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Service Use by At-Risk Youth after School-Based Suicide Screening

Abstract

Objective—We sought to examine follow-up service use by students identified at risk for suicidal behavior in a school-based screening program, and assess barriers to seeking services as perceived by youth and parents.

Method—We conducted a longitudinal study of 317 at-risk youth identified by a school-based suicide screening in six high schools in New York State. The at-risk teenagers and their parents were interviewed approximately two years after the initial screen to assess service use during the intervening period and identify barriers that may have interfered with seeking treatment.

Results—At the time of the screen, 72% of the at-risk students were not receiving any type of mental health service. Of these students, 51% were deemed in need of services and subsequently referred by us to a mental health professional. Nearly 70% followed through with the screening's referral recommendations. Youth and their parents reported perceptions about mental health problems, specifically relating to the need for treatment, as the primary reasons for not seeking service.

Conclusions—Screening appears to be effective in enhancing the likelihood that students at risk for suicidal behavior will get into treatment. Well developed and systematic planning is needed to ensure that screening and referral services are coordinated so as to facilitate access for youth into timely treatment.

Keywords

adolescents; suicide; screening; high school

Screening is a prominent component of youth suicide prevention activities, recommended by the U.S. Surgeon General,¹ the Institute of Medicine,² and the President's New Freedom Commission³ as a means to combat the third leading cause of death in youths aged 10 to 19 years old.⁴ Schools have been specifically targeted for screening programs, as well as other promising suicide prevention program models, such as gatekeeper training programs,^{5, 6} because of the convenience by which children and adolescents can be reached,⁷ and schools' inherent ties to a student's family and community.⁸ Both screening and gatekeeper training programs seek to identify students at risk for suicide and enhance their referral to appropriate services, but the means to identify the students differ. Screening incorporates direct inquiry of the students via self-report assessments⁹; whereas, gatekeeper training programs aim to increase case-finding by improving school staff's knowledge and skills in intervening with suicidal students.¹⁰ School-based gatekeeper training programs may be limited in their scope of detecting youth at risk for suicide,¹¹ while screening programs are particularly sensitive in their ability to identify at-risk children, not otherwise identified by school personnel.¹² A study of 1729 students from seven high schools who completed the Columbia Suicide Screen demonstrated that the majority of students who screened at risk were not identified by school professionals. Furthermore, screening yielded a lower false

positive rate and higher positive predictive value when identifying significant mental health problems compared to school professionals' identifications.¹² Several other studies have examined the clinical validity and reliability of school-based screening procedures, yielding encouraging results.^{9, 13-16} Additionally, concerns surrounding the possible iatrogenic effects of screening programs have proved unsubstantiated, with research finding no evidence that asking youth about suicide increases distress or suicidality.¹⁷

While research has supported suicide screening programs' ability to identify at-risk youths, what is lacking is a systematic assessment of whether at-risk youth have actually accessed services *after* their identification by the screen.¹⁸ A recent study of a school-based gatekeeper training suicide prevention program found that more than two thirds of at-risk students accessed mental health services following the program.⁶ No comparable study examining service use follow-through by students identified as at-risk in a screening program has yet been reported. A suicide screening procedure is only as effective as its ability to get at-risk students the care that they need, therefore this study sought to examine service use follow-through by students who screened as at-risk for suicidal behavior and to identify barriers that youth and parents perceived as preventing them from following up on referrals.

METHOD

Participants

At-risk students (n=317) were identified during a two-stage screening program conducted from fall of 2002 through spring of 2004 involving 2,342 adolescents aged 13 through 19 years enrolled in ninth through twelfth grade in six high schools in Nassau, Suffolk, and Westchester counties in New York State. Five schools were public coeducational schools and one school was an all-boys parochial school. These schools were part of a study examining whether asking about suicide creates increased distress or suicidal ideation.¹⁷ The project employed a group-randomized design in which classes within each school were randomized to either an *experimental* group, which received a 1st screening survey *with* a set of questions assessing suicidal ideation and behavior, or a *control* group, which received the same 1st survey but *without* suicide questions. Both groups received the same 2nd survey with suicide questions on a subsequent day. Of the 317 at-risk students, 179 and 139 were identified from the experimental and control groups, respectively.

The at-risk students were followed approximately two years after the initial screen (over 92% in 2005 and the remainder in 2006). The mean number of days between the initial survey and follow-up assessment was 750 for the youth (ranging from 519 days to 1,207), and 751 days for the parents (ranging from 522 to 1,200 days). Approximately 70% (n=223) of the at-risk students and/or their parents participated in the follow up. Nearly 75% (n=167) had both informant reports, 13.5% had only youth reports, and 11.7% had only parents reports at follow up. There were no significant differences between follow-up participants (having either a youth or parent interview) and non-participants in terms of ethnicity, original risk status, and functional impairment (Table 1), but follow-up participants were older (t-test = 2.35, p<.05) than non-participants and more likely to be female ($\chi^2 = 6.68, <.05$).

