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Paul Rohde, John Noell, Linda Ochs and John R. Seeley, Depression, suicidal ideation and STD-related risk in homeless older adolescents, *Journal of Adolescence*, Volume 24, Issue 4, August 2001, Pages 447-460. <http://dx.doi.org/10.1006/jado.2001.0382>

Word Count (text and tables): 3981

Frequency and Correlates of Depression in Homeless Older Adolescents

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Abstract

Goals of this study were to examine the frequency and correlates of depression in a sample of homeless older adolescents as a function of age and gender. Diagnostic interviews and blood/urine samples were obtained from 523 homeless adolescents (mean age = 17.8). Overall, 12.2% had a current DSM-IV diagnosis of major depression and 6.5% had dysthymia, with higher rates for female and older participants. Depression was strongly associated with suicidal behavior and hopelessness. Depression was also associated with biologically-verified sexually transmitted disease (in older participants), infrequent condom use, increased sexual coercion (in female participants), and non-heterosexual orientation (in older participants).

Although more than one million children and adolescents in the U.S. are thought to be homeless (Robertson, 1992), this population has been quite difficult to evaluate. However, the limited available data suggest that rates of depression among homeless adolescents and adults, at least as ascertained by self-report questionnaires, are higher than the general population (e.g., Rotheram-Borus, 1993; Schutt, Meschede, & Rierdan, 1994). The first goal of the present study is to evaluate the rates of depression according to DSM-IV (American Psychiatric Association, 1994) criteria for major depressive disorder (MDD) and dysthymia in a large sample of homeless older adolescents. The association of depression with suicidal behavior and hopelessness is examined to (a) replicate previously-reported associations in nonhomeless adolescent samples (e.g., Lewinsohn, Rohde, & Seeley, 1996), and (b) provide validity data for the diagnosis of MDD and dysthymia via semi-structured interviews in this population. In addition, we examine whether the adolescent's depression began before or after the onset of homelessness. The implicit assumption in clinical work with this population is that depression is a result of homelessness but the hypothesis that depression contributes to the adolescent leaving home also needs to be considered.

The second primary focus of the present study is whether depression in this population is significantly associated with measures of sexual and drug use behaviors that increase the probability of sexually transmitted disease (STD) acquisition and pregnancy. Homeless youth are at elevated risk for intravenous [IV] drug use and unprotected sexual intercourse, which leads to elevated rates of STDs and unintended pregnancy (Kipke, O'Connor, Palmer, & MacKenzie, 1995; Rotheram-Borus, Koopman, Haignere, & Davies, 1991). In addition, homeless adolescents often experience high rates of sexual coercion and become involved in prostitution (e.g., Janus, Burgess, & McCormack, 1987; Lucas & Hackett, 1995). They also report higher than average rates of homosexual behavior, which may be associated with higher incidence of HIV infection (e.g., Kipke et al., 1995; Greenblatt & Robertson, 1993). In nonhomeless adolescent samples, self-report depression scores have been shown to be significantly associated with sexual and drug use behaviors that increase the probability of STD acquisition and pregnancy (e.g., Bardone, Moffitt, Caspi, & Dickson, al., 1996; Ensminger, 1986; Kaplan et al., 1984; Orr, Celentano, Santelli, & Burwell, 1994).

To contribute to a developmental understanding of depression in homeless adolescents, we examine the degree to which the rates and correlates of depression vary as a function of the adolescent's age and gender. Of the two moderating effects, rates of depression are predicted to be more strongly associated with female gender than with age (e.g., Cauce et al., 1999; McCarthy & Hagan, 1992). The present study also recognizes that some associations with depression may vary as a function of gender or age. For example, MacLean and colleagues (MacLean, Paradise, & Cauce, in press) found that depression in homeless adolescents was more strongly associated with substance use for female participants than for male participants. Regarding the potential impact of age, more social service opportunities are available for adolescent minors as compared to young people over 18 years of age (McCarthy & Hagan, 1992), which may decrease the risk of depression in young adolescents. Conversely, younger adolescents are presumably less resilient and therefore have fewer coping resources, increasing their level of vulnerability and risk.

Method

Participants and Procedures

Data are available from 523 adolescents recruited from the streets of a large northwestern U. S. city. Volunteers from a street outreach program that connects homeless adolescents with available services contacted the adolescents at areas where homeless youths were observed to congregate and informed them of the study. Two criteria were required for participation: (a) homelessness, which was defined as spending fewer than 30 days total with parents or guardians in the previous 6 months, not living with parents or guardians, even temporarily, in the past 30 days, and not having a stable domicile, and (b) being less than 21 years of age. The definition of homelessness was designed to identify adolescents who spent nearly all of their time “on the street,” having no stable home available to them. In addition to participating in the semistructured interview, blood and urine specimens were collected to determine current STD and pregnancy status. The present study is embedded in a larger study that was designed to examine the correlates and risk factors of STD transmission in homeless youth. Adolescents were paid \$20 for their participation in the assessment.

