HHS Public Access

Author manuscript

J Am Acad Child Adolesc Psychiatry. Author manuscript; available in PMC 2017 November 01.

Published in final edited form as:

J Am Acad Child Adolesc Psychiatry. 2016 November ; 55(11): 931–936. doi:10.1016/j.jaac.2016.07.772.

Childhood Attention-Deficit/Hyperactivity Disorder and Homelessness: A 33-Year Follow-Up Study

Dr. Lourdes García Murillo, MD,

The Child Study Center at New York University Langone Medical Center, New York

Dr. Maria A. Ramos-Olazagasti, PhD,

Columbia University/New York State Psychiatric Institute, New York

Dr. Salvatore Mannuzza, PhD,

Retired

Dr. Francisco Xavier Castellanos, MD, and

The Child Study Center at New York University Langone Medical Center, New York. Nathan Kline Institute for Psychiatric Research, Orangeburg, NY

Dr. Rachel G. Klein, PhD

The Child Study Center at New York University Langone Medical Center, New York

Abstract

Objective—To examine whether childhood attention-deficit/hyperactivity disorder (ADHD) predicts homelessness in adulthood, and whether the persistence of childhood ADHD through adolescence influences likelihood of homelessness.

Method—A 33-year prospective, controlled, follow-up of clinic-referred 6- to 12-year-old Caucasian boys with ADHD (probands; mean = 8), at mean age 41 (follow-up [FU] = 41). Comparisons, children without ADHD from the same medical center, were matched for age and socioeconomic status (SES). Both groups were evaluated at mean age 18 (FU18). Homelessness was assessed at FU41 in 134/207 probands (65%), and 136/178 (76%) comparisons. We tested 1) the relationship between childhood ADHD and homelessness; 2) whether adolescent dysfunctions (conduct disorder, non-alcohol substance use disorder, arrests, and school dropout) accounted for this relationship, if found; and 3) whether ADHD that persisted through FU18 elevated probands' homelessness rate.

Results—Probands had significantly higher rates of homelessness than comparisons (23.7% vs 4.4%), ($\chi^2_{(1)}=21.15$, (df=1), $p<.001$). In a multivariate analysis, including childhood ADHD and covariates, the probands' significant elevation of homelessness remained (OR= 3.60, 95% CI:

Correspondence to Rachel G. Klein, PhD, The Child Study Center at NYU Langone Medical Center. One Park Ave 7th Floor, New York, NY 10016; Rachel.klein@nyumc.org.

Disclosure: Drs. García Murillo, Ramos-Olazagasti, Mannuzza, Castellanos, and Klein report no biomedical financial interests or potential conflicts of interest.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1.32–9.76, $p=.01$). Probands with persistent ADHD through adolescence had significantly more homelessness than remitted probands ($\chi^2_{(1)}=12.73$, $p<.001$), but this relationship was no longer significant when conduct disorder at FU18 was controlled (OR=1.97, 95%CI: 0.89–4.38, $p=.09$).

Conclusion—Among Caucasian boys followed into adulthood, childhood ADHD was associated with an elevated rate of homelessness. Findings point to the need for clinical monitoring of childhood ADHD through adolescence, even when ADHD does not persist, in hopes of mitigating a cascade of malfunction that includes homelessness.

Keywords

ADHD; Homelessness; prediction; longitudinal method

INTRODUCTION

On a single night in January 2015, 564,708 people in the US were identified as homeless,¹ yielding an overall national rate of 17.7 per 10,000². Governmental expenditures on homelessness are substantial. For example, in 2015 the US dedicated \$4.5 billion to address homelessness. Beyond economic costs, homelessness has a huge impact on health. Homelessness is associated with elevated rates of tuberculosis, hepatitis C virus, human immunodeficiency virus,^{3,4} and mortality,^{5–11} as well as serious mental disorders^{9, 12–16}, especially substance use disorders.^{3,17,18} In New York State, 88,250 persons were classified as homeless in 2015, a 10% increase over the prior year².