Measures

The same measures were used in screening and follow-up assessments, unless otherwise noted. Self-completion screening questionnaires were completed by the students over two class periods, on separate days (described in detail elsewhere).¹⁷ The follow-up measures were administered in an interview format via telephone separately to youths and their

parents. The content of the parent and youth interviews was similar, with the exception of the exclusion of the parent's assessment of the youth's mental health status. While parents are essential for an accurate assessment of service use,^{19–21} adolescents provide the most clinically relevant assessment of their psychological distress.²²

Suicidal Ideation Questionnaire (SIQ-JR)—The 15-item SIQ-JR²³ uses a 7-point Likert-type scale, ranging from 0 (“I never had this thought”) to 6 (“This thought was in my mind almost every day”), assessing the frequency of specific suicidal thoughts during the past month. It assesses a wide range of thoughts related to death and dying, passive and active suicidal ideation, and suicidal intent. Reliability of the SIQ-JR is high, ranging from .91 to .96^{23–25} for internal consistency and from .87 to .93 for test-retest reliability (.89 overall; .87 for females and .93 for males).²⁵ The SIQ-JR has demonstrated criterion validity,^{23, 25, 26} construct validity in community^{24, 25, 27} and clinical samples²⁶ and predictive validity.²⁴

Suicide Attempt History—Seven questions asking about lifetime and recent suicide attempts were derived from the depression module of the Diagnostic Interview Schedule for Children (DISC-IV)²⁸ and an earlier suicide screen.²⁹ These items have demonstrated good construct validity.^{29, 30} The assessment of an attempt included questions about occurrences, injuries sustained, medical care sought and hospitalization.³¹

Beck Depression Inventory (BDI-IA)—The BDI-IA³² contains 21 items that assess cognitive, behavioral, affective, and somatic components of depression. The responses for each question range from 0 (the depressive symptom is not present) to 3 (the symptom is severe). The BDI has demonstrated excellent internal consistency (0.8 to 0.9) and good test-retest reliability (0.7) in research in adolescents^{33, 34} and excellent sensitivity (83.3) and specificity (81.3) in identifying major depression in adolescents.³⁵ The BDI has been used in over 200 studies, many of which included adolescents.^{33–35}

Drug Use Screening Inventory (DUSI)—The DUSI^{36, 37} is designed to screen for alcohol or drug use and problems among teenagers, and has demonstrated good reliability, discriminant validity and sensitivity and has published normative cutoff scores.^{e.g. 36–39} A total score combines all 15 items from the substance use scale (assessing the degree of involvement and severity of consequences from alcohol and drug use), 3 alcohol or drug items on the school performance adjustment scale, and 1 additional aggression item assessing the clinically predictive problem of breaking things or getting into fights while under the influence of alcohol or drugs.⁴⁰

Columbia Impairment Scale (CIS)—The CIS provides a measure of overall severity of functional impairment.⁴¹ It is a 13 item scale taps four major areas of functioning: interpersonal relationships, school/work, certain broad areas of psychopathology (general behavior or mood), and use of leisure time. The CIS has demonstrated good internal consistency (0.7 – 0.9), test-retest reliability (0.6 – 0.9) and discriminant validity.⁴¹ The CIS also shows moderate to high correlations with other specific indications of psychological dysfunction, such as referral for mental health interventions.⁴² The CIS was administered to both adolescents and their parents at the follow up.

The Services Assessment for Children and Adolescents (SACA)—The SACA^{43, 44} is designed to collect service use information from parents and children who are at least 11 years of age. The SACA includes a structured format, and covers multiple time frames, multiple service settings, and both barrier and benefit questions. The SACA queries participants about lifetime and one-year service use histories regarding various inpatient,

outpatient, and school settings and individual modules with detailed questions about location, content and amount of care. We modified the SACA to include separate time frames reflecting service use prior to, concurrent with, and following the screen. The SACA was administered only at follow up.

Help-seeking Utilization Questionnaire—The HUQ45 is a modification of Offer's Mental Health Utilization Questionnaire⁴⁶ and at baseline provided information on the extent to which students received help for an emotional problem in the month prior to the survey. Current treatment (at time of survey) with a psychiatrist, psychologist or social worker was also assessed. At follow up, the HUQ was incorporated into the SACA, assessing the frequency of utilization of informal sources of help (i.e., parents, friends, siblings, teachers, coaches), and 18 reasons for non-use of each type of service. A factor analysis of the reasons for non-use has yielded three interpretable dimensions of related characteristics corresponding to specific reasons for nonuse of helping sources: "shame," "self-efficacy," or "structure".⁴⁷

