution cutoff on the SI subscale • Ideation (recent): nHW = 22%; H = 17%; B = 15%	NO

[9] Archival/retrospective studies (Vincent et al., 2008; Archer et al., 2004).

[10] MAYSI/MAYSI-2 assesses suicidal ideation "within past few months." Therefore, behavior assessed with these measures will be classified as "recent."

Studies of Prevalence of Suicide Ideation and Behavior among Youth in the Juvenile Justice System—Studies of Youth in the Juvenile Justice System, Undefined (n = 1)

Author	Sample: Size/Type	Sample: Race/ Ethnicity, %2	Sample: Age	Sample: Female, %	Suicide Measures	Suicide Variable: Ideation	Suicide Variable: Attempts	Study Limitation: Small Female N3	Study Limitation: Race/Eth. not rep.	Results for Suicidal Ideation & Behavior4	Did study explore variables associated with suicidal ideation and behavior?
Chavira et al./2010	n=300 (actively involved in juvenile justice) Site: San Diego County , CA	W=33 H=30 B=21 AA=8 MR=7	range: 11–18	32	*Diagnostic Interview Schedule for Children* (DISC-IV)	X	X		X	• Ideation (PY): 29.2% of active juvenile justice youth thought of death and dying • Attempts (LT): 14%	YES[11]: age, special education, psychopathology, smoking, lack of social support by mother and father, physical/sexual abuse

[11] Chavira et al. (2010) assessed for suicide risk predictors using "suicidal behavior" as a dependent variable which signifies a "yes" response to both: 1) thinking about death or talking about suicide in the past year and 2) having at least one lifetime suicide attempt.

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