Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

HHS Public Access

Author manuscript

Acad Pediatr. Author manuscript; available in PMC 2023 May 08.

Published in final edited form as:

Acad Pediatr. 2023 ; 23(4): 722–730. doi:10.1016/j.acap.2022.08.009.

United States Youth Arrest and Health Across the Life Course: A Nationally Representative Longitudinal Study

Destiny G. Tolliver, MD[1],
Yale National Clinician Scholars Program, Yale School of Medicine New Haven, Conn

Laura S. Abrams, PhD,
Department of Social Welfare, Luskin School of Public Affairs, University of California Los Angeles

Christopher Biely, MS,
Department of Pediatrics, UCLA Mattel Children's Hospital, University of California Los Angeles

Benjamin P.L. Meza, MD,
Division of General Internal Medicine and Health Services Research, University of California Los Angeles

Adam Schickedanz, MD,
Department of Pediatrics, University of California Los Angeles

Alma D. Guerrero, MD,
Department of Pediatrics, UCLA Mattel Children's Hospital, University of California Los Angeles

Nicholas J. Jackson, PhD,
Division of General Internal Medicine and Health Services Research, University of California Los Angeles

Eraka Bath, MD,
Department of Psychiatry, Semel Institute/NPI, University of California Los Angeles

Nia Heard-Garris, MD,
Department of Pediatrics, Northwestern University Feinberg School of Medicine, Chicago, Ill

Rebecca Dudovitz, MD,
Department of Pediatrics, UCLA Mattel Children's Hospital, University of California Los Angeles

Elizabeth Barnert, MD
Department of Pediatrics, UCLA Mattel Children's Hospital, University of California Los Angeles

Abstract

Address correspondence to Destiny G. Tolliver, MD, Yale National Clinician Scholars Program, Yale School of Medicine, 333 Cedar St, SHM I-456, PO Box 208088, New Haven, CT 06510 (destiny.tolliver@yale.edu).
[1]Dr Tolliver is now with Department of Pediatrics, Boston Medical Center, Boston, Mass.

The authors have no conflicts of interest to disclose.

SUPPLEMENTARY DATA

Supplementary data related to this article can be found online at https://doi.org/10.1016/j.acap.2022.08.009.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Background: Youth are arrested at high rates in the United States; however, long-term health effects of arrest remain unmeasured. We sought to describe the sociodemographic characteristics and health of adults who were arrested at various ages among a nationally representative sample.

Methods: Using the National Longitudinal Study of Adolescent to Adult Health, we describe sociodemographics and health status in adolescence (Wave I, ages 12−21) and adulthood (Wave V, ages 32−42) for people first arrested at age younger than 14 years, 14 to 17 years, and 18 to 24 years, compared to never arrested adults. Health measures included physical health (general health, mobility/functional limitations, death), mental health (depressive symptoms, suicidal thoughts), and clinical biomarkers (hypertension, diabetes). We estimate associations between age of first arrest and health using covariate adjusted regressions.

Results: Among the sample of 10,641 adults, 28.5% had experienced arrest before age 25. Individuals first arrested as children (ie, age <14) were disproportionately Black, compared to White. Compared to individuals never arrested, people arrested before age 25 had more depressive symptoms and higher rates of suicidal thoughts during adolescence. Arrest before age 25 was associated with worse self-reported health, higher rates of functional limitations, more depressive symptoms, and greater mortality by adulthood (ages 32−42).

Conclusions: Arrest before age 25 was associated with worse physical and mental health–and even death in adulthood. Child arrest was disproportionately experienced by Black children. Reducing arrests of youth may be associated with improved health across the life course, particularly among Black youth, thereby promoting health equity.

Keywords

health inequities; juvenile justice system; youth arrest

In 2019, US law enforcement made nearly 700,000 arrests of children and adolescents under age 18.[1] Interactions with police, from police stops to arrests, are traumatic and stressful.[2–9] They are particularly challenging for youth and emerging adults (ie, people under age 25) as they are at critical stages of mental, physical, and social development. Young children may be especially vulnerable to detrimental effects of arrest because they often lack the developmental maturity and abstract reasoning to understand the legal process.[2,10–12] Although developmental immaturity is sometimes considered in determining incompetency to stand trial,[10] of the over 700,000 cases prosecuted annually in US juvenile courts, 3.6% are of children under 12 years old, and nearly 1 in 5 are children under age 14,[13] underscoring the need to address the impact of criminal legal contact on health for this population. Although researchers have examined associations between age of incarceration and health,[12] postadjudication placement occurs in less than 10% of juvenile court cases.[13] However, criminal legal system involvement (a term used here to encompass both adult and juvenile systems, as some youth are ineligible or excluded from the juvenile system) encompasses police stops, arrest, adjudication, incarceration, and other forms of court supervision—all of which may impact health through allostatic load and disrupting health-promoting behaviors.[11] Therefore, it is important to consider the broad range of experiences with law enforcement in the lives of children, adolescents, and young adults when considering the health impact of the criminal legal system.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Incarcerated youth have high rates of unmet physical health,[14–16] mental health,[16] and material needs.[17,18] Studies examining criminal legal system involvement beyond incarceration—including arrest and police exposures—have demonstrated associations between police contact and worse mental health and call for further research in this domain.[3,5,7,9,17–21] Despite this emerging knowledge,[5,9] no nationally representative studies have measured associations between arrest at different developmental stages and both physical and mental health during adolescence and adulthood, particularly using clinical biomarkers. Understanding the health of adolescents who experience arrest can inform policies that address their health needs. Additionally, understanding the health of people over time lays the groundwork for identifying population health needs later in life. Therefore, this descriptive study seeks to characterize the sociodemographic characteristics and health status—both in adolescence and adulthood—of individuals who experienced youth arrest in the United States.