Definition of At-Risk Status

A youth was determined to be "at-risk" from the baseline screen if he/she (1) reported serious suicidal ideation as operationalized by a score greater than or equal to 31 on the SIQ-JR; or an endorsement of any of 6 SIQ-JR "critical items" at the clinically significant levels of "a couple of times a week" or "almost every day" ("I thought about killing myself"; "I thought about how I would kill myself"; "I thought about when I would kill myself"; "I thought about what to write in a suicide note"; "I thought about writing a will"; "I thought about telling people I had a plan to kill myself"); or an endorsement of BDI item statements "I would like to kill myself" or "I would kill myself if I had a chance"; (2) endorsed a past suicide attempt (regardless of timing, injury or medical attention); (3) exhibited depression as defined by a BDI score greater than or equal to 16; or (4) reported a substance problem, as manifested by an endorsement of 4 out of 8 clinically significant impairment items on the DUSI.¹⁷ These risk criteria were based on those identified in psychological autopsy studies of youth suicide.⁵

Clinical and Case-Management Procedures

One of two procedures followed the screen depending on its results. For adolescents reporting serious suicidal ideation, any past suicide attempt, depression with any level of suicidal ideation, or a request to talk to a clinician, a "Safety Review" interview was conducted by a project child psychiatrist, psychologist or social worker. Members of the project's clinical team interviewed these adolescents to assess imminent suicide risk and the need for further evaluation and possible treatment. If survey responses were substantiated during the interview, a project social worker contacted the parents by telephone to provide a summary of the screening results, verify a student's report of current treatment, and discuss recommendations for further evaluation and treatment with a local mental health provider. Adolescents who scored above the cutoff on the BDI or DUSI, without reporting current suicidal ideation or history of attempts, were not interviewed by our project's clinical team; however their parents were notified of their survey findings by project social workers. Based on students' level of functional impairment and seriousness of suicidal ideation and symptomatology, our project social workers recommended either a specific referral, provided lists of mental health resources in the area, or merely discussed the screening findings with the parents. During the telephone interaction between the project social worker and the parents, parents were always offered help with specific referrals if they wanted our assistance. Provider lists were offered to all parents of students deemed in need of treatment, based on the clinical interview, but parents did not always want these lists because they either had other sources of treatment or did not feel treatment was necessary. All families

were given contact information for the project social worker in case they wanted future assistance. On occasion, school guidance personnel took over the case-management responsibilities if parents preferred their assistance. Project social workers facilitated referrals by providing several names of local mental health facilities or practitioners from a referral list that we developed for each community. The parent's insurance status and managed care plan was taken into consideration. Uninsured families were referred to mental health resources in the community that accommodated their financial limitations. A specific referral was developed in collaboration with the parents, and they were advised to contact providers directly to schedule appointments. We offered to discuss our findings with the therapists after the appointments were made, with the parents' permission. Unless parents refused the social workers' recommendations, parents' follow through was tracked until an appointment had been attended or it became clear that follow through was not likely to happen in a reasonable amount of time.

The study procedures were approved by the Institutional Review Board of the NYS Psychiatric Institute/Columbia University Department of Psychiatry.

Data Analysis

A series of univariate logistic regression and chi-square analyses were conducted to examine the relationships between service use follow-through and demographic and baseline clinical characteristics. This analytic strategy was also used to determine whether demographic and baseline clinical factors were related to treatment status at the time of the screen. Treatment status at the time of the screen was examined within the *total* baseline sample of at-risk youth; whereas service follow-through was examined within a *subset* who participated in the follow up.

RESULTS

Table 1 presents the distribution of screening risk criteria for the 317 at-risk youth, of whom half (n=159) met more than one of the criteria. Serious suicidal ideation and/or a past suicide attempt were endorsed by 138 students (43.5%).

Treatment Status at the Time of the Screen

At the time of the screen, 71.6% (n=227) of at-risk students were not receiving any type of mental health services (Table 2). Students in treatment were more likely to have endorsed having made a past suicide attempt and were more likely to report functional impairment than those not in treatment. No significant differences in suicidal ideation, depression, or substance problems emerged between those students who were in treatment and those who were not in treatment at the time of the screen. Of the 92 students who reported a past suicide attempt, 42.4% were in treatment at the time of the screen. The rates of treatment among youth reporting current serious suicidal ideation, depression, a substance problem, or functional impairment was 29.3%, 29.1%, 31.6%, 36.6%, respectively.

Of the 90 students in some form of mental health treatment, 55.6% were receiving psychotherapy, 12.2% were receiving medication only, and 28.9% were receiving a combination of psychotherapy and medication. Further, 21.1% were receiving services from an in-school provider only, 61.1% were receiving services from an out-patient provider only, and 16.7% were receiving services both in and out of school.