In the prospective, controlled, New York Longitudinal Study, we found that attention-deficit/hyperactivity disorder (ADHD) in childhood was associated with multiple dysfunctions in adulthood^{19–21}; however, we did not report on homelessness, which we had assessed. Here, we examine whether homelessness was increased among the adults who had ADHD in childhood. To our knowledge, this question has not been examined in previous studies concerning predictors of homelessness. For example, a prospective, epidemiological study of adolescents (11–18 years old) reports whether family relationships, school adjustment and victimization experiences predict homelessness six years later (ages 18–28)²², but does not consider ADHD. Similarly, homelessness was examined in a large sample of patients with serious mental disorders, such as schizophrenia, bipolar disorder or major depression, and also in a systematic review that included alcohol and drug dependence, psychotic illnesses, and personality disorders. Neither study considered ADHD^{13, 18}.

Two studies of homelessness, both cross-sectional, have considered ADHD as a risk factor. A survey of 81 homeless veterans found a high rate of ongoing ADHD (62%)²³. The authors note that “none of the patients or their clinicians had considered ADHD a possible influence on their lives.” Among 192 incarcerated women, homelessness during the previous year was significantly elevated among those who met scale criteria for childhood ADHD, established retrospectively by means of self-ratings on the Wender Utah Rating Scale²⁴. Thus, neither of the investigations that report on ADHD among homeless individuals relied on diagnoses of ADHD obtained in childhood.

In this report we examine whether childhood ADHD predicts homelessness in adults from the New York Longitudinal Study of ADHD, which followed children with ADHD for 33 years, on average, along with matched comparisons^{20, 25}. We hypothesized that probands with childhood ADHD (without conduct disorder when recruited) would have increased rates of homelessness in adulthood relative to comparisons. In addition, we report whether ADHD contributes to an excess of homelessness in probands, after accounting for the development, in adolescence, of conduct disorder, non-alcohol substance use disorder, having ever been arrested, or dropping out of school, at follow-up 18 (FU18). We also expected that probands whose ADHD had persisted through adolescence, as established at FU18, would have an elevated rate of homelessness compared to probands whose ADHD at FU18 had remitted.

METHOD

The study was approved by the institutional review board of the New York University Langone Medical Center. Participants were informed fully of study procedures and provided written consent. Because the study design and sample are detailed elsewhere,^{25–27} they are briefly summarized.

Probands

Originally, probands were 207 Caucasian boys, 6 to 12 years of age (mean 8.3 ± 1.6 years) referred by schools between 1970 and 1978 because of behavioral problems. They had to have a previous history of pervasive hyperactivity, and elevated parent and teacher scales of hyperactivity, IQ 85 on the Wechsler Intelligence Scale for Children²⁸, have English speaking parents and a diagnosis of *DSM-II* Hyperkinetic Reaction of Childhood²⁹ based on a comprehensive clinical psychiatric evaluation with parent and child. Children with a pattern of aggressive or antisocial behavior were excluded, to ensure that children's disorder was limited to ADHD, avoiding a confound with conduct disorder. As explained elsewhere³⁰, probands would have met criteria for *DSM-IV* ADHD, combined type.

At FU41, 135/207 probands (65%) were evaluated (mean age 41.4 ± 2.9). Of the 72 lost to follow-up, 21 were not located; 13 refused; information was not obtained for 11/15 deceased; interviews were denied in 4/6 incarcerated probands; and grant support ended before 23 were evaluated. Childhood characteristics of assessed and lost probands did not differ significantly.

Comparisons

Comparisons were identified at FU18. They consisted of 178 Caucasian boys from the same community who had been seen in the same medical center as probands for routine physical examinations or acute conditions (no chronic disorders) between ages 6 and 12 and had no history of ADHD in childhood. They were group matched for age and socioeconomic status with probands.

Of the 178 comparisons, 136 (76.4%) were evaluated at FU41 (mean age, 41.5 ± 3.2). Of the 42 comparisons lost to follow-up, 20 were not located; 15 refused; informants were not

available for 2/5 deceased; one was incarcerated; grant funds ended before four were scheduled.