Methods

Study Design

We analyzed data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a nationally representative US cohort followed from 1994 to 2018.[22] The Wave I survey was conducted among adolescents in grades 7 to 12 (ages 12–21 years old) in 1994 to 1995, and included questions about health, social determinants of health, and family attributes. Each Wave I participant was eligible for subsequent Waves of data collection.[22] In 2008, 15,701 (76% of Wave I participants) respondents aged 24 to 32 years (including individuals in correctional settings) completed Wave IV interviews, which included questions on criminal legal system involvement. Wave V was conducted in 2016 to 2018 among 12,300 adults aged 32 to 42 years to collect social, environmental, behavioral, and biological data to assess the emergence of chronic health conditions. Our study included the 10,614 adults who participated in Waves I, IV, and V, had valid sample weights, and had complete data on the primary variable (age of arrest).

Measures

Age of Arrest—In Wave IV, participants were asked questions about criminal legal system involvement, including whether they had been arrested, number of arrests, age of arrests, and at what age their first arrest occurred. To focus on health over time for pediatric patients, our analysis centered on youth—individuals 24 years old and younger—who experienced arrest. We identified participants arrested for the first time as children under age 14, an age selected based on recommendations from the United Nations Convention on the Rights of the Child[23]; adolescents, defined as 14 to 17 years old because this older age group is still covered by most states' juvenile criminal legal systems; young adults, defined as 18 to 24 years old because neuroscientific advances demonstrate this group is still experiencing rapid brain development[24]; adults, defined as people 25 years or older; and finally people who had never been arrested.

Demographics—We analyzed Wave I demographics including self-reported sex, race, and ethnicity (Appendix A). We selected these variables because there are gender and racial

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

disparities in arrest rates.[2] We combined race and ethnicity variables to form categories of White non-Hispanic, Black non-Hispanic, Hispanic, and Other (combined due to small sample size, this group included people who selected Asian or Pacific Islander, American Indian or Native American, or other race). Because household factors are associated with criminal legal system involvement, we examined household characteristics including income, parental education level, and family household structure.[15]

Health Measures—Health measures were selected based on their impact on morbidity and mortality, as demonstrated in prior literature on criminal legal system involvement and health.[12,25] To comprehensively consider the health of the study population, we examined physical and mental health measures, including both self-reported measures and biomarkers. For adolescents and adults, using Wave I and Wave V data, respectively, we examined self-reported overall general health[12]; mobility or functional limitations[12]; depressive symptoms[26]; and suicidal thoughts (Appendix A). We analyzed clinical biomarkers to identify adults with hypertension, diabetes, hyperlipidemia, and elevated weight status according to Add Health standard definitions.

Statistical Analyses

We examined sample characteristics with descriptive statistics. We compared sociodemographic and health characteristics by age at first arrest using the adjusted Wald F test for continuous variables and the Rao-Scott chi-square test for categorical variables. Understanding that bivariate analyses could identify the presence of a difference among categories, but could not characterize that difference, we performed regressions to quantify the association between age at arrest and health measures when the *P* value was less than .05. We performed linear regression for continuous variables and logistic regression for dichotomous variables. Each health measure was regressed on age of first arrest as the independent variable with the never arrested group as the referent group, adjusting for sociodemographic variables (sex, race and ethnicity, Wave I household income, parental education, household structure). Race and ethnicity were included in the model as social categories that are associated with exposure to structural racism,[27,28] which impacts both age of first arrest and health status, and could potentially confound the relationship of interest. We used Add Health survey weighting to account for survey stratification, clustering, and weighting to provide nationally representative population estimates.[29] Wave V sample weights were used for Wave V outcome analyses. Wave I sample weights were used for the analysis of "deceased by Wave V." Analyses were performed in Stata version 14.2 (Stata Corp, College Station, Tex). The study was approved by our institution's institutional review board.

Results

Of the sample of 10,641 adults, 2647 (weighted prevalence, 28.5%) experienced arrest. Of those who had been arrested, 91 (weighted prevalence, 3.3%) were first arrested as children (age <14), 543 (weighted prevalence, 22.2%) as adolescents (ages 14−17), 1537 (weighted prevalence, 58.3%) as young adults (ages 18−24), and 476 (weighted prevalence, 16.3%) as adults (age ≥25). There were 245 individuals (weighted prevalence, 9.5%) who were

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

arrested before completing Wave I (age range 7−19 years), 169 (weighted prevalence, 6.6%) who were arrested at the same age in years as when they completed Wave I (age range 12−19 years), and 2233 (weighted prevalence, 83.9%) who were arrested after Wave I (age range 13−32 years).

Sociodemographic Characteristics and Youth Arrest

All sociodemographic characteristics (sex, race and ethnicity, household income, parental education, household structure) were associated with youth arrest (Table 1). Specifically, most of those first arrested as children or adolescents were male, with differences by sex decreasing as age category increased ($P < .001$). Of those first arrested as children, 48.8% were White, 20.4% were Black, 14.8% were Hispanic, and 16.0% were of another race or ethnicity ($P = .038$). In addition, 45.1% of people arrested as children were from households with income less than $25,000 per year, compared with 27.5% of people arrested as adolescents and 24.4% of people arrested as a young adult ($P = .001$). Over half of people arrested as children lived in households in which the highest level of parental education included a high school diploma or less, compared to 38% of people who had never been arrested ($P = .024$). Just 18.7% of individuals who experienced child arrest lived in households with 2 biological parents, compared with 60.4% of never arrested individuals ($P < .001$).

Youth Arrest and Adolescent and Adult Health Status

Age at first arrest was associated with all the self-reported health measures reported in adolescence (Wave I) and adulthood (Wave V) except mobility limitations in adolescence and suicidal thoughts in adulthood. Table 2 shows bivariate associations between age and self-reported health measures, and Table 3 shows the results of adjusted regression for health measures with statistically significant bivariate associations.