Demographics. More than half of the participants (58.9%) were male. The majority of participants (77%) defined themselves as Caucasian; 10% were Native American, 3% Hispanic, 3% African America, 1% Asian, and 6% classified themselves as “other.” Participants had a mean age of 17.8 years ($SD = 1.8$; range = 13-20) and, on average, were 14.6 years of age ($SD = 2.5$, range = 6-20) when they first left home. The sample was divided into younger (less than 18 years of age, 40.4%) versus older (18 or more years of age, 59.6%) participants.

Assessment of Depression

Participants were assessed for current MDD and dysthymia using relevant sections from the Structure Clinical Interview for DSM-IV (American Psychiatric Association, 1994) Axis I Disorders - Nonpatient Edition (SCID; First, Spitzer, Gibbon, & Williams, 1995). In addition to providing a diagnosis, the SCID provide information regarding the prevalence of individual depressive symptoms, the onset age of first MDD or current dysthymia, and, if the participant had a diagnosis of MDD, the lifetime number of MDD episodes.

Interviewers were carefully selected, trained, and supervised. Prior to data collection, 30 pilot participants were administered the complete assessment battery. The first author reviewed the assessment of MDD and dysthymia on all of the pilot tapes and provided written feedback. During data collection, all interviews were audiotaped and a second interviewer reviewed the recordings of 79 interviews for reliability purposes. Inter-rater reliability for the diagnosis of depression was evaluated by the kappa statistic (Cohen, 1960). Kappa values for a diagnosis of current MDD and dysthymia were .95 and .75, respectively, indicating acceptable or excellent levels of inter-rater agreement.

Measures of Suicidal Behavior and Hopelessness

Suicidal behavior included (a) lifetime history of suicide attempt, which was assessed by the question, “Have you ever tried to kill yourself or done anything that could have killed you?,” with interviewers excluding purely thrill-seeking behaviors, and (b) suicidal ideation during the past week, which was assessed with four 4-point items that we have used extensively in our research with nonhomeless adolescents (e.g., “I felt I would kill myself if I knew a way,” Lewinsohn, Rohde, and Seeley, 1996; $\alpha = .80$). Hopelessness was assessed with ten items from the Beck Hopelessness Inventory (Beck, Weissman, Lester, & Trexler, 1984; $\alpha = .84$).

Measures of STD and Risk Factors

Biologically-verified STD (herpes simplex virus type II, hepatitis B, chlamydia) and pregnancy status were determined by urine and blood specimens collected by a trained phlebotomist. A total of 15.4% of the participants had a current STD (8.2% herpes simplex II, 2.5% hepatitis B, 5.5% chlamydia); 5.6% of the female adolescents were currently pregnant. All physiological analyses were performed by laboratories at the Centers for Disease Control and Prevention (Atlanta, GA).

The following STD-related risk factors were also assessed: (a) frequency of condom usage in last 3 months (5-point scale; dichotomized into use most or all of the time versus half of the time or less); (b) number of heterosexual partners in the last 3 months, (c) lifetime IV drug use (Yes/No); (d) frequency of sexually coercion (females only; 14 items; Koss, 1990); (e) lifetime history of heterosexual or homosexual prostitution (Yes/No); (f) non-heterosexual orientation, which was determined by the endorsement of bisexual or homosexual attraction on one or more of three items (self-labeled sexual orientation, reported feelings of sexual attraction towards member of the same and opposite sex, sexual preferences in daydreams); and (g) lifetime homosexual experience (Yes/No).

Results

Rates of Depression

Sixty-four participants, or 12.2%, reported being in a current episode of MDD at the time of assessment. As shown in Table 1, rates were significantly higher for the older participants and for the female participants. Thirty-four homeless adolescents (6.5%) met criteria for a current episode of dysthymia, with no differences in rates as a function of age or gender. Overall, ninety-two homeless adolescents (17.6%) had a current diagnosis of unipolar depression (MDD and/or dysthymia), with significantly higher rates for female than for male participants.