Follow-Ups and Assessment at Mean Age 41

Probands were reevaluated in late adolescence (FU18, $n=195/207$, 94% retention)^{25,26}. Both probands and comparisons were evaluated in young adulthood (FU25)³¹ and again in adulthood (FU41)^{19–21}. At each follow-up, participants were interviewed in person by trained clinicians blind to group membership and all previous information, with inquiry about psychiatric history and multiple aspects of function. From the clinical information, we generated definite and probable diagnoses. Definite diagnoses indicate that full *DSM* criteria were met. Probable diagnoses were assigned when the person reported less than the full criteria for a disorder, but these symptoms caused significant functional impairment. In the present report, we combined definite and probable disorders, as we have done elsewhere.^{19,20} The rationale is that those with probable disorders are typically treated in clinical centers. Importantly, they are more similar to individuals with definite disorders than to non-ill individuals^{19–21, 32}. Details appear in previous publications.^{19–21,25,26}

Information about homelessness was collected at FU41 (because homelessness was not assessed at FU25, the data from this wave are not considered). Homelessness was assessed with the question “Have you ever been homeless, that is, without a permanent residence, without a fixed address, for longer than one week?” If the participant replied affirmatively, we inquired about number of times, longest continuous duration, total duration, and where the person lived while homeless (i.e., “stayed with friends or relatives,” “stayed in shelters,” “slept on the street, in subway stations, in cars, etc.”). If a person had more than one homelessness event, the most severe was indexed (thus, if both living on the street and staying with friends had occurred, living on the street was indexed).

Selection of Covariates

The study goal was to assess whether childhood ADHD had a specific, significant relationship to homelessness in adulthood, independently of other features that might influence risk of homelessness. For this purpose, we selected major dysfunctions that characterized the probands’ adolescent development. As such, they had to be significantly more prevalent in the probands than the comparisons between ages 13 and 18. In addition, the differences were consistent with features related to homelessness in previous studies^{13,33,34} (i.e., conduct disorder and drug dependence). The covariates included: development of conduct disorder, of non-alcohol substance use disorder (SUD), having been arrested, and dropping out of school (prior to high school graduation). Alcohol related disorders were not included because their rate did not differ between probands and comparisons at FU18.

Data Analyses

Group contrasts relied on unpaired *t* test and uncorrected χ^2 for dichotomous variables. We carried out a hierarchical logistic regression analysis where the covariates were entered in Step 1, and childhood ADHD was entered in Step 2. To test whether ADHD is a significant

contributor to homelessness, above and beyond the other characteristics, we conducted a likelihood ratio test with one degree of freedom.

To test the relationship between persistence of ADHD at FU18 and homelessness, we performed a hierarchical logistic regression as described above, only among probands, where covariates were entered in Step 1 and ADHD at FU18, in Step 2. Alpha was set at 0.05, two tailed.

RESULTS

Due to missing data at FU41 for 1/135 probands, the report is based on 134 probands. No comparison had missing data. Characteristics of probands and comparisons at FU41, and of probands grouped by whether or not they had ever been homeless, are presented in Table 1. Relative to probands that had never been homeless, those who had been homeless had elevated rates of mental disorders, had completed fewer years of education, and were more likely to have dropped out of school.

Rate of Homelessness in Probands and Comparisons

As hypothesized, homelessness was significantly more frequent among probands than comparisons. Of the 134 probands, 32 (23.9%) had been homeless at least once, versus 6/136 (4.4%) comparisons ($\chi^2_{(1)} = 21.15, p=.001$). Characteristics of homeless periods, duration, and number of times are summarized in Table 2. More than half of homeless probands had lived on the street or in a shelter, while the majority of the few comparisons who experienced homelessness stayed with family or friends. Also, probands had longer continuous duration, longer total duration, and more times being homeless than comparisons.

Specific Relationship Between Childhood ADHD and Homelessness

A test of a specific association between ADHD and homelessness was justified by the finding that probands experienced significantly more homelessness than comparisons. When entered into a hierarchical logistic regression analysis that included conduct disorder, non-alcoholic SUD, having dropped out of school and having ever been arrested between ages 13 and 18 in model 1 and childhood ADHD in model 2, probands remained at significantly higher risk of homelessness than comparisons (OR= 3.60, 95% CI: 1.32–9.76, $p=.01$). Moreover, adding ADHD significantly improved the model fit (difference in log likelihood = 7.11, $p<.01$). Also contributing independently to homelessness was having dropped out of school (OR=3.04, 95% CI: 1.26–7.37, $p=.01$) and non-alcoholic SUD (OR=2.45, 95% CI: 1.00–5.97, $p=.05$). Results of the hierarchical logistic regression analysis are summarized in Table 3.