General Health—Bivariate analyses showed that individuals who experienced arrest reported worse mean general health scores in adolescence and in adulthood, compared to never arrested individuals (Table 2). Linear regression demonstrated that individuals arrested in adolescence had worse self-reported general health in adolescence (b = +0.22, $P < .001$) and adulthood (b = +0.24, $P < .001$), compared to those who had never been arrested. First arrest in young adulthood was associated with worse general health in adulthood compared to those who had never been arrested (b = +0.17, $P < .001$; Table 3).

Mobility and Functional Limitations—There was a higher prevalence of functional limitations in adulthood among people who had been arrested ($P = .003$; Table 2) at any age compared to those who had never been arrested. Arrest as a young adult was associated with a 1.5 (95% confidence interval [CI] 1.2, 1.7) times higher odds of functional limitations in adulthood compared to those who had never been arrested (Table 3). There was no association between age of arrest and mobility limitations during adolescence.

Depressive Symptoms—Individuals arrested as children or adolescents reported more depressive symptoms than those arrested at older ages or never arrested (Table 2). In adjusted regression models, compared to those never arrested, depressive symptom scores in

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

adolescence were higher among those arrested as a child (b = +1.00, $P = .035$), adolescent (b = +1.27, $P < .001$), and young adult (b = +0.40, $P = .010$). Arrest was associated with more depressive symptoms in adulthood, with child arrest having the highest coefficient (b = 0.96, $P = .022$) followed by adolescent arrest (b = 0.67, $P = .001$) and young adult arrest (b = 0.41, $P < .001$; Table 3).

Suicidal Thoughts—Suicidal thoughts were common in adolescence among those arrested as children or adolescents (24.9% of people arrested as children and 19.3% of people arrested as adolescents versus 13.1% of never arrested people, $P = .017$; Table 2). In adolescence, adjusted regression showed a 2.7 times higher odds (95% CI 1.1, 6.6) of suicidal thoughts among people first arrested as children, a 2.0 (95% CI 1.4, 2.8) times higher odds among people arrested as adolescents, and a 1.3 (95% CI 1.01, 1.7) times higher odds among people arrested as young adults, compared to adolescents who were never arrested (Table 3). There was no association between age of arrest and suicidal ideation in adulthood.

Youth Arrest and Adult Clinical Biomarkers

Age at first arrest was associated with diabetes and mortality in adulthood. Table 4 shows bivariate associations between age category and clinical biomarkers, and Table 3 shows the results of adjusted regression for health measures that were statistically significant upon bivariate analysis.

Approximately one third of adults who experienced child arrest had diabetes in adulthood, compared with 10.8% of those arrested as adolescents, 5.6% of those arrested as young adults, and 9.4% of those who had never been arrested (Table 4). Child arrest was associated with a 4.2 times higher adjusted odds having diabetes (95% CI 1.4, 12.3) compared to the never arrested group. Of participants who experienced child arrest, 47.7% met criteria for hypertension as adults, more than those arrested as adolescents, young adults, and those who had never been arrested. Upon adjusted regression, there was no significant difference in diagnoses of hypertension among adults who had been arrested at any age group compared with those who had never been arrested. There were no statistically significant differences in the prevalence of hyperlipidemia or weight status (Table 4).

Finally, 1.5% of people arrested as children, 3.2% of those arrested as adolescents, and 2.4% of those arrested as young adults were deceased at the time of adult (Wave V) data collection, compared to 0.8% of those who were never arrested ($P < .001$; Table 4). Arrest as an adolescent was associated with the highest odds of being deceased at the time of adult data collection compared to people who had never been arrested, with an adjusted odds ratio of 3.4 (95% CI 1.7, 6.9; Table 3).

Discussion

This nationally representative study demonstrates that, similar to other national estimates,[30–32] over 1 in 4 US adults has experienced arrest—many during the critical stages of brain development before age 25. This study adds that youth arrest is associated with worse health at different stages of the life course—including higher mortality. People

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

who experienced youth arrest had more depressive symptoms and a higher prevalence of suicidal ideation in adolescence. In adulthood, people who had been arrested had worse general health, more depressive symptoms, were more likely to have diabetes based on clinical biomarkers, and were more likely to have died by adulthood. Finally, we found that Black people were over-represented among people who have been arrested, with wider disproportionalities present for child arrest than older ages. Other studies highlight the racial disparities present at every stage of criminal legal system involvement—including arrest—which are starker among people at the youngest ages.[1,2,13,16,33] This differential exposure to arrest indicates that addressing the health needs of people exposed to the criminal legal system may be an important racial health equity strategy.

Mental Health

Our study highlights that mental health needs are common among arrested youth, a finding that aligns with prior studies.[8,21,34] Mental health and trauma responses are often criminalized, and in our study, we found that adolescents had more depressive symptoms and a 1.3 to 2.7 times higher odds of having suicidal ideation, many prior to their first arrests. This aligns with existing literature which shows that police stops, warnings, or arrests, were associated with increased suicide attempts,[9] underscoring that many youth could benefit from mental health supports before criminal legal system involvement. Additionally, the criminal legal system itself can be traumatizing, contributing to the development of mental health conditions.[2,35] In our study, adults arrested as children, adolescents, or young adults also have more depressive symptoms than people who were never arrested. The high rates of mental health needs among this population demonstrate that improving the screening and treatment of mental health of youth who experience criminal legal system involvement is imperative for all child-serving sectors.