 Insert Table 1 about here

Almost all of the participants who met criteria for current MDD reported multiple past episodes: 12.5% reported no past MDD episodes (i.e., this was their first incidence), 18.8% reported 2-5 lifetime MDD episodes, and 68.7% reported 6 or more episodes of MDD. Among depressed homeless adolescents, the number of MDD episodes and the average onset age of first depressive episode (MDD or dysthymia) did not vary as a function of age or gender.

Temporal order of depression versus homelessness status. To better understand the development of depression in relation to homelessness, age of first depressive episode in the currently depressed homeless adolescents was contrasted with age at which the adolescent had first left home. Approximately three-fourths of homeless youth (72.6%) reported experiencing their first episode of depression prior to leaving home. For the remaining depressed adolescents, the depression either occurred concomitantly (within the same year; 15.5%) or followed the onset of homelessness (11.9%). The association between onset of homelessness versus depression did not vary as a function of age or gender.

Association with Suicidal Behavior and Hopelessness

Hierarchical logistic regression models were used to examine the association between current depression and each of the predicted correlates of depression. For each model, the

potential correlate of current depression was entered as the first block to determine the unadjusted bivariate association. To control for potential confounding effects, age and gender were entered as the second block. All three variables had a significant unadjusted bivariate association and none became nonsignificant after controlling for the two potential confounding effects; therefore, only adjusted results are presented in the upper portion of Table 2. The magnitude of association between each significant variable and a diagnosis of current depression is shown by the adjusted odds ratio (OR) and 95% confidence interval (CI). Interactions of the potential correlate with the two moderators were considered for entry in a third block using the likelihood ratio test; none were significant.

To facilitate comparison of significant results between continuous and binary variables, the two continuous variables were dichotomized using a median split and the odds ratios were recalculated. The revised odds ratios are shown in the second column of Table 2. The percentage of nondepressed and depressed homeless adolescents with each of the significant correlates is shown in the third and fourth columns of the Table.

 Insert Table 2 about here

Associations with STD and Related Risk Factors

A similar analytic strategy was used to examine the association of current depression with presence of an STD or pregnancy or the STD-related risk behaviors. Results are shown in the lower portion of Table 2. Current depression was unrelated to pregnancy in the homeless female adolescents but was significantly associated with a biologically-verified STD in older homeless adolescents; age interaction likelihood ratio $\chi^2(1, n = 523) = 4.57, p < .05$. Two variables had significant main effect associations with depression: less consistent condom use and greater reports of sexual coercion (among female participants). One additional variable had a significant interaction with age; non-heterosexual orientation was associated with depression in the older, but not younger, homeless adolescents; likelihood ratio $\chi^2(1, n = 523) = 6.89, p < .01$. No interactions with gender were significant.

Discussion

Perhaps the most striking aspect of the present study is the high rate of MDD and dysthymia in homeless adolescents. These results are particularly compelling given the rigorous assessment of depression using standard diagnostic criteria and a semistructured interview format. Previously, depression in this population has been assessed almost exclusively using self-report questionnaires. Assessing the severity and duration of depressive symptoms and ruling out alternative explanations for the changes in functioning (e.g., lack of food or shelter, illness or injury, substance use, bereavement) based on questionnaire response is problematic.

The use of DSM-IV criteria allows us to compare the present results to prevalence rates from a large community sample from the same region of the country that employed a similar diagnostic procedure (Lewinsohn et al., 1993). A similar pattern of gender differences is found in the two samples but the overall rates of depression among homeless youth are substantially higher: non-homeless community female adolescents were significantly more likely than male adolescents to have current diagnosis of MDD (3.7% and 1.7%, respectively) but did not differ in rates of current dysthymia (0.6% and 0.5%, respectively). Comparing these rates to findings in

the present study suggests that the point prevalence rate of MDD in homeless adolescents may be four to five times greater than in the general community. Even more striking, the rate of dysthymia (a less severe but more chronic disorder) appears to be over ten times greater.

The present findings are consistent with results from the small number of previous studies that have been conducted with similar samples. Buckner and Bassuk (1997) assessed 6-month prevalence of MDD and dysthymia in 41 homeless adolescents using a structured diagnostic interview. As per adolescent report, 8.3% of homeless adolescents met criteria for MDD (10.3% as per parent report) and 2.6% met criteria for dysthymia (9.8% as per parent report). In a recent study, Cauce et al. (1999) found that 21% of homeless adolescents met diagnostic criteria for MDD or dysthymia. In conclusion, rates of depression among homeless young people are clearly elevated relative to the general adolescent population. In addition, almost all of the currently depressed homeless adolescents reported having experienced multiple past depressive episodes. This finding is in contrast to previous results with depressed non-homeless adolescents, who generally report having experienced only a single episode of depression (e.g., Lewinsohn et al., 1993).

