A Pediatric Profile of a Homeless Patient in San Jose, California

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Abstract: The causes of homelessness are complex and poorly understood. This paper describes the homeless population in Santa Clara County, California in terms of Adverse Childhood Events, Traumatic Brain Injuries (TBIs), and family breakdown. Respondents reported severely traumatic childhoods; 78.7% grew up with an alcohol or drug abuser and 64.6% endured psychological abuse as a child. Seventy-six percent of subjects recalled at least one TBI, 58.4% with loss of consciousness. Nineteen percent were in foster care as children and 40.2% reported having someone other than a parent as a primary caregiver. Fifty-three percent felt they had moved too much as children, and 37.5% had experienced homelessness as children. Santa Clara County has both the highest median income and the highest rate of unsheltered homelessness in the nation. Leaders and community members should work together to improve the lives of the homeless and to prevent another generation of homeless people.

Key words: Homelessness, adverse childhood events, adverse childhood experiences, traumatic brain injury, trauma, abuse, child abuse, foster care, homeless children, homeless youth, homeless people.

Homelessness is a significant public health problem. Undomiciled people experience more infectious and chronic illnesses, mental health disorders, substance use disorders, and trauma due violent crime than the general population.[1,2] They also die at a younger age; the mortality rate among the chronically homeless has been reported to be four to nine times that of the general population, and average life expectancy is 45 years.[1] It is difficult to obtain accurate national and regional estimates of numbers of homeless individuals, but according to the Center for Disease Control, over 610,000 people are estimated to be homeless in the U.S.[1] This study focuses on the San Jose/ Santa Clara, California region, where over 7,600 people are estimated to be homeless

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on a given night.[3] In 2014, a U.S. Department of Housing and Urban Development document stated that the "San Jose/Santa Clara City and County reported the highest rate [of unsheltered homelessness in the nation], with three quarters of its homeless population staying in unsheltered locations."[4][11]

In recent decades, researchers have explored the connections between adverse childhood experiences (ACEs) and homelessness.[5,6] The childhoods of people who eventually become homeless are distinguished by unstable relationships with caregivers.[7,8] Those who ultimately become homeless are much more likely to have had parents leave the family (because of legal processes, relationship problems, or even death), and parents who are far more likely to experience psychiatric disorders, substance use disorders, criminality, and violence.[7,8] Children who become homeless later in life also suffer greater rates of abuse and neglect than children in the general population.[7,8]

A growing body of evidence suggests that the cumulative number of adverse childhood events a person experiences (their "ACE Score") may be predictive of negative adult outcomes, but few studies have specifically studied the severity of adverse childhood experiences among the homeless. One study demonstrated earlier onset of homelessness and more severe substance use patterns with a higher ACE Score.[9] Another study noted a correlation between higher ACE Score and unemployment and social service use.[10] Most of this work has been conducted in predominantly African American and White homeless populations. This study aims to describe the prevalence and severity of adverse childhood experiences among the homeless population of Santa Clara County, which has a large Hispanic population.

There has also been a smaller but growing body of evidence demonstrating a strong correlation between traumatic brain injury (TBI) and homelessness. A review article from 2012 identified eight small studies of variable quality exploring the relationship between homelessness and TBI.[11] It is clear that there is a higher prevalence of TBI among the homeless compared with that of the general population, which is estimated at 24% in rural areas, 15% in urban areas, and 14% in suburban areas.[12] It has been established that people who experience TBIs are more likely to struggle with current life stressors, have difficulty adapting to new situations, and have problems following through on recommendations from health care providers. Additionally, among people who experience more severe TBIs including longer periods of time unconscious after the injury, there are more cognitive and emotional problems. These include poor concentration, difficulty learning new things, difficulty planning and thinking ahead, and depression and anxiety.[13] All of these changes can affect a person's ability to initiate and maintain relationships, employment, and housing. We investigated the age of first TBI, the worst severity of TBI, and the prevalence of TBI across our population.

The breakdown of the childhood home and family plays a significant role in the development of homelessness. Family dysfunction is correlated with adult homelessness. Previous studies have defined seven factors associated with family dysfunction.[5,6,14,15] These include the inadequacy of nurturing constancy, poor residential stability, inadequate income, dependence on public assistance, family violence, parental criminality, parental mental illness, and parental substance abuse.[14] The latter four factors were wrapped into the ACE Score, but we believe the former three may be important pieces of the homelessness puzzle. It has been established that parenting and attachment play

a substantial role in the development of resilience and healthy coping strategies. We decided to investigate the constancy of the primary caregiver for the child, the involvement in formal and informal foster care, the constancy of the child's home, and the experience of childhood homelessness in our population.