Physical Health

Incarceration as an adolescent or young adult is associated with poor self-reported adult health—including worse general health,[18] functional limitations,[12] and cardiovascular health.[25] Our study extends the self-reported findings from prior studies of incarcerated youth to include arrested youth, and additionally demonstrates, using clinical biomarkers, that arrest at the youngest ages may be associated with a higher prevalence of diabetes. Furthermore, our results indicate that adolescent or young adult arrest is associated with premature death. Prior studies found that police exposures are associated with worse physical health due to injury by law enforcement and increased risk behaviors.[20,36] It is also possible that other social risks lead to both arrest and poor health, making it likely that the relationship we observed between youth arrest and mid-adulthood mortality is multifactorial and multidirectional. Regardless of the mechanistic link, our findings suggest people who experience arrest are at a substantially higher risk for poor health—and even death—and may benefit from health interventions throughout the life course.

Clinical Care and Advocacy Implications

Routine health care can provide longitudinal surveillance, screening, and early intervention for health needs associated with criminal legal system involvement among children, adolescents, and young adults.[2] To address mental health, health care professionals can

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

advocate for increased mental health care access, interventions to mitigate toxic stress,[11] and policies that reduce material hardship.[37] Emphasizing trauma-informed care for youth regardless of the degree of criminal legal system involvement acknowledges and treats youth arrest itself as a potential toxic stressor that is bad for health.[38] Investments in alternate pathways for youth, such as prearrest diversion, that use community-based and in-home supports instead, could reduce youth arrests and connect youth to health-promoting systems instead. To achieve health equity, strategies that provide health care, investments in schools and communities, and develop public policy must specifically address structural racism to reduce exposure to the criminal legal system involvement and narrow disparities.[33,39]

Child health groups, including the American Academy of Pediatrics, have called for a nationwide minimum age of juvenile criminal legal system jurisdiction of at least 12 years, which would prevent child criminal legal system involvement and redirect children to community resources rather than criminalizing behaviors, many of which are developmentally appropriate responses to distress or indicate unaddressed mental health needs.[40,41] Our findings reinforce the need for a federal minimum age as it may protect youth who are vulnerable to poor health from arrest, particularly Black children who experience disproportionate rates of arrests at young ages.[37] In our study, Black children were disproportionately represented at 20.4% of those arrested before age 14, despite making up 14.9% of the US population in 1995.[42] Since Wave I, child arrests have decreased, but racial disparities are widening—in 2019, Black children comprised 35.9% of referrals to juvenile court younger than 14, despite constituting 15.3% of US children.[13] Statutes allowing discretion to determine eligibility for juvenile court jurisdiction aggravate racial disparities, including those stemming from racial discrimination and adultification.[10,43] Our data suggest that minimum age laws and other policies that use nondiscretionary boundaries to redirect youth from the criminal legal system to other supports could impact a substantial child population that is disproportionately Black and lower income. Additionally, reducing community police presence in favor of community investments and addressing youth behaviors as health needs may benefit health across the life course.

Limitations

Due to the data collection approach, our study may be limited by recall bias; however we attempt to mitigate this by incorporating clinical biomarkers into the study. Additionally, our study's power was limited by the lower frequency of child arrest and moderate sample size. Results may be impacted by attrition or censoring in later Waves, due to factors like unmeasured mortality among people who were arrested or inability to complete later surveys while incarcerated. However, we believe the likelihood of this significantly biasing our results is low, because analysis of survey nonresponses has indicated that there is a low rate of bias due to attrition, and concluded that later Waves remain nationally representative.[44] Furthermore, any bias this would create would likely be toward the null, meaning if this had an effect, we anticipate that our results are likely to be more conservative than if those lost to follow-up due to incarceration were fully included. Next, because the study first recruited adolescents using a school-based survey, youth who were not enrolled in school were excluded, and it is possible our findings under-estimate arrests. This is more reason to

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

believe that, if our findings are biased by missing data, the findings we present would be more conservative estimates than if the survey had achieved complete initial and follow-up data collection among the most at-risk participants.

Limitations also include an inability to establish temporal relationships between arrest and health status for people arrested prior to completing Wave I of the survey. However, we know that at least 83.9% of people arrested were arrested after completing the Wave I survey. The exposed group in this study represents a subset of all youth impacted by law enforcement in the sample. From community police presence to police stops, many police encounters do not result in formal criminal legal system involvement, meaning our study may not capture the full extent of the ways legal system contact are linked to health. Additionally, there is likely unmeasured confounding due to factors like preexisting emotional trauma or health needs not included in this descriptive study. Future studies intending to portray a causal relationship between arrest and health status should explore these contextual factors to clearly identify the impact of arrest. Finally, our study describes associations between age of arrest and health, but does not explore gender or sexual identity. The criminal legal system is associated with unique harms to girls and people with marginalized gender and sexual identities, which can intersect with race. Given the racial inequities identified in our study, future studies and interventions should incorporate intersectionality and allow for heterogeneity of effect in their design to address the specific conditions of minoritized groups.[2,45]

Conclusions

Youth who experience arrest are more likely to have worse physical and mental health in adolescence and adulthood. Policies that address structural racism and invest in youth health and social supports—instead of arresting youth—may reduce legal system involvement and improve population health by actualizing greater health equity. Ultimately, we should work to prevent arrest while also addressing the short- and long-term health needs of criminal legal system-involved youth.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

The authors would like to dedicate this work to the millions of people, families, and communities impacted by the criminal legal system.