Current depression was significantly associated with current suicidal ideation, hopelessness, and a history of suicide attempt. These associations are not unexpected given the strong relations between depression, hopelessness, and suicidality (e.g., Beck, Brown, Berchick, Stewart, and Steer, 1990). However, the findings provide concurrent validity data for use of the SCID with this population. In addition, they document that the rates of suicidal behavior in this population are markedly elevated. We previously found that a lifetime history of MDD was significantly associated with a history of suicide attempt in community adolescents (22.0% with lifetime MDD reported suicide attempt vs. 3.7% with no history of MDD; Lewinsohn, Rohde, & Seeley, 1996).

Almost three-quarters of the depressed homeless adolescents reported having first become clinically depressed prior to leaving home. An additional 16% first became depressed at approximately the same time they left home. Only 12% of those currently depressed reported developing their first depressive episode more than one year after leaving home. Although retrospective data may be prone to distortion, these findings suggest that depression may be a risk factor for homelessness in vulnerable adolescents, and that being homeless may not be a universally depressogenic experience but may be a risk factor for adolescents prone to depression, as evidenced by a past history of MDD.

Another goal of the present study was to contribute to knowledge in this area by examining the potential moderating effects of age and gender on depression in homeless youth. Understanding these effects has important implications in the development of appropriate prevention and intervention programs for this population. As predicted, the gender difference in rates of MDD was replicated. The preponderance of depression in women compared to men may be one of the most robust associations with depression (e.g., Culbertson, 1997). However, other associations and interactions with gender were nonsignificant. Therefore, we were unable in the present study to shed much new light on any possible explanations for the increased rates of depression in female adolescents.

Regarding age effects, the rates of MDD were greater among older homeless adolescents. There was no indication that younger homeless adolescents were at greater risk for depression or

were more negatively impacted by depression. Two interactions with age were found: depression in the older adolescents was associated the presence of a biologically-verified STD (i.e., herpes simplex virus type II, hepatitis B, chlamydia) and with a non-heterosexual orientation, but not for younger adolescents. It is possible that sexual orientation is less stable or consistent in younger adolescents. Another possibility is that older adolescents find a non-heterosexual orientation to be more stigmatizing or stressful than younger adolescents. It should be noted that these adolescents were not labeling themselves as exclusively homosexual or bisexual; rather they were indicating that they were not exclusively heterosexual.

Unlike current STD status, pregnancy in the female homeless adolescents was unrelated to depression level, although the relatively low rate of current pregnancy may have negatively impacted our statistical power. Nonetheless, this pattern of results illustrates that factors related to acquisition of an STD and becoming pregnant are not synonymous and that different aspects of sexual behavior may be more relevant for each of the two outcomes (e.g., pregnancy is more strongly associated with the overall frequency of intercourse whereas STDs are related more strongly to the number of sexual partners).

Depression was related to lower self-reported condom use and, among females, with a greater likelihood of sexual coercion. This latter variable was examined only in the female participants, as our pilot work indicated that very few homeless male participants endorsed being recipients of sexual coercion. The present results are consistent with the suggestion of Brown and colleagues (Brown, Danovsky, Jourie, DiClemente, & Ponton, 1997) that depressed adolescents lack adequate self-esteem and the assertiveness skills needed to implement safer sex practices. However, given the association with sexual coercion, the possibility needs to be considered that depressed homeless adolescent may be unable to engage in safer sex practices even if they are so inclined.

A few caveats need to be noted before concluding. First, participants were not a truly random sample of the homeless older adolescent population; achieving that goal would be extremely difficult and costly at best, and is perhaps impossible. Second, compared to national norms, racial minority adolescents were under-represented in the present study (although racial composition of the sample is consistent with state census data). Third, most of the examined measures were based on adolescent self-report. Fourth, the data were cross-sectional, as opposed to longitudinal. These limitations were imposed by practical constraints of the project and by the realities of the population with which we were working. Given that data were cross-sectional, causal interpretations can only be suggested. Regarding the use of self-report data, participants may have both under-reported information (to avoid the project having to make a report to Children's Services) or over-reported information (in an effort to shock or boast to the interviewer). However, Calsyn, Allen, Morse, Smith, and Tempelhoff (1993) found high test-retest and inter-rater reliability for self-reports of homeless mentally-ill adults, which suggests that homeless individuals are reliable sources of information.

Positive aspects of the present study include the fact that a large sample of extremely transitory young people were rigorously assessed on a variety of measures, including an interviewer-administered assessment of MDD and dysthymia as per DSM-IV criteria and the biologically-verified assessment of STDs and pregnancy.