When repeating the above analysis excluding participants who had stayed with friends/family while homeless, i.e., including only participants who lived on the street, probands remained at statistically significantly higher risk of homelessness than comparisons (OR=5.16, 95% CI:1.07–24.98, $p=.04$). Dropping out of school remained as a statistically significant feature (OR=4.00, 95% CI:1.25–12.76, $p=.02$).

Persistent ADHD and Homelessness

A substantial proportion of probands (40%) continued to have ADHD when evaluated at FU18.^{25,35} Accounting for the contribution of covariates, persistence of ADHD was not a significant predictor of homelessness (OR=1.02, 95%CI:0.41;2.56).

DISCUSSION

To our knowledge, this is the first prospective follow-up of boys with ADHD reporting on homelessness in adulthood. Previous reports have documented that ADHD in childhood predicts several interrelated negative outcomes, especially antisocial personality disorder, criminality, and substance use disorder. However, it does not necessarily follow that homelessness, a highly undesirable life event, should be inevitable, and the question of this relationship deserves examination.

As we hypothesized, among this cohort of boys with ADHD, who were free of childhood conduct disorder at referral, ADHD substantially increased the risk of homelessness. The absence of conduct disorder when children were recruited is important because it might influence the likelihood of future homelessness, complicating knowledge of the role of ADHD per se. The association between childhood ADHD and homelessness remained statistically significant after adjusting for the development of conduct disorder, non-alcohol SUD, school dropout and having been arrested at FU18 (OR=3.60). This finding suggests that having ADHD in childhood was, in itself, a predictor of homelessness above and beyond multiple negative developments in adolescence. However, it is important to note that ADHD was not the only independent influence. Also contributing independently to homelessness was having dropped out of school (OR=3.04) and having a history of non-alcohol SUD (OR=2.45). Although inferences about such associations are speculative, the identification of childhood ADHD, school drop-out and non-alcohol SUD as contributors to homelessness suggest that indirect complications of childhood ADHD during adolescence may demand special strategies to enhance long-term social benefits in children with ADHD. The design of this study does not allow the identification of intervening mechanisms between childhood ADHD and later homelessness. A possible conjecture may be that a fair proportion of children with ADHD fail to develop adequate social networks and support that, in turn, fail to provide the resources necessary to avoid homelessness, under difficult economic or other circumstances.

We also hypothesized that the persistence of ADHD would have a significant negative influence on the probability of homelessness. Indeed, boys whose ADHD had persisted through adolescence experienced relatively more homelessness than those whose ADHD had remitted. However, in contrast to the above associations, persistence of ADHD was not significantly related to homelessness when the influence of conduct disorder was accounted for. These findings point to the importance of childhood ADHD, independent of whether or not it continued into adolescence, in predicting homelessness. This pattern of outcome regarding homelessness differs from what we found when examining other negative outcomes, such as the development of antisocial disorder, non-alcohol substance use disorder, and criminality^{20, 30}. These outcomes, which influenced quality of life negatively, were all accounted for by the persistence of ADHD. In late adolescence, children who no

longer had ADHD did not have a greater level of these dysfunctions compared to their non-ADHD peers. Does homelessness present a special case? Replication of our finding is important to ensure that the relationship between childhood ADHD and homelessness, independent of other preceding developments, is not a chance finding.

It is also important to know whether aspects of homelessness, not merely its occurrence, are affected by childhood ADHD. In Table 2, it is apparent that features of homelessness are worse in probands than comparisons. However (and fortunately), statistical contrasts are precluded because only 6 comparisons had ever been homeless.