Financial statement:

Dr Tolliver’s time is funded by the Yale National Clinician Scholars Program and by Clinical and Translational Science award number TL1 TR001864 from the National Center for Advancing Translational Science. Dr Barnert’s time is funded by the National Institute on Drug Abuse (grant K23 DA045747–01), the California Community Foundation (grant BA-19–154836), and the University of California, Los Angeles, Children’s Discovery and Innovation Institute. Dr Schickedanz was funded by the UCLA National Research Service Award Primary Care and Health Services Fellowship, the UCLA/UCSF ACEs Aware Family Resilience Network, and the Eunice Kennedy Shriver National Institute of Child Health and Human Development (fund number K23HD099308). The effort of Drs Barnert, Abrams, Dudovitz, Meza, and Schickedanz is also supported by the Health Resources and Services Administration of the U.S. Department of Health and Human Services’ Life Course Intervention Research Network

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

(UA6MC32492). Dr Bath has received funding from the Los Angeles County Department of Probation and from NIDA of NIH under the American Academy of Child and Adolescent Psychiatry NIDA K12 program, grant no. K12DA000357, the California Community Foundation, and the UCLA Pritzker Center for Strengthening Children and Families. Dr Heard-Garris's effort was supported, in part, by the National Heart, Lung, and Blood Institute (Heard-Garris, 1K01HL147995–01). The contents are solely the responsibility of the authors and do not necessarily represent the official view of National Institutes of Health. The authors' funding sources had no involvement in the study design, collection, analysis, or interpretation of the data, writing of the manuscript, or the decision to submit the article for publication.

References

1. Office of Juvenile Justice and Delinquency Prevention. OJJDP statistical briefing book 2020. Available at: http://www.ojjdp.gov/ojstatbb/crime/JAR_Display.asp?ID=qa05200 Accessed August 9, 2021.
2. Owen MC, Wallace SB. Advocacy and collaborative health care for Justice-involved youth. Pediatrics 2020;146:e20201755. 10.1542/peds.2020-1755. [PubMed: 32376728]
3. Gearhart MC, Bender A, Barnhart S, et al. Youth profiles of police-initiated post-traumatic stress symptomatology. Child Adolesc Soc Work J 2021;39:525–537. 10.1007/s10560-021-00741-4.
4. Gottlieb A, Wilson R. The effect of direct and vicarious police contact on the educational achievement of urban teens. Child Youth Serv Rev 2019;103:190–199. 10.1016/j.childyouth.2019.06.009. [PubMed: 31359898]
5. Jackson DB, Fahmy C, Vaughn MG, et al. Police stops among at-risk youth: repercussions for mental health. J Adolesc Health 2019;65:627–632. 10.1016/j.jadohealth.2019.05.027. [PubMed: 31495640]
6. Jackson DB, Testa A, Vaughn MG, et al. Police stops and sleep behaviors among at-risk youth. Sleep Health 2020;6:435–441. 10.1016/j.sleh.2020.02.006. [PubMed: 32305306]
7. Turney K Depressive symptoms among adolescents exposed to personal and vicarious police contact. Soc Mental Health 2021;11:113–133. 10.1177/2156869320923095.
8. Bácak V, Nowotny KM Race and the association between police stops and depression among young adults: a research note. Race Justice 2020;10:363–375. 10.1177/2153368718799813.
9. Jackson DB, Testa A, Fix RL, et al. Adolescent police stops, self-harm, and attempted suicide: findings from the UK Millennium Cohort Study, 2012−2019. Am J Public Health 2021;111:1885–1893. 10.2105/AJPH.2021.306434. [PubMed: 34554817]
10. Abrams LS, Barnert ES, Mizel ML, et al. When is a child too young for juvenile court? A comparative case study of state law and implementation in six major metropolitan areas. Crime Delinq 2020;66:219–249. 10.1177/0011128719839356.
11. Shonkoff JP, Garner AS, Siegel BS, et al. The lifelong effects of early childhood adversity and toxic stress. Pediatrics 2012;129: e232–46. 10.1542/peds.2011-2663. [PubMed: 22201156]
12. Barnert ES, Abrams LS, Dudovitz R, et al. What is the relationship between incarceration of children and adult health outcomes? Acad Pediatr 2019;19:342–350. 10.1016/j.acap.2018.06.005. [PubMed: 29935252]
13. Sickmund M, Sladky A, Kang W. Easy access to juvenile court statistics: 1985–2018 Online. Available at: https://www.ojjdp.gov/ojstatbb/ezajcs/. Accessed August 9, 2021.
14. Hein K, Cohen MI, Litt IF, et al. Juvenile detention: another boundary issue for physicians. Pediatrics 1980;66:239–245. [PubMed: 7402808]
15. Braverman PK, Murray PJ, Adelman WP, et al. Health care for youth in the juvenile justice system. Pediatrics 2011;128:1219–1235. 10.1542/peds.2011-1757. [PubMed: 22123883]
16. Sedlak AJ, Bruce C. Youth's characteristics and backgrounds: findings from the survey of youth in residential placement. Juv Justice Bull 2010;1:1–12.
17. Sugie NF, Turney K. Beyond incarceration: criminal justice contact and mental health. Am Sociol Rev 2017;82:719–743. 10.1177/0003122417713188.
18. Sundaresh R, Yi Y, Roy B, et al. Exposure to the US criminal legal system and well-being: a 2018 cross-sectional study. Am J Public Health 2020;110:S116–S122. 10.2105/AJPH.2019.305414. [PubMed: 31967880]