Screening Referral Recommendations

Of those 227 students who were not receiving any mental health services at the time of the screen, we made a referral for 118 students, gave a list of local providers without a specific

referral to 35 students, and gave no specific referral or provider list to 74 students. Of this latter group, we either deemed no treatment or further evaluation was needed ($n=58$) or the parent did not need or want our assistance ($n=16$). Students who received a referral were significantly more likely to have expressed current serious suicidal ideation (35.9%) on the screen than those who received a provider list (14.7%) or were not given a referral (15.1%; $\chi^2 = 12.8$ $p < .01$). Furthermore, those who received a referral or were given a provider list both reported more functional impairment (51.3%, 45.2% respectively) than those given no referral (28.6%; $\chi^2 = 9.2$ $p < .05$). These differences reflect the criteria that we used for deciding what kind of referral to make. There were no significant differences in age, gender, ethnicity, depression, substance abuse and/or drug impairment, or past attempt history between those students who received a referral and those who did not. We also made a referral to 29 of the 90 students who were already in some form of concurrent treatment at the time of the screening. This decision was based on the belief that either more extensive, or a different type of, treatment would be of benefit.

Service Use Follow-through

The follow-up participation rate (70.3%; $n=223$) did not differ significantly by our screening's referral recommendation (68.0% (100/147), 75.7% (28/37) and 71.4% (95/133) for those who received a referral, provider list, or no referral information, respectively; $\chi^2 = 0.96$ $p > .05$), but did differ significantly by the student's treatment status at the time of the screen (66.5% (151/227) and 80% (72/90) for those who had not previously been in treatment and those who had been in treatment, respectively ($\chi^2 = 12.06$ $p < .001$). However, there were no significant demographic or clinical differences between those followed and those not followed among the group not in treatment at the time of the screen, with the exception that the participants were more likely to be female ($\chi^2 = 7.1$ $p < .01$).

Among the 151 students in the follow-up sample who were not receiving any mental service at the time of the screen, the proportion of students who sought a new mental health service following the screen differed significantly by our screening's referral recommendation (69.2% (54/78), 42.3% (11/26) and 31.9% (15/47) for those who received a referral, provider list, or no referral information, respectively; $\chi^2 = 17.8$ $p < .001$). Approximately three-quarters (76.9%) of those who followed through with our referral recommendation reported that their decision to seek services had been influenced by the screening. A lower percentage of those given a provider list (50%) or no referral information (53.3%) reported such influence ($\chi^2 = 4.9$ $p < .10$).

Table 3 presents the demographic and baseline clinical characteristics of the 78 students who were not in treatment at the time of the screen and who received a new referral, differentiating the 54 students who followed through with the referral and the 24 students who did not seek any form of treatment. New service users were significantly more likely to have been depressed ($p < .05$) at the initial screen; no other significant differences existed.

Of the 54 new service users, 7 students received services from an in-school provider only, 25 received services from an outpatient provider only, and the remaining 22 students sought multiple services (including five students who utilized an inpatient service at some point between the screening and follow up). Moreover, 44 students had received psychotherapy alone, 6 students received psychotherapy and medication, 3 received some other type of treatment (e.g. acupuncture, "Christian counseling"), and one participant's type of treatment was unknown to us. No participants went on to only receive medication without the provision of psychotherapy. Overall, 24% of the new service users had their first appointment within a month following the screen. Within six months, 52% had kept their first appointment, and within a year 70% had successfully reached a mental health provider.

The number of treatment sessions ranged from 1 to 104, with a median of 10 visits. Only 2% of the new service users had only one treatment visit.

Barriers to Service

Table 4 presents the parent- and youth-perceived barriers to seeking or receiving services among the subsample that received a referral but did not pursue services after the screen. Both youth and their parents reported perceptions about mental health problems, specifically relating to the need for treatment, as the primary reasons for not seeking service. Structural barriers and perceptions about the helpfulness of mental health services did not appear to play a central role in a lack of follow-up service use.

DISCUSSION

The vast majority of youth identified by the school-based screening program to be at risk for suicidal behavior were not in treatment at the time of the screen. Over half of the youth who had attempted suicide in the past were not receiving services. Approximately two thirds of students reporting current serious suicide ideation, depression, substance use problems, or impaired functioning were not receiving any services. These findings underscore the persistently high levels of unmet service needs among youth at risk for suicidal behavior. The findings are consistent with the New Freedom Commission's recommendations to expand the role of school mental health services in transforming mental health care for youth.⁸ Specifically, school-based screening programs can be effective in identifying at risk youth who are not receiving service and provide opportunities for referral.

Approximately, two thirds of those who we referred to treatment had used a new service by the follow-up approximately 2 years later. This rate of service use follow-through is similar to that reported after a gatekeeper training program.⁶ Thus, both screening and gatekeeper training appear to facilitate youth's accessing mental health services. The services accessed after the screen were mainly outpatient services incorporating some form of psychotherapy rather than pharmacotherapy.

Access to mental health services by youth depends upon the recognition and actions of key adults,^{19, 20} as well as on their own perception of a problem. This is consistent with our finding that the most prevalent barriers to service use were primarily related to parents' and youth's perceptions about mental health problems, specifically thinking that the problem wasn't serious enough to warrant services; thinking that the problem would get better on its own; wanting to solve the problem by oneself (or within the family); not believing that any real problem existed. Educating parents as well as youth about the seriousness of risk behaviors needs to be enhanced, suggesting that screening programs may need to be augmented to include educational efforts targeting parents. It is important to note that recent efforts by national family support organizations, such as the National Alliance for Mental Illness (NAMI) and Children and Adults with ADD (CHADD) have developed and are making available free of charge in many communities across the country educational programs targeted at parents of children with mental health issues. Encouragement of parents whose teen-agers screen positive to participate in these kinds of programs could be an important adjunct to school-based screening programs.