Psychiatric disorders other than MDD and dysthymia were not assessed in the present

study but need to be included in future research. Psychiatric disorders other than depression have a more significant impact on the psychosocial functioning of homeless adolescents. For instance, conduct disorder problems and substance abuse have been shown to be significantly associated with earlier onset of sexual intercourse and with greater engagement in sexual risk behaviors in community adolescents (Chen, Stiffman, Cheng, & Dore, 1997; Harvey & Spigner, 1995; Tubman, Windle, & Windle, 1996) and conduct disorder, but not depression, was found in previous research to predict teenage pregnancy (Kovacs, Krol, & Voti, 1992).

Homeless adolescents have numerous reasons for elevated rates of depression, including increased levels of adverse life events (physical as well as psychological), lower levels of social support, poor health and limited access to health care, increased substance abuse, and fewer financial resources. The present study documents the magnitude of these problems and the need to identify and provide treatment to depressed homeless young people. Professionals working with this population are advised to routinely screen for depression and associated suicide risk. Female homeless adolescents in general and homeless adolescents over the age of 18 may be at particularly high risk. Homeless adolescents being treated for STDs should be routinely assessed for depression. The extent to which depression is contributing to the chronicity of homelessness is unknown. Given that the majority of the depressed homeless adolescents reported first becoming depressed prior to becoming homeless, clinically-significant depression may have been a contributing factor for homelessness rather than its consequence. Depression may also be a risk factor the acquisition of an STD in this population. If these hypotheses are verified in future longitudinal research, they would represent additional reasons for the development and implementation of effective prevention interventions to reduce the incidence of depression in at-risk adolescents.

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Author Notes

This research was supported in part by a grant from the National Institute on Allergy and Infectious Diseases (AI34497; John Noell, PI). The authors wish to thank Drs. Carolyn Black, Stephen Morse, Miriam Alter, Scott Schmid, Jim Dobbins, and Mr. Charles Schable of the Centers for Disease Control and Prevention, US Public Health Service for the STD analyses. We also gratefully acknowledge the assistance of Dr. Paul Yovanoff for some of the analyses. Finally, we wish to express our deep appreciation to the street kids and the service agencies, especially Yellow Brick Road, who made this study possible.

Table 1.
Rates of Depression as a function of Age and Gender.

Variable	MDD	Dysthymia	Depression
% Total sample	12.2	6.5	17.6
Age			
% younger	8.0	8.5	15.6
% older	15.0	5.1	18.8
$\chi^2(1, n = 523)$	5.78*	2.38	0.94
Gender			
% female	20.4	8.8	26.4
% male	6.5	4.9	11.3
$\chi^2(1, n = 523)$	22.94**	3.26	19.96**

*p < .05; **p < .001. MDD = major depressive disorder.

Table 2.
Associations with Current Depression.

	OR (95% CI) ^a	OR dichotomized	% with variable	
			Non-Dep	Dep
Measures of Suicidal Behavior and Hopelessness				
Lifetime suicide attempt	3.93 (2.40 - 6.45)	n/a	31.7	67.4
Current suicidal ideation	1.33 (1.23 - 1.43)	9.47	44.1	88.0
Hopelessness	4.76 (3.13 - 7.23)	4.75	38.2	72.8
Measures of STD Risk				
Presence of STD^b				
younger	0.67 (0.21 - 2.07)	n/a	15.6	12.1
older	2.57 (1.26 - 5.25)	n/a	12.6	28.8
Current pregnancy (females)	ns		6.3	3.5
Infrequent condom usage	1.89 (1.10 - 3.23)	n/a	55.7	40.0
Number of sex partners in last three months				
0	ns		23.7	25.3
1			30.7	32.2
2+			45.7	42.5
Lifetime IV drug use	ns		34.4	41.3
Being sexual coerced (females)	1.14 (1.03 - 1.27)	1.67	46.2	61.8

(tables continues)

	OR (95% CI) ^a	OR dichotomized	% with variable	
			Non-Dep	Dep
Lifetime history of prostitution	ns		12.1	17.4
Non-heterosexual orientation^b				
younger	0.67 (0.30 - 1.54)	n/a	38.2	36.4
older	2.33 (1.24 - 4.38)	n/a	24.6	52.5
Lifetime homosexual experience	ns		44.4	53.8

Associations are adjusted for age and gender. n/a = not applicable. ns = nonsignificant.

^aCI = Confidence Interval

^bsignificant interaction with age.

Non-dep = nondepressed adolescents; Dep = adolescents with current MDD or dysthymia.