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

19. Heard-Garris N, Sacotte KA, Winkelman TNA, et al. Association of childhood history of parental incarceration and juvenile justice involvement with mental health in early adulthood 2020;2:1–11. doi:10.1001/jamanetworkopen.2019.10465.
20. Jindal M, Mistry KB, Trent M, et al. Police exposures and the health and well-being of black youth in the US: a systematic review. JAMA Pediatr 2021;176:78–88. 10.1001/jamapediatrics.2021.2929.
21. Ahuja M, Records K, Haeny AM, et al. The association between experiencing police arrest and suicide ideation among emerging young adults: does race matter? Health Psychol Open 2021;8:20551029211026027. 10.1177/20551029211026027. [PubMed: 34221440]
22. Harris KM, Halpern CT, Whitsel E, et al. The national longitudinal study of adolescent to adult health: research design [WWW document]. 2009.
23. United Nations. United Nations Convention on the Rights of the Child: Children's Rights in Juvenile Justice Geneva: United Nations; 2007.
24. Nikoa Balvin, Prerna Banati, UNICEF. The Adolescent Brain: A Second Window of Opportunity. Innocenti, Florence: A compendium, Miscellanea, UNICEF Office of Research; 2017:1–72. www.unicef-irc.org.
25. Howell BA, Long JB, Edelman EJ, et al. Incarceration history and uncontrolled blood pressure in a multi-site cohort. J Gen Intern Med 2016;31:1496–1502. 10.1007/s11606-016-3857-1. [PubMed: 27619934]
26. Perreira KM, Deeb-Sossa N, Harris KM, et al. What are we measuring? An evaluation of the CES-D across race/ethnicity and immigrant generation. Soc Forces 2005;83:1567–1602. 10.1353/sof.2005.0077.
27. Boyd RW, Lindo EG, Weeks LD, et al. On racism: a new standard for publishing on racial health inequities. Health Aff Blog 2020. 10.1377/hblog20200630.939347. Available at: 10.1377/forefront.20200630.939347/.2020. [Accessed 18 October 2021].
28. Jones CP. Invited commentary: "race," racism, and the practice of epidemiology. Am J Epidemiol 2001;154:299–304. 10.1093/aje/154.4.299. [PubMed: 11495851]
29. Chen P, Harris KM. Guidelines for analyzing add health data 2020. Available at: https://addhealth.cpc.unc.edu/wp-content/uploads/docs/user_guides/GuidelinesforAnalysisofAddHealthData_202004.pdf. Accessed November 1, 2021.
30. Carson EA, Golinelli D. Americans With Criminal Records. *Americans With Criminal Records.* 2012. The Sentencing Project; 2014:1–2.
31. Department of Justice, Office of Justice Programs, Bureau of Justice StatisticsGreenspan O, DeBacco D. Archived | Survey of State Criminal History Information Systems, 2012.. http://www.ojp.usdoj.gov.
32. Brame R, Turner MG, Paternoster R, et al. Cumulative prevalence of arrest from ages 8 to 23 in a national sample. Pediatrics 2012;129:21–27. 10.1542/peds.2010-3710. [PubMed: 22184650]
33. Abrams LS, Mizel ML, Barnert ES. The criminalization of young children and overrepresentation of black youth in the juvenile justice system. Race Soc Probl 2021;13:73–84. 10.1007/s12552-021-09314-7.
34. Dennison CR, Finkeldey JG. Self-reported experiences and consequences of unfair treatment by police. Criminology 2021;59:254–290. 10.1111/1745-9125.12269.
35. Wakefield SM, Baronia R, Brennan S. Depression in justice-involved youth. Child Adolesc Psychiatr Clin N Am 2019;28:327–336. 10.1016/j.chc.2019.02.010. [PubMed: 31076111]
36. Farkas K, Duarte CD, Ahern J. Injuries to children and adolescents by law enforcement: an analysis of California emergency department visits and hospitalizations, 2005–2017. JAMA Pediatr 2021;4:8–10. 10.1001/jamapediatrics.2021.2939.
37. Edmunds C, Alcaraz M. Childhood material hardship and adolescent mental health. Youth Soc 2021;53:1231–1254. 10.1177/0044118X211001896.
38. Testa A, Jackson DB. Adverse childhood experiences and perceived unfair police treatment: differences by race and ethnicity. J Adolesc Health 2022;70:804–809. 10.1016/j.jadohealth.2021.11.030. [PubMed: 35131166]

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

39. Ward JB, Gartner DR, Keyes KM, et al. How do we assess a racial disparity in health? Distribution, interaction, and interpretation in epidemiological studies. Ann Epidemiol 2019;29:1–7. 10.1016/j.annepidem.2018.09.007. [PubMed: 30342887]
40. National Juvenile Justice Network. NJJN Policy Platform: Raise the Minimum Age for Trying Children in Juvenile Court Available at: https://www.njjn.org/uploads/digital-library/updated%20March%2021%20NJJN%20Policy%20Platform_RaiseTheMinimumAge.pdf. Accessed June 10, 2021.
41. American Academy of Pediatrics. Health group statement of support for instituting a minimum age of jurisdiction for juvenile justice involvement 2021. Available at: https://www.aap.org/en/advocacy/juvenile-justice/health-groups-call-for-minimum-age-of-jurisdiction/ Accessed December 10, 2021.
42. U.S. Census Bureau. Statistical Abstract of the United States: 1995 1995. Available at: https://www.census.gov/library/publications/1995/compendia/statab/115ed.html Accessed October 10, 2021.
43. Epstein R, Blake JJ, González T Girlhood Interrupted: The Erasure of Black Girls' Childhood (June 27, 2017). Georgetown Law
44. Harris KM, Halpern CT, Whitsel EA, et al. Cohort profile: the national longitudinal study of adolescent to adult health (Add Health). Int J Epidemiol 2019;48. 10.1093/ije/dyz115.1415-1415k.
45. Crenshaw K Mapping the margins: intersectionality, identity politics, and violence against women of color. Stan L Rev 1990;43: 1241.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

What's New

Individuals who had been arrested as youth had a higher prevalence of physical and behavioral health needs. Black children and low-income children were arrested at disproportionately high rates. Efforts to reduce arrests may improve health equity.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Acad Pediatr. Author manuscript; available in PMC 2023 May 08.

Table 1.