To our knowledge, this is the first study to report service use follow-through after a suicide screening program. The inclusion of both youths and parents in the follow up and a comprehensive assessment of service use enhanced our understanding of the rates of service use, types of services used and perceived barriers among parents and youth. However, the study has several limitations that may have contributed to an overestimate of follow up service use. First, we employed suburban schools with predominantly white populations of

limited socioeconomic diversity because the sampling frame was dictated by design considerations of our earlier study.¹⁷ As such, the results cannot be generalized to urban, more ethnically or socioeconomically diverse settings, which include minority youths who are less likely to receive needed mental health services, especially in their communities outside of school.⁴⁸ Second, not all of our families had health insurance, but we did not routinely record this information, so we cannot provide the rate of uninsured families in our sample. Third, girls were more likely to participate in the follow up, notably among those who had not received mental health services at the time of the screen, and tended to follow-through more with referrals than boys. This may have yielded an overestimation of the overall rate of help-seeking following the screen. Fourth, the screening program utilized project mental health clinicians who interviewed adolescents reporting serious distress, serious suicidal ideation or any past suicide attempt to assess imminent suicide risk and the need for further evaluation and possible treatment. Parents were also informed about any other of the risk criteria (i.e., depression and significant substance problems) exhibited by their children and referrals were arranged with parents by project social workers. It is highly unlikely that any school would have such a wealth of specialized mental health personnel, particularly in the current environment of severe state and local budget deficits and corresponding funding cutbacks to schools; thus, schools undertaking screening programs may face challenges in implementing these critical case management activities.⁴⁹

In summary, screening appears to be effective in enhancing the likelihood that students at risk for suicidal behavior will get into treatment. It should be considered a critical component of school-based suicide prevention programs. However, nearly one third of at risk students still do not get into treatment and only a quarter of students who sought treatment did so within a month of the screen, so that the timeliness of treatment is also a concern. Thus, while school-based screening and referral programs can improve identification of at risk youth they do not guarantee that identified youth will gain access to treatment. This is why well developed and systematic planning is needed to ensure that screening and referral services are coordinated so as to facilitate access for youth into timely treatment. Because schools often operate independently from mental health treatment providers, one cannot assume that this coordination will occur without careful facilitation of it. Furthermore, to maximize a screening program's impact, future efforts will be needed to enhance the engagement of parents and youth and address their perceptions about mental health problems.

References

1. The Surgeon General's Call to Action to Prevent Suicide. Washington, DC: US Public Health Service; 1999.
2. Goldsmith, SK.; Pellmar, TC.; Kleinman, AM.; Bunney, WE. Reducing Suicide: A National Imperative. Washington, DC: National Academies Press; 2002.
3. President's New Freedom Commission on Mental Health. Achieving the Promise: Transforming Mental Health Care in America: Final Report. Rockville, MD: Department of Health and Human Services; 2003.
4. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS). [Accessed May 26, 2009]. [online]. www.cdc.gov/ncipc/wisqars/default.htm
5. Gould MS, Greenberg T, Velting DM, Shaffer D. Youth suicide risk and preventive interventions: a review of the past 10 years. *J Am Acad Child Adolesc Psychiatry.* 2003; 42(4):386–405. [PubMed: 12649626]
6. Kataoka S, Stein BD, Nadeem E, Wong M. Who gets care? Mental health service use following a school-based suicide prevention program. *J Am Acad Child Adolesc Psychiatry.* 2007; 46(10): 1341–1348. [PubMed: 17885576]