There may be concern that the study sample, recruited in the 1970's, does not represent current standards for the diagnosis of ADHD. As noted elsewhere²⁰, the children's clinical presentation conforms closely to *DSM-IV* ADHD, combined type (e.g., they had pervasive impairing inattention and hyperactivity/impulsivity, a childhood onset, and ADHD was the salient clinical presentation); as such, they also conform to the *DSM-5* diagnosis.

Twenty-four percent of probands reported having been homeless. This lifetime prevalence is substantially higher than the 11% estimated rate in the adult white population³⁶. However, it is difficult to compare our rates to population prevalence. Our definition of homelessness (at least one week) differs from the one used by government agencies that consider homelessness based on a cross-sectional point in time, such as on any one night. Thus, we assume the rate in our sample would have been even higher had we not required a minimum one week duration. Moreover, the average age of our sample was 41, and not yet at the limit of risk; our sample did not include children from disadvantaged socioeconomic background, females, nor ethnic/racial minorities.^{1,3,12,37}

Foster care has been identified as a precursor of homelessness.³⁸ In this study, only one proband had been in foster care, for a few days. Similarly, other childhood experiences that have been related to homelessness, such as group home placement³⁸ and experiences of victimization,²² were absent among probands.

Although we obtained information regarding multiple features of homelessness, we did not inquire about its timing. Missing age at the time of homelessness precludes identifying factors that might have preceded homelessness, and played an influential role. For example, among the 32 probands who had been homeless, 21 (66%) had been incarcerated versus 27% of those who had not been homeless. We do not know whether incarceration anteceded homelessness and possibly influenced its occurrence. If it were so, it would add another specific negative consequence of incarceration, in addition to those that have received considerable critical attention recently.³⁹

Inevitably, in naturalistic designs such as this clinical longitudinal study, intervening developments might be responsible for significant longitudinal relationships. Inference of cause from naturalistic studies is impossible. Nevertheless, because ADHD preceded homelessness, we may conclude that the disorder predicted it, even if we cannot assume a causal relationship.

Identifying early predictors of homelessness should help illuminate possible targets for prevention programs. The most immediate implication would appear to be ensuring that children with ADHD continue to be followed for extended periods. The concurrent efficacy of treatment is well established, but interventions are typically relatively brief.⁴⁰ In the case of childhood ADHD, our data suggest that continued clinical attention should be applied, even if the disorder's active symptoms are no longer evident.

Acknowledgments

This research was supported by National Institutes of Health (NIH) grants R01MH18579 (R.G.K.), T32 MH067763 (F.X.C.), and R01DA016979 (F.X.C.). M.R.O. was supported by a Robert Wood Johnson Foundation New Connections Junior Investigator Award. L.G.M. was supported by an Advanced Training Fellowship from the Alicia Koplowitz Foundation, Spain.

Dr. Ramos-Olazagasti served as the statistical expert for this research.

The authors thank the Alicia Koplowitz Foundation for supporting Child and Adolescent Psychiatry.