Characteristics of US Adolescents by Age of Arrest,* Add Health Wave I

	Childhood Arrest (Age < 14) (n = 91)	Adolescent Arrest (Age 14–17) (n = 543)	Young Adult Arrest (Age 18–24) (n = 1537)	Adult Arrest (Age > 24) (n = 476)	Never Arrested (n = 7994)	*P* Value†
Sex % (n)						<.001
Male	75.4 (62)	75.1 (382)	70.6 (996)	63.3 (261)	41.0 (2,824)	
Female	24.6 (29)	24.9 (161)	29.4 (541)	36.7 (215)	59.0 (5,169)	
Race and ethnicity % (n)						.038
White	48.8 (46)	66.5 (322)	68.0 (902)	65.9 (263)	69.2 (4,699)	
Black	20.4 (16)	16.6 (111)	17.6 (351)	17.1 (119)	14.4 (1,489)	
Hispanic	14.8 (15)	11.8 (64)	11.0 (190)	11.7 (63)	10.7 (1,088)	
Other	16.0 (13)	5.1 (44)	3.4 (88)	5.4 (30)	5.7 (682)	
Household income % (n)						.001
$0–$24,000	45.1 (31)	27.5 (134)	24.4 (363)	24.4 (117)	20.3 (1,530)	
$25,000–$49,000	26.3 (24)	29.9 (151)	26.9 (405)	21.1 (112)	27.0 (2,065)	
$50,000–$74,000	11.5 (10)	18.5 (96)	18.3 (269)	19.6 (85)	19.1 (1,519)	
$75,000 or more	7.1 (9)	7.5 (55)	10.9 (165)	10.8 (44)	11.5 (985)	
Missing	10.0 (17)	16.6 (107)	19.5 (335)	24.1 (118)	22.0 (1,895)	
Highest level of parental education % (n)						.024
Less than high school	10.8 (8)	10.5 (40)	9.9 (147)	9.8 (47)	8.5 (687)	
High school diploma	41.3 (31)	34.4 (175)	35.5 (472)	36.5 (145)	29.7 (2,138)	
Some college	22.2 (19)	20.6 (113)	19.5 (317)	22.3 (110)	22.6 (1,711)	
College degree or more	25.7 (28)	34.5 (202)	35.1 (564)	31.3 (163)	39.2 (3,267)	
Family household structure % (n)						<.001
Two biological parents	18.7 (22)	39.8 (216)	49.7 (714)	50.9 (210)	60.4 (4,656)	
Two parents (1 or more non-bio parent)	35.9 (33)	22.3 (138)	19.5 (322)	17.0 (101)	14.9 (1,273)	
Single parent	32.4 (28)	31.3 (152)	23.1 (391)	23.2 (118)	20.5 (1,716)	
Other	13.0 (8)	6.6 (37)	7.7 (110)	9.0 (47)	4.2 (349)	

*Values may not add up due to rounding and/or missing data.

†We compared sociodemographic characteristics by age at first arrest using the Rao-Scott chi-square test. A *P* value <.05 indicates a statistically significant difference between age group categories.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 2.

Physical and Mental Health Status Among US Adolescents and Adults by Age of Arrest, Add Health Wave I andWave V

	Health Measures in Adolescence (Wave I)						Health Measures in Adolescence (Wave V)					
	Childhood Arrest (Age < 14) (n = 91)	**Adolescent Arrest (Age 14–17) (n = 543)**	**Young Adult Arrest (Age 18–24) (n = 1537)**	**Adult Arrest (Age > 24) (n = 476)**	**Never Arrested (n = 7994)**	***P* Value**	**Childhood Arrest (Age < 14) (n = 91)**	**Adolescent Arrest (Age 14–17) (n = 543)**	**Young Adult Arrest (Age 18–24) (n = 1537)**	**Adult Arrest (Age > 24) (n = 476)**	**Never Arrested (n = 7994)**	***P* Value**[†]
General health, mean (SD)[*]	2.2 (SD 1.0)	2.3 (SD 0.8)	2.1 (SD 0.8)	2.3 (SD 0.9)	2.1 (SD 0.9)	<.001	2.7 (SD 0.9)	2.7 (SD 0.9)	2.6 (SD 0.9)	2.8 (SD 1.0)	2.4 (SD 1.0)	<.00
Mobility limitations (Wave I), % (n)	4.7 (6)	3.1 (23)	3.1 (54)	2.3 (12)	2.1 (194)	.25	26.5 (24)	25.9 (136)	28.6 (411)	31.7 (158)	23.3 (1,851)	.003
Functional limitations (Wave V), % (n)[†]												
Depressive symptoms, mean (SD)[*]	7.4 (3.8)	7.3 (4.5)	6.5 (4.1)	6.9 (4.6)	6.4 (4.8)	.012	3.3 (2.9)	2.9 (2.5)	2.6 (2.6)	3.0 (3.0)	2.3 (2.5)	<.001
Suicidal thoughts, % (n)[†]	24.9 (22)	19.3 (103)	14.0 (250)	15.2 (72)	13.1 (1,032)	.017	15.0 (16)	9.1 (42)	8.0 (120)	6.1 (32)	6.7 (483)	.067

SD indicates standard deviation.

[*]We used the adjusted Wald F test to determine whether there was a significant difference in means across age of arrest for continuous variables (general health, depressive symptoms). A P value less than .05 was considered statistically significant.

[†]We used the Rao-Scott chi-square test to determine whether there were significant associations between age of arrest and the categorical variables (mobility limitations, functional limitations, and suicidal thoughts).

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Acad Pediatr. Author manuscript; available in PMC 2023 May 08.

Table 3.