The overall purpose of this study was to describe the pediatric profile of a homeless person in Santa Clara County, California. To that end, we utilized a three pronged approach, investigating: (1) the childhood prevalence and severity of ACEs, (2) TBIs, and (3) home breakdown in the lives of our county's homeless.

Methods

We used a convenience sample of homeless people who were obtaining health care at the two clinic sites of the Santa Clara County Homeless Program between August 2013 and May 2014. The study was conducted until research assistants reached their goal of greater than 120 patient surveys completed. The homeless clinic serves only patients who are currently or were recently homeless. The homeless program also includes a mobile unit and a backpack medicine unit serving various encampments, but researchers determined that these were remote and low-volume, and possibly could interfere with the development of trust among clinicians and patients at the sites (as patients in the encampments are often suspicious), so a decision was made to keep research assistants at the higher-volume clinics for patient recruitment. Notably, the clinics do not serve veterans as there is a nearby VA hospital. Veterans were not intentionally excluded from this study but it is uncommon for veterans to receive medical care at this clinic.

Entire waiting rooms of people, ranging from 10 to 40 people, at the two county homeless clinics were approached *en masse* for participation in the survey. No compensation was offered to participants. Research team members obtained informed consent from the volunteer participants. The survey was administered in a private room by members of the research team. Spanish translation was available when needed. No patients who spoke a language other than English or Spanish attempted to volunteer for the study. Non-homeless individuals accompanying patients were excluded. The standardized questionnaire included collection of demographic, physical and mental health, and substance use data.

Many of our survey questions were used with permission from those used in the Felitti et al. Adverse Childhood Experiences study.[5,16] It was a survey-based study of 17,337 Kaiser patients in San Diego.[16] In the initial arm of the study, which was conducted among 9,508 patients between June and October of 1997, 52% were female, 79.4% were White, the average age was 56.1 years, and 43% had graduated from college.[5] They found that childhood stress is correlated, in a linear dose-response relationship, with multiple poor health outcomes including alcoholism, drug abuse, chronic obstructive pulmonary disease, ischemic heart disease, liver disease, tobacco use, multiple sexual partners, unintended pregnancy, and suicide attempts.[16] Since publication, several studies have used their questions to investigate ACEs further.[16,17,18] We used the ACE study questions to determine prevalence of adverse childhood experiences among a homeless population. These questions include three categories of childhood abuse (psychological abuse, physical abuse, contact sexual abuse), five categories of household

dysfunction (exposure to substance abuse, mental illness, domestic violence against the mother, parental separation and divorce, and incarceration), and two categories of neglect (emotional and physical). All questions were used with permission and have been validated. There are a total of 10 categories of adverse childhood events. Subjects were given one point for each category of ACE they endorsed, to receive an ACE score with a maximum possible score of 10.

Using these questions, we were able to compare the ACE scores of our participants with other studied populations, including a predominantly middle-class, mostly White population,[5] a cross-section of the general public from five states from 2007,[17] and a homeless population in Vancouver, British Columbia from 2014.[18]

We inquired about TBI using questions from the Ohio State University TBI Identification Short Form.[19] Patients were asked about head injuries they sustained including car or bike accidents, falls, sports injuries, fights, abuse, firearms, or projectiles. Any positive responses were then further characterized. We asked about the cause of injury, the age they were when they sustained the injury, the length of loss of consciousness (LOC) if any, and the presence of amnesia or dizziness. The injuries were then categorized into five levels, with level 1 as very mild (injury but no LOC and not dazed), level 2 as mild (no LOC but dazed or mild memory loss), level 3 as moderate (less than 30 minutes of LOC), level 4 as severe (LOC lasting 30 min to 24 hours) and level 5 as extremely severe (LOC greater than 24 hours). We also calculated the number of TBIs with LOC before age 15 and the number of people who had experienced moderate to severe TBIs in their lifetimes (level 3–5), as these indicators have been shown to correlate with long term sequelae.