7. Shaffer, D.; Gould, MS. Suicide prevention in schools. In: Hawton, K.; Van Heeringen, K., editors. *The International Handbook of Suicide and Attempted Suicide*. West Sussex, England: John Wiley and Sons; 2000.
8. Stephan SH, Weist M, Kataoka S, Adelsheim S, Mills C. Transformation of children's mental health services: the role of school mental health. *Psychiatr Serv*. 2007; 58(10):1330–1338. [PubMed: 17914011]
9. Shaffer D, Craft L. Methods of adolescent suicide prevention. *J Clin Psychiatry*. 1999; 60(Suppl 2): 70–74. [PubMed: 10073391]
10. Wyman PA, Brown CH, Inman J, et al. Randomized trial of a gatekeeper program for suicide prevention: 1-year impact on secondary school staff. *J Consult Clin Psychol*. 2008; 76(1):104–115. [PubMed: 18229988]
11. Kataoka SH, Stein BD, Lieberman R, Wong M. Datapoints: suicide prevention in schools: are we reaching minority youths? *Psychiatr Serv*. 2003; 54(11):1444. [PubMed: 14600297]
12. Scott MA, Wilcox HC, Schonfeld IS, et al. School-Based Screening to Identify At-Risk Students Not Already Known to School Professionals: The Columbia Suicide Screen. *Am J Public Health*. 2009; 99(2):334–339. [PubMed: 19059865]
13. Aeltline RH Jr. An Evaluation of a School Based Suicide Prevention Program. *Adolescent & Family Health*. 2003; 3(2):81–88.
14. Aeltline RH Jr, DeMartino R. An outcome evaluation of the SOS Suicide Prevention Program. *Am J Public Health*. 2004; 94(3):446–451. [PubMed: 14998812]
15. Thompson EA, Eggert LL. Using the suicide risk screen to identify suicidal adolescents among potential high school dropouts. *J Am Acad Child Adolesc Psychiatry*. 1999; 38(12):1506–1514. [PubMed: 10596250]
16. Reynolds WM. A school-based procedure for the identification of adolescents at risk for suicidal behaviors. *Fam Community Health*. 1991; 14(3):64–75.
17. Gould MS, Marrocco FA, Kleinman M, et al. Evaluating Iatrogenic Risk of Youth Suicide Screening Programs: A Randomized Controlled Trial. *JAMA*. 2005; 293(13):1635–1643. [PubMed: 15811983]
18. Mann JJ, Apter A, Bertolote J, et al. Suicide prevention strategies: a systematic review. *JAMA*. 2005; 294(16):2064–2074. [PubMed: 16249421]
19. Pescosolido BA. Beyond rational choices: The social dynamics of how people seek help. *Am J Sociology*. 1992; 97(4):1096–1138.
20. Proctor, EK.; Stiffman, AR. Background of services and treatment research. In: Williams, JBW.; Ell, K., editors. *Advances in Mental Health Research: Implications for Practice*. Washington, D. C: NASW Press; 1998.
21. Hoagwood K, Horwitz S, Stiffman A, et al. Concordance between parent reports of children's mental health services and service records: The Services Assessment for Children and Adolescents (SACA). *J Child & Family Studies*. 2000; 9(3):315–331.
22. Andrews VC, Garrison CZ, Jackson KL, Addy CL, McKeown RE. Mother-adolescent agreement on the symptoms and diagnoses of adolescent depression and conduct disorders. *J Am Acad Child Adolesc Psychiatry*. 1993; 32(4):731–738. [PubMed: 8340292]
23. Reynolds, WM. *SIQ Professional Manual*. Odessa, Florida: Psychological Assessment Resources, Inc; 1988.
24. Keane E, Dick R, Bechtold D. Predictive and concurrent validity of the Suicidal Ideation Questionnaire among American Indian adolescents. *J Abnorm Child Psych*. 1996; 24:735–747.
25. Reynolds W, Mazza J. Assessment of suicidal ideation in inner-city children and young adolescents: reliability and validity of the Suicidal Ideation Questionnaire-JR. *School Psycho Rev*. 1999; 28:17–29.
26. King C, Hill E, Naylor M, Evans T, Shain B. Alcohol consumption in relation to other predictors of suicidality among adolescent inpatient girls. *J Am Acad Child Adolesc Psychiatry*. 1993; 32:82–88. [PubMed: 8428889]
27. Mazza J. The relationship between post traumatic stress symptomatology and suicidal behavior in school-based adolescents. *Suicide Life-Threat Behav*. 2000; 30:91–103. [PubMed: 10888051]