Multivariable Regression Analyses Predicting Adolescent Health Status, Adult Health Status, and Adult Clinical Biomarkers Based on Age of Arrest, Add Health Wave I and Wave V

	Adjusted[†]	
Adolescent health measures (Wave I)		
Worse general health[‡]	b	(95% CI)
Never arrested	ref	
Childhood arrest (age <14)	0.11	(−0.18, 0.40)
Adolescent arrest (ages 14−17)	***0.22	(0.11, 0.34)
Young adult arrest (ages 18−24)	0.07	(0.00005, 0.14)
Adult arrest (age >24)	**0.19	(0.07, 0.31)
Depressive symptoms[‡]	b	(95% CI)
Never arrested	ref	
Childhood arrest (age <14)	*1.00	(0.07, 1.93)
Adolescent arrest (ages 14−17)	***1.27	(0.65, 1.90)
Young adult arrest (ages 18−24)	*0.40	(0.10, 0.71)
Adult arrest (age >24)	*0.56	(0.07, 1.05)
Suicidal thoughts[§]	OR	(95% CI)
Never arrested	ref	
Childhood arrest (age <14)	*2.7	(1.1, 6.6)
Adolescent arrest (ages 14−17)	***2.0	(1.4, 2.8)
Young adult arrest (ages 18−24)	*1.3	(1.01, 1.7)
Adult arrest (age >24)	1.4	(0.9, 2.1)
Adult health measures (Wave V)		
Worse general health[‡]	b	(95% CI)
Never arrested	ref	
Childhood arrest (age <14)	0.15	(−0.09, 0.39)
Adolescent arrest (ages 14−17)	***0.24	(0.15, 0.33)

Author Manuscript
Author Manuscript
Author Manuscript
Author Manuscript

		Adjusted[†]
Young adult arrest (ages 18−24)	***0.17	(0.09, 0.25)
Adult arrest (age >24)	***0.32	(0.20, 0.45)
Functional limitations[§]	OR	(95% CI)
Never arrested	ref	
Childhood arrest (age <14)	1.4	(0.7, 2.9)
Adolescent arrest (ages 14−17)	1.3	(0.99, 1.7)
Young adult arrest (ages 18−24)	***1.5	(1.3, 1.8)
Adult arrest (age >24)	***1.7	(1.3, 2.2)
Depressive symptoms[≠]	b	(95% CI)
Never arrested	ref	
Childhood arrest (age <14)	*0.96	(0.14, 1.78)
Adolescent arrest (ages 14−17)	**0.67	(0.30, 1.04)
Young adult arrest (ages 18−24)	***0.41	(0.19, 0.63)
Adult arrest (age >24)	***0.77	(0.38, 1.15)
Adult clinical biomarkers (Wave V)		
Hypertension[§]	OR	(95% CI)
Never arrested	ref	
Childhood arrest (age <14)	1.5	(0.7, 3.4)
Adolescent arrest (ages 14−17)	0.9	(0.6, 1.3)
Young adult arrest (ages 18−24)	1.1	(0.9, 1.4)
Adult arrest (age >24)	1.4	(0.9, 2.3)
Diabetes[§]	OR	(95% CI)
Never arrested	ref	
Childhood arrest (age <14)	**4.2	(1.4, 12.3)
Adolescent arrest (ages 14−17)	1.1	(0.6, 1.9)
Young adult arrest (ages 18−24)	**0.5	(0.3, 0.8)
Adult arrest (age >24)	0.9	(0.4, 2.0)
Deceased at the time of Wave V[§,//]	OR	(95% CI)

Author Manuscript
Author Manuscript
Author Manuscript
Author Manuscript

	Adjusted[†]	
Never arrested	ref	
Childhood arrest (age <14)	1.8	(0.3, 10.3)
Adolescent arrest (ages 14−17)	**3.4	(1.7, 6.9)
Young adult arrest (ages 18−24)	***2.7	(1.6, 4.6)
Adult arrest (age >24)	*2.6	(1.1, 6.3)

OR indicates odds ratio; 95% CI, 95% confidence interval; and ref, reference category.

[†]Model adjusted for sex, race/ethnicity, household income, highest parental education, and family structure.

[‡]Linear regression.

[§]Logistic Regression.

[//]Wave I survey weights used for analysis.

*P value <.05.

**P value <.01.

***P value <.001.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 4.

Clinical Biomarkers Among US Adults by Age of Arrest, Add Health Wave V

	First Arrest at Age <14 (n = 91)	First Arrest at Age 14−17 (n = 543)	First Arrest at Age 18−24 (n = 1537)	First Arrest at Age 25+ (n = 476)	Never Arrested (n = 7994)	*P* Value
Hypertension joint class[*] % (n)	47.7 (13)	36.2 (87)	39.9 (252)	41.2 (80)	30.9 (1,056)	.004
Diabetes joint class[†] % (n)	33.1 (7)	10.8 (22)	5.6 (52)	8.8 (22)	9.4 (336)	.003
Hyperlipidemia joint class[‡] % (n)	6.8 (5)	22.2 (46)	18.6 (118)	21.3 (39)	15.4 (574)	.063
Obesity % (n)	63.5 (20)	41.8 (109)	49.5 (311)	47.7 (101)	47.1 (1,728)	.235
Deceased at the time of Wave V[§] % (n)	1.5 (2)	3.2 (24)	2.4 (48)	2.2 (14)	0.8 (88)	<.001

[*]Respondent has either a blood pressure measure classified as hypertension stage 1 or 2 based on JNC7 OR took an antihypertensive medication in the past 4 weeks OR has ever been diagnosed with high blood pressure or hypertension.

[†]Respondent has either fasting glucose >= 126 mg/dl OR non-fasting glucose >= 200 mg/dl OR HbA1c >= 6.5% OR a self-reported history of diabetes except during pregnancy OR has taken an anti-diabetic medication in the past 4 weeks.

[‡]Respondent has either a self-reported history of high cholesterol or triglycerides OR has taken an antihyperlipidemic medication in the past 4 weeks OR has a fasting TG concentration >= 500 mg/dl OR an LDL-C concentration >= 190 mg/dl.

[§]Wave I survey weights used for analysis.

Acad Pediatr. Author manuscript; available in PMC 2023 May 08.