References

1. Henry, M., Shivji, A., de Sousa, T., Cohen, R. Abt Associates inc. The 2015 Annual Homeless Assessment Report (AHAR) to Congress. Washington, DC: The U.S. Department of Housing and Urban Development; 2015.
2. National Alliance to End Homelessness. The State of Homelessness in America 2016. Washington, DC: National Alliance to End Homelessness; 2015.
3. Salit SA, Kuhn EM, Hartz AJ, Vu JM, Mosso AL. Hospitalization costs associated with homelessness in New York City. *N Engl J Med*. 1998; 338(24):1734–1740. [PubMed: 9624194]
4. Beijer U, Wolf A, Fazel S. Prevalence of tuberculosis, hepatitis C virus, and HIV in homeless people: a systematic review and meta-analysis. *Lancet Infect Dis*. 2012; 12:859–870. [PubMed: 22914343]
5. Nordentoft M, Wandall-Holm N. 10 year follow up study of mortality among users of hostels for homeless people in Copenhagen. *BMJ*. 2003; 327(7406):81–81. [PubMed: 12855527]
6. Shaw M, Dorling D. Mortality among street youth in the UK. *Lancet*. 1998; 352(9129):743.
7. Hwang SW. Mortality among men using homeless shelters in Toronto, Ontario. *JAMA*. 2000; 283:2152–2157. [PubMed: 10791509]
8. Roy E, Haley N, Leclerc P, Sochanski B, Boudreau JF, Boivin JF. Mortality in a cohort of street youth in Montreal. *JAMA*. 2004; 292:569–574. [PubMed: 15292082]
9. Nielsen SF, Hjorthøj CR, Erlangsen A, Nordentoft M. Psychiatric disorders and mortality among people in homeless shelters in Denmark: a nationwide register-based cohort study. *Lancet*. 2011; 377:2205–2214. [PubMed: 21676456]
10. Barrow SM, Herman DB, Cordova P, Struening EL. Mortality among homeless shelter residents in New York City. *Am J Public Health*. 1999; 89:529–534. [PubMed: 10191796]
11. Hibbs JR, Benner L, Klugman L, et al. Mortality in a cohort of homeless adults in Philadelphia. *N Engl J Med*. 1994; 331:304–309. [PubMed: 8022442]
12. Beijer U, Andreasson S. Gender, hospitalization and mental disorders among homeless people compared with the general population in Stockholm. *Eur J Public Health*. 2010; 20(5):511–516. [PubMed: 20371499]
13. Fazel S, Khosla V, Doll H, Geddes J. The prevalence of mental disorders among the homeless in western countries: systematic review and meta-regression analysis. *PLoS Med*. 2008; 5(12):e225. [PubMed: 19053169]
14. Stergiopoulos V, Cusi A, Bekele T, et al. Neurocognitive impairment in a large sample of homeless adults with mental illness. *Acta Psychiatr Scand*. 2015; 131(4):256–268. [PubMed: 25604122]

15. Bassuk EL, Rubin L, Lauriat A. Is homelessness a mental health problem? *Am J Psychiatry*. 1984; 141:1546–50. [PubMed: 6209990]
16. Fichter MM, Quadflieg N. Prevalence of mental illness in homeless men in Munich, Germany: results from a representative sample. *Acta Psychiatr Scand*. 2001; 103(2):94–104. [PubMed: 11167311]
17. Beijer U, Andreasson A, Agren G, Fugelstad A. Mortality, mental disorders and addiction: a 5-year follow-up of 82 homeless men in Stockholm. *Nord J Psychiatry*. 2007; 61(5):363–368. [PubMed: 17990198]
18. Folsom DP, Hawthorne W, Lindamer L, et al. Prevalence and risk factors for homelessness and utilization of mental health services among 10,340 patients with serious mental illness in a large public mental health system. *Am J Psychiatry*. 2005; 162(2):370–376. [PubMed: 15677603]
19. Ramos Olazagasti MA, Klein RG, Mannuzza S, et al. Does childhood attention-deficit/hyperactivity disorder predict risk-taking and medical illnesses in adulthood? *J Am Acad Child Adolesc Psychiatry*. 2013; 52(2):153–162. e154. [PubMed: 23357442]
20. Klein RG, Mannuzza S, Olazagasti MA, et al. Clinical and functional outcome of childhood attention-deficit/hyperactivity disorder 33 years later. *Arch Gen Psychiatry*. 2012; 69:1295–1303. [PubMed: 23070149]
21. Cortese S, Ramos Olazagasti MA, Klein RG, Castellanos FX, Proal E, Mannuzza S. Obesity in men with childhood ADHD: a 33-year controlled, prospective, follow-up study. *Pediatrics*. 2013; 131:e1731–1738. [PubMed: 23690516]
22. van den Bree MB, Shelton K, Bonner A, Moss S, Thomas H, Taylor PJ. A longitudinal population-based study of factors in adolescence predicting homelessness in young adulthood. *J Adolesc Health*. 2009; 45(6):571–578. [PubMed: 19931829]
23. Lomas B, Gartside PS. Attention-deficit hyperactivity disorder among homeless veterans. *Psychiatr Serv*. 1997; 48(10):1331–1333. [PubMed: 9323755]
24. Hennessey KA, Stein MD, Rosengard C, Rose JS, Clarke JG. Childhood attention deficit hyperactivity disorder, substance use, and adult functioning among incarcerated women. *J Atten Disord*. 2010; 14(3):273–280. [PubMed: 19773601]
25. Gittelman R, Mannuzza S, Shenker R, Bonagura N. Hyperactive boys almost grown up. I. Psychiatric status. *Arch Gen Psychiatry*. 1985; 42(10):937–947. [PubMed: 4037987]
26. Klein RG, Mannuzza S. Long-term outcome of hyperactive children: a review. *J Am Acad Child Adolesc Psychiatry*. 1991; 30(3):383–387. [PubMed: 2055874]
27. Mannuzza S, Klein RG, Konig PH, Giampino TL. Hyperactive boys almost grown up. IV. Criminality and its relationship to psychiatric status. *Arch Gen Psychiatry*. 1989; 46(12):1073–1079. [PubMed: 2589922]
28. Wechsler, D. Wechsler intelligence scale for children, revised. New York: Psychological Corporation; 1974.
29. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 2. Washington, DC: American Psychiatric Association; 1968.
30. Mannuzza S, Klein RG, Moulton JL 3rd. Lifetime criminality among boys with attention deficit hyperactivity disorder: a prospective follow-up study into adulthood using official arrest records. *Psychiatry Res*. 2008; 160(3):237–246. [PubMed: 18707766]
31. Mannuzza S, Klein RG, Bessler A, Malloy P, LaPadula M. Adult psychiatric status of hyperactive boys grown up. *Am J Psychiatry*. 1998; 155(4):493–498. [PubMed: 9545994]
32. Cortese S, Imperati D, Zhou J, et al. White matter alterations at 33-year follow-up in adults with childhood attention-deficit/hyperactivity disorder. *Biol Psychiatry*. 2013; 74(8):591–598. [PubMed: 23566821]
33. McCaskill PA, Toro PA, Wolfe SM. Homeless and matched housed adolescents: a comparative study of psychopathology. *J Clin Child Psychol*. 1998; 27(3):306–319. [PubMed: 9789190]
34. Booth RE, Zhang Y. Conduct disorder and HIV risk behaviors among runaway and homeless adolescents. *Drug Alcohol Depend*. 1997; 48(2):69–76. [PubMed: 9363405]
35. Mannuzza S, Klein RG, Bonagura N, Malloy P, Giampino TL, Addalli KA. Hyperactive boys almost grown up. V. Replication of psychiatric status. *Arch Gen Psychiatry*. 1991; 48(1):77–83. [PubMed: 1984764]