28. Shaffer D, Fisher P, Lucas CP, Dulcan MK, Schwab-Stone ME. NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *J Am Acad Child Adolesc Psychiatry*. 2000; 39(1):28–38. [PubMed: 10638065]
29. Shaffer D, Scott M, Wilcox H, et al. The Columbia Suicide Screen: validity and reliability of a screen for youth suicide and depression. *J Am Acad Child Adolesc Psychiatry*. 2004; 43(1):71–79. [PubMed: 14691362]
30. Gould MS, King R, Greenwald S, et al. Psychopathology associated with suicidal ideation and attempts among children and adolescents. *J Am Acad Child Adolesc Psychiatry*. 1998; 37(9):915–923. [PubMed: 9735611]
31. Meehan PJ, Lamb JA, Saltzman LE, O’Carroll PW. Attempted suicide among young adults: progress toward a meaningful estimate of prevalence. *Am J Psychiatry*. 1992; 149(1):41–44. [PubMed: 1728183]
32. Beck, AT.; Steer, RA. *Manual for the Beck Depression Inventory*. San Antonio, TX: Psychological Corporation; 1993.
33. Strober M, Green J, Carlson G. Utility of the Beck Depression Inventory with psychiatrically hospitalized adolescents. *J Consult Clin Psychol*. 1981; 49(3):482–483. [PubMed: 7276342]
34. Teri L. The use of the Beck Depression Inventory with adolescents. *J Abnorm Child Psychol*. 1982; 10(2):277–284. [PubMed: 7108067]
35. Roberts RE, Lewinsohn PM, Seeley JR. Screening for adolescent depression: a comparison of depression scales. *J Am Acad Child Adolesc Psychiatry*. 1991; 30(1):58–66. [PubMed: 2005065]
36. Tarter RE, Hegedus AM. The Drug Use Screening inventory: Its applications in the evaluation and treatment of alcohol and other drug abuse. *Alcohol Health Res W*. 1991; 15:65–75.
37. Tarter RE, Laird SB, Bukstein O, Kaminer Y. Validation of the adolescent drug use screening inventory: Preliminary findings. *Psychol of Addic Behav*. 1992; 6:233–236.
38. Tarter R, Mezzich A, Kirisci L, Kaczynski N. Reliability of Drug Use Screening Inventory among adolescent alcoholics. *J Child Adolesc Substance Abuse*. 1994; 3:25–36.
39. Kirisci L, Mezzich A, Tarter R. Norms and sensitivity of the adolescent version of the drug use screening inventory. *Addict Behav*. 1995; 20:149–157. [PubMed: 7484309]
40. Shaffer D, Gould MS, Fisher P, et al. Psychiatric diagnosis in child and adolescent suicide. *Arch Gen Psychiat*. 1996; 53(4):339–348. [PubMed: 8634012]
41. Bird HR, Shaffer D, Fisher P, Gould MS, et al. The Columbia Impairment Scale (CIS): Pilot findings on a measure of global impairment for children and adolescents. *Int J Meth Psych Res*. 1993; 3(3):167–176.
42. Bird, HR. The assessment of functional impairment. In: Shaffer, D.; Lucas, CP.; Richters, JE., editors. *Diagnostic Assessment in Child and Adolescent Psychopathology*. New York: Guilford; 1999.
43. Horwitz SM, Hoagwood K, Stiffman AR, et al. Reliability of the Services Assessment for Children and Adolescents. *Psychiat Serv*. 2001; 52(8):1088–1094.
44. Leaf PJ, Alegria M, Cohen P, Goodman SH, et al. Mental health service use in the community and schools: Results from the four-community MECA study. *J Am Acad Child Adolesc Psychiatry*. 1996; 35(7):889–897. [PubMed: 8768348]
45. Gould MS, Munfakh JL, Lubell K, Kleinman M, Parker S. Seeking help from the internet during adolescence. *J Am Acad Child Adolesc Psychiatry*. 2002; 41(10):1182–1189. [PubMed: 12364839]
46. Offer D, Howard KI, Schonert KA, Ostrov E. To whom do adolescents turn for help? Differences between disturbed and nondisturbed adolescents. *J Am Acad Child Adolesc Psychiatry*. 1991; 30(4):623–630. [PubMed: 1890097]
47. Gould MS, Greenberg T, Munfakh JL, Kleinman M, Lubell K. Teenagers’ attitudes about seeking help from telephone crisis services (hotlines). *Suicide Life-Threat Behav*. 2006; 36(6):601–613. [PubMed: 17250466]
48. Kataoka SH, Zhang L, Wells KB. Unmet need for mental health care among U.S. children: variation by ethnicity and insurance status. *Am J Psychiatry*. 2002; 159(9):1548–1555. [PubMed: 12202276]

49. Hallfors D, Brodish PH, Khatapoush S, Sanchez V, Cho H, Steckler A. Feasibility of screening adolescents for suicide risk in “real-world” high school settings. *Am J Public Health.* 2006; 96(2): 282–287. [PubMed: 16380568]

TABLE 1

Characteristics of Follow-Up Participants and Non-Participants

	Total (n=317)		Participants (n=223)		Non-Participants (n=94)	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Age*	15.0	(1.0)	15.0	(1.2)	14.7	(1.1)
	N	%	N	%	N	%
Gender*						
Male	132	41.6	82	36.8	50	53.2
Female	185	58.4	141	63.2	44	46.8
Ethnicity						
White	248	78.2	178	79.8	70	74.5
African American	15	4.7	9	4.0	6	6.4
Hispanic	31	9.8	23	10.3	8	8.5
Asian	12	3.8	6	2.7	6	6.4
Other	11	3.5	7	3.1	4	4.3
Risk Status at Screen						
Serious Ideation	82	26.5	54	25.0	28	29.8
Past Attempts	92	29.0	66	29.6	26	27.7
Depression	251	79.9	173	78.6	78	83.0
Substance Problem	79	24.9	62	27.8	17	18.1
Functional Impairment at Screen	145	45.7	100	44.8	45	47.9

* p<.05

TABLE 2
Treatment Status at Time of Screen By Students' Demographic and Clinical Characteristics