We explored a qualitative description of family and home breakdown by asking the following questions: "During your first 18 years of life, did your primary caregiver ever change? In your opinion, did you move too much as a child? Did you ever experience homelessness or live outdoors (including in a car) before age 18? Did you ever run away for more than one day? Were you ever in the formal foster care system?" In addition, we asked participants about their primary caregivers, and those who were raised predominantly by a person other than a biological parent were categorized as experiencing "unofficial foster care" as a child.

We also used the PTSD Checklist- Civilian Form (PCL-C) from the US Department of Veteran's Affairs to screen for the prevalence of Posttraumatic Stress Disorder (PTSD) in our population; a screen was counted as positive if a respondent endorsed at least three out of the four questions.[20] Questions asked about the presence of a "frightening, horrible, or upsetting" event that caused a subject to experience recurrent nightmares, avoid related situations or thoughts, be constantly on guard, or feel numb or detached from others and surroundings.

This study was approved by the institutional review board of Santa Clara Valley Medical Center.

Results

Demographic characteristics and health status. In total, 127 consented and agreed to participate in the survey. Of those, 125 participants fully completed the surveys, but

the remaining two people completed the vast majority of the survey and were only excluded from a small amount of data analysis pertaining to the last few questions. Table 1 displays the demographic and housing characteristics of the survey participants. Forty-three percent of survey participants were White, 33% were Hispanic, 14% were Black, 6% were multi-ethnic or "other," 2% were Asian, and 2% were American Indian. This is similar to demographic data collected by the 2013 homeless census for Santa Clara County; our sample had a slightly greater proportion of White participants (43% vs. 39%), and a slightly smaller proportion of Black (14% vs. 17%) and Asian (2% vs. 6%) participants.[3] Most (68.5%) were male. Data on physical/mental health issues, hospital utilization, and substance use were also collected and presented in Table 1.

Adverse childhood events. The proportion of positive responses for the 10 categories included in the ACE score ranged from 33.4% for having had a household member who was incarcerated to 78.7% for having had a household member who was an alcoholic or drug abuser (Table 2). Sixty-two percent grew up with a household member with a serious mental illness. Domestic violence was present in 54.3% of respondents' households. As children, 64.6% percent experienced psychological abuse, 53.5% endured physical abuse, and 43.3% suffered sexual abuse. Compared with the demographically different population of the original ACE study, the Santa Clara County homeless were 2 to 10 times more likely to experience ACEs. Compared with a more similar population (homeless people surveyed with the ACE questions in Vancouver, BC, in 2014[18]), Santa Clara County homeless people were 1.1 to 2.3 times more likely to experience ACEs. The average ACE score for participants was 5.5, the median was 6, and the mode was 7. Only 6.3% of patients did not report any ACEs, while 66.9% had five or more ACEs. This is in stark contrast with a CDC replication of the ACE study involving five states and 29,212 adults in 2009, which found that 40.6% of participants had no ACEs and only 8.7% had experienced five or more[17] (Figure 1). Women experienced a greater number of ACEs than men (Figure 2). As a result of these experiences and other trauma, screening for Posttraumatic Stress disorder was positive in 67.5% of women surveyed and in 54.1% of men. Although this indicates a positive screen and not a diagnosis, the magnitude of the effect is significant and far exceeds the reported prevalence of PTSD in the general population, which is reported to range from 6–24%.[12,21]

Traumatic brain injury. Homeless residents of Santa Clara County were also extremely likely to report a history of traumatic brain injury (Table 3). Seventy-six percent of participants endorsed having experienced at least 1 TBI. Fifty-eight percent reported having had a TBI with loss of consciousness. As children under age 18, 55.2% of participants recalled having had a TBI and 38.4% stated they had experienced a TBI with loss of consciousness. Twenty-two percent had experienced their first TBI prior to age 15 and 29.6% had experienced a TBI with loss of consciousness for greater than 30 minutes. The prevalence and severity of the TBIs described by patients are profound.

Home and family breakdown. Nearly half (47.2%) of respondents reported a change in their primary caregiver when they were children (Table 4). Slightly over half (53.1%) felt they moved too much as children. Thirty-eight percent stated they had been homeless at some point prior to age 18. Approximately one fifth (19.5%) stated they were in formal foster care at some point during childhood. It is unclear exactly how many experienced informal foster care. Among the 99 participants who were not in foster

Table 1.

DEMOGRAPHIC AND HOUSING CHARACTERISTICS OF VHHP HOMELESS PARTICIPANTS

	Number (%)
Total number of participants	127
Gender (male)	87 (68%)
Race	
White	54 (43%)
Hispanic	42 (33%)
Black	18 (14%)
Asian	3 (3%)
American Indian	3 (3%)
Other	7 (6%)
Age	21–75, average 48
Employment	
Employed: Full-Time/Part-Time	14 (12%)
Retired-Disability/Age	35 (29%)
Unemployed-looking	35 (29%)
Unemployed-not looking	35 (29%)
Education	
No HS Diploma	30 (24%)
GED	25 (20%)
High School Graduate	40 (31%)
Any College	17 (14%)
College Graduate	10 (8%)
N/A	5 (4%)
Location of Sleep Last Night	
Shelter	23 (18%)
Streets	17 (14%)
Housed	30 (24%)
Double-up	22 (18%)
Hotel/motel	1 (1%)
Other	29 (23%)
N/A	4 (3%)
Hospitalization Utilization	
ER in past 2 months	33%
Total number of ER visits in 2 months	84
Hospitalized in past 2 months	34%
Total number of hospitalizations	102
Most Frequently Reported Medical Conditions (multiple values)	
Mental Health Disorder	101 (80%)
Skeletal/Fractures	88 (69%)
Hypertension	61 (48%)

Table 1. (*continued*)

	Number (%)
Hepatitis C	39 (31%)
Sexually Transmitted Infections/Diseases	113 (30%)
Mental Health	
Depressed for 2+ weeks	79%
Attempted suicide	45%
Self-reported Substance Use	
Ever considered self alcoholic	75 (59%)
Ever used illicit drugs	112 (88%)

care, 31.3% (n = 31; 24.4% of the total sample) listed a non-parent relative as a primary caregiver. Some of these respondents also stated a parent was a primary caregiver for them; some listed multiple relatives and non-relative caregivers as well as parents and step-parents. It is unclear if respondents had multiple caregivers at once or if their primary caregiver changed multiple times throughout their first 18 years. It is clear that 40.2% of the total sample surveyed listed a person other than a biological parent as a primary caregiver. Non-parent caregivers included grandparents, aunts and uncles, cousins, foster parents, group homes, neighbors, siblings, friends, and adoptive parents.

Discussion

Homelessness is often associated with increased trash, human waste water pollution, open air drug markets, and crime,[22] but it is not often associated with intense, severe childhood trauma. Regarding all areas we explored, including childhood adversities, posttraumatic stress, traumatic brain injury, and family instability, the differences between the experiences of the Santa Clara County homeless and the general population gape widely. Compared with an average person, the homeless were 10 times as likely to have a household member go to prison, to live with someone who was using street drugs, and to live with an adult who "often or very often" pushed, shoved, grabbed, or slapped them (Table 2). They were 6.6 times more likely to be threatened with or hurt by a knife or gun, and 6.5 times more likely to have a household member attempt suicide. Most (76.0%) reported at least one lifetime TBI, which is three to five times greater than the reported rate of TBIs in the general population, and is greater than the reported prevalence of TBIs among incarcerated populations (60.3%).[12] Over half of respondents (58.4%) experienced a TBI with LOC and over a third (38.4%) experienced a TBI in childhood. More than four out of 10 (43.3%) endured sexual abuse as children. Approximately half of respondents recalled an overly unstable home environment in terms of both their caregivers and their physical addresses.

Mental illness and substance use disorders in homeless populations should be seen as critical indicators of probable significant psychosocial trauma. It is also clear that solutions to the large problem of homelessness must address the deep psychologi-

Table 2.

PREVALENCE (%) OF ADVERSE CHILDHOOD EVENTS IN THE VHHP HOMELESS PARTICIPANTS AS COMPARED TO THE ACE STUDY

| Household Dysfunction by Category	Prevalence % VHHP	Prevalence % ACE study	# times more prevalent in homeless cohort
Substance abuse	78.7	25.6	3.1
Live with anyone who was a problem drinker or alcoholic?	68.5	23.5	2.9
Live with anyone who used street drugs?	48.8	4.9	10.0
Mental illness	62.2	18.8	3.3
Was a household member depressed or mentally ill?	57.5	17.5	3.3
Did a household member attempt suicide?	26	4.0	6.5
Mother treated violently (Was your mother (or stepmother)	54.3	12.5	4.3
Sometimes, often, or very often pushed, grabbed, slapped, or had something thrown at her?	48	11.9	4.0
Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?	34.6	6.3	5.5
Ever repeatedly hit over at least a few minutes?	29.9	6.6	4.5
Ever threatened with, or hurt by, a knife or gun?	19.7	3.0	6.6
Criminal behavior in household	33.9	3.4	10.0
Did a household member go to prison?	33.9	3.4	10.0
Psychological (Did a parent or other adult in the household . . .)	64.6	11.1	5.8
Often or very often swear at, insult, or put you down?	58.3	10.0	5.8
Often or very often act in a way that made you afraid that you would be physically hurt?	52.8	4.8	11.0
Physical Assault (Did a parent or other adult in the household . . .)	53.5	10.8	5.0
Often or very often push, grab, shove, or slap you?	48.8	4.9	10.0
Often or very often hit you so hard that you had marks or were injured?	49.6	9.6	5.2
Sexual Assault (Did an adult or person at least 5 years older ever . . .)	43.3	22.0	2.0
Touch or fondle you or have you touch their body in a sexual way?	42.5	8.7–19.3	2.2–4.9
Attempt or actually have oral, anal, or vaginal intercourse with you?	25.2	6.9–8.9	2.8–3.6
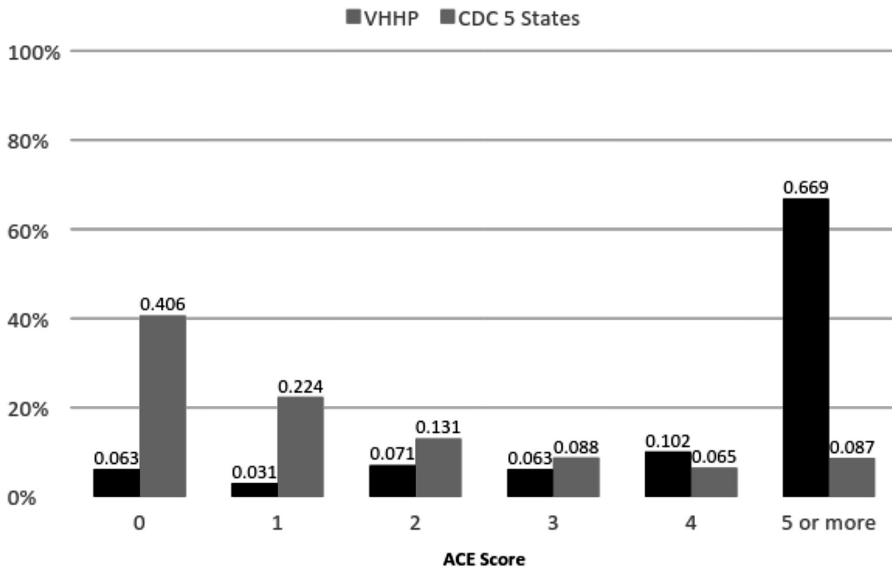
Figure 1. Adverse Childhood Experiences (ACE) score distribution in VHHP homeless participants as compared the CDC, five state, 2009.
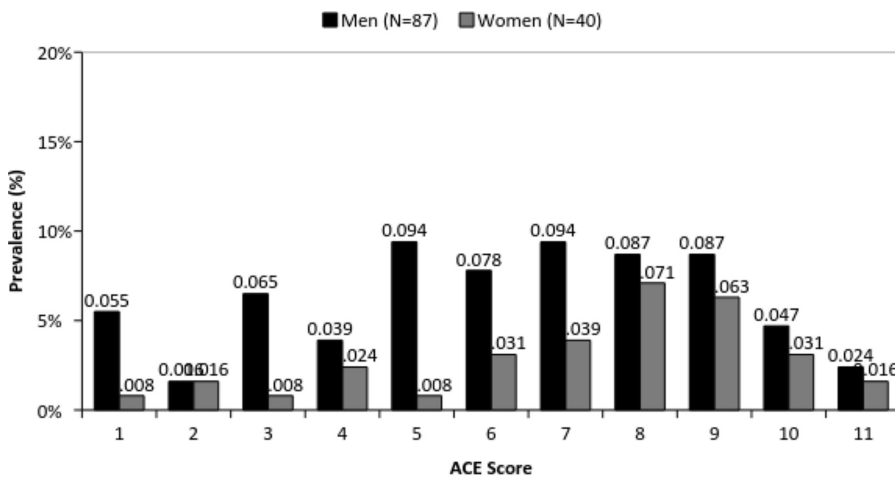

Figure 2. Adverse Childhood Experiences (ACE) score