36. Link BG, Susser E, Stueve A, Phelan J, Moore RE, Struening E. Lifetime and five-year prevalence of homelessness in the United States. *Am J Public Health.* 1994; 84(12):1907–1912. [PubMed: 7998628]
37. Susser ES, Lin SP, Conover SA. Risk factors for homelessness among patients admitted to a state mental hospital. *Am J Psychiatry.* 1991; 148(12):1659–1664. [PubMed: 1957927]
38. Susser ES, Lin SP, Conover SA, Struening EL. Childhood antecedents of homelessness in psychiatric patients. *Am J Psychiatry.* 1991; 148(8):1026–1030. [PubMed: 1853951]
39. Aizer A, Doyle JJ. Juvenile Incarceration, Human Capital, and Future Crime: Evidence from Randomly Assigned Judges. *The Quarterly Journal of Economics.* 2015; 130(2):759–803.
40. Molina BS, Hinshaw SP, Swanson JM, et al. The MTA at 8 years: prospective follow-up of children treated for combined-type ADHD in a multisite study. *J Am Acad Child Adolesc Psychiatry.* 2009; 48(5):484–500. [PubMed: 19318991]

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Clinical Guidance

- ADHD places children at risk for negative outcomes including homelessness.
- Adolescence represents a particularly vulnerable developmental period for children with ADHD.
- Clinicians should anticipate the importance of maintaining monitoring of children throughout adolescence.
- Effort should be focused on recognizing the path to dropping out of school, and of substance use.