	In Treatment (N=90)		Not in Treatment (N=227)		Odds Ratios (95% Confidence Interval)
	Mean	(SD)	Mean	(SD)	
Age**	15.27	(1.21)	14.81	(1.14)	1.39 (1.13-1.71)
	N	%	N	%	
Gender					
Male	36	40.0	96	42.3	1.10 (0.67-1.81)
Female	54	60.0	131	57.7	
Ethnicity					
White	76	84.4	172	75.8	1.76 (0.94-3.29) [†]
African American	3	3.3	12	5.3	
Hispanic	8	8.9	23	10.1	
Asian	1	1.1	11	4.8	
Other	2	2.2	9	4.0	
Risk Status at Screen					
Serious Ideation	24	27.9	58	25.9	1.11 (0.63-1.94)
Past Attempts	39	43.3	53	23.3	2.51 (1.50-4.22)***
Depression	73	82.0	178	79.1	1.21 (0.64-2.26)
Substance Problem	25	27.8	54	23.8	1.23 (0.71-2.14)
Functional Impairment at Screen	53	68.9	92	42.4	2.42 (1.43-4.11)**

** p<.01

*** p<.001

[†]The analysis contrasted whites versus all others

TABLE 3
 Service Use Follow Through Among those Given a Referral[†] by Students' Demographic and Clinical Characteristics

	Service Use Follow-through (N=54)		No Service Use Follow-through (N=24)		Odds Ratios (95% Confidence Interval)
	Mean (SD)	(SD)	Mean (SD)	(SD)	
Age	14.9 (N=78)	14.9 (1.1)	15.1 (1.1)	15.1 (1.1)	0.86 (0.55–1.34)
Gender					
Male	20 (N=31)	20 (64.5 % ^a)	11 (35.5 % ^a)	11 (35.5 % ^a)	1.44 (0.54–3.81)
Female	34 (N=47)	34 (72.3 % ^a)	13 (27.7 % ^a)	13 (27.7 % ^a)	
Ethnicity % ^a					
White	39 (N=53)	39 (73.6 %)	14 (26.4 %)	14 (26.4 %)	2.01 (0.75–5.42) ^b
African American	3 (N= 3)	3 (100 %)	0 (0 %)	0 (0 %)	
Hispanic	8 (N=13)	8 (61.5 %)	5 (38.5 %)	5 (38.5 %)	
Asian	2 (N= 5)	2 (40.0 %)	3 (60.0 %)	3 (60.0 %)	
Other	2 (N= 4)	2 (50.0 %)	2 (50.0 %)	2 (50.0 %)	
Risk Status at Screen ^c					
Serious Ideation	21 (N=29)	21 (72.4 %)	8 (27.6 %)	8 (27.6 %)	1.31 (0.48–3.61)
Past Attempts	14 (N=20)	14 (70.0 %)	6 (30.0 %)	6 (30.0 %)	1.05 (0.35–3.18)
Depression	44 (N=58)	44 (75.9 %)	14 (24.1 %)	14 (24.1 %)	3.14 (1.09–9.10) [*]
Substance Problem	19 (N=27)	19 (70.4 %)	8 (29.6 %)	8 (29.6 %)	1.09 (0.39–3.00)
Functional Impairment at Screen	28 (N=37)	28 (75.7 %)	9 (24.3 %)	9 (24.3 %)	2.12 (0.78–5.75)

[†] Among those not in treatment at the time of the screen

^{*} p<.05

^a Row percents

^b The analysis contrasted whites versus all others

^c The risk status groups are not mutually exclusive.

TABLE 4

Perceived Barriers to Service Among those Given a Referral who did not Follow through

	Parent (N=17) ^a		Youth (N=18) ^a	
	N	%	N	%
Structural				
Services too expensive	1	5.9	2	11.1
Didn't know where to go	0	0	1	5.6
Had to wait too long	0	0	0	0
Transportation	0	0	1	5.6
Would take too much time	0	0	2	11.1
Any of the structural barriers	1	5.9	2	11.1
Perceptions about Mental Health Problems				
Parent didn't think child had a problem	9	52.9	NA	
Child didn't think child had a problem	5	29.4	12	75.0
Problem not serious enough	9	52.9	6	33.3
Thought it would get better	5	29.4	4	22.2
Wanted to solve problem ourselves	7	41.2	1	5.6
Thought family would help	3	17.6	1	5.6
Child no longer needed help	4	23.5	2	11.1
Any perceptions about mental health problems	16	94.1	17	94.4
Perceptions about Mental Health Services				
Concerned what family would say	0	0	0	
Concerned what others would say	0	0	0	
Would not do any good	1	5.9	4	22.2
Didn't help in past	0	0	2	11.1
Child ashamed	0	0	0	0
Parent ashamed	0	0	NA	
Against beliefs	0	0	0	0
Would not trust advice	1	5.9	1	5.6
Family objected	0	0	0	0
Too personal	1	5.9	2	11.1
Any perceptions about mental health services	2	11.8	4	22.2

^a24 participants in the follow-up study had been given a referral and did not receive follow-up service use. The smaller Ns of parents and youth in the table reflect missing data.