Table 1

Sample Characteristics at Follow-Up at Mean Age 41

Variables	PROBANDS		COMPARISONS	
	TOTAL (n=134)	HOMELESSNESS		TOTAL (n=136) ^a
		Absent (n=102)	Present (n=32)	
	Mean (SD)/n (%)	Mean (SD)/n (%)	Mean (SD)/n (%)	Mean (SD)/n (%)
Age (years)	41.4 (2.9)	41.3 (3.1)	41.8 (2.4)	41.5 (3.2)
SES ^b	2.9 (1.0)	2.9 (1.0)	2.7 (1.0)	3.2 (1.1)
Education (years)	13.3 (2.1)	13.5 (2.2)	12.4 (1.5) ^c	15.8 (2.3)
Marital Status				
Married/Cohabiting	94 (70.1)	73 (71.6)	21 (65.6) ^c	107 (78.6)
Separated	15 (11.2)	9 (8.8)	5 (15.6) ^c	12 (8.8)
Single (never married)	13 (9.7)	12 (11.7)	1 (3.1) ^c	13 (9.6)
Divorced	13 (9.7)	8 (7.8)	5 (15.6) ^c	4 (2.9)
Lifetime diagnoses ^c				
Conduct disorder	84 (62.7)	56 (54.9)	28 (87.5) ^c	36 (26.5)
Nicotine dependence	81 (60.4)	53 (52.0)	28 (87.5) ^c	42 (30.9)
SUD (non-alcohol)	76 (56.7)	48 (47.1)	28 (87.5) ^c	52 (38.2)
Any mood disorder	66 (49.2)	50 (49.0)	16 (50.0)	58 (42.6)
SUD (alcohol)	61 (45.5)	42 (41.2)	19 (59.4)	56 (41.2)
Antisocial personality	44 (32.8)	24 (23.5)	20 (62.5) ^c	5 (3.7)
Any anxiety disorder	25 (18.6)	15 (14.7)	9 (28.1)	28 (20.6)
Dropped out of school	51 (38.1)	29 (28.4)	22 (68.7) ^c	10 (7.3)

Note: SES = socioeconomic status; SUD = substance use disorder.

^aOf 136 comparisons, 6 were homeless, too few for meaningful contrasts.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Socioeconomic status. 1 is lowest, 5 highest.
 $p < .01$ between homeless and non-homeless probands.

Table 2Features of Homelessness in Probands and Comparisons^a

Variables	Probands (n=32)		Comparisons (n=6)	
	Mean (SD)/n (%)	Median (min-max)	Mean (SD)/n (%)	Median (min-max)
Place stayed while homeless ^b				
Street-Shelter	19 (59.4)		2 (33.3)	
Family-Friends	13 (40.6)		4 (66.6)	
Longest continuous duration of homelessness (months)	10.7 (17.8)	3.5 (1–78)	2.0 (1.3)	2.0 (0–4)
Total duration of homelessness (months)	15.5 (22.9)	6.0 (1–96)	2.5 (1.8)	2.0 (0–5)
Number of homeless periods	2.3 (2.8)	1.0 (1–12)	1.3 (0.5)	1.0 (1–2)

^aPresented for information's sake. Small n (n=6) precludes meaningful statistical contrasts.^bIf more than 1 episode was reported, the most severe is presented

Hierarchical Logistic Regression Analysis That Entered the Covariates in Model 1 and Childhood Attention-Deficit/Hyperactivity Disorder (ADHD) in Model 2

Table 3

PREDICTORS of HOMELESS	Never homeless (n=232) Mean (SD) or n (%)	Ever Homeless (n=38) Mean (SD) or n (%)	Model 1			Model 2		
			OR	95% CI	p	OR	95% CI	p
Ever arrested	58 (25%)	20 (54%)	0.95	0.37–2.42	.91	0.81	0.30–2.17	.67
Dropped out of school	38 (16%)	23 (60%)	3.64	1.50–8.84	<.01	3.04	1.26–7.37	.01
Conduct disorder	68 (30%)	28 (76%)	2.94	0.97–8.84	.06	2.34	0.75–7.26	.14
Nonalcoholic SUD	34 (15%)	17 (46%)	2.24	0.95–5.30	.07	2.45	1.00–5.97	.05
ADHD	102 (44%)	32 (84%)	---	---	---	3.6	1.32 – 9.76	.01

Note: SUD = substance use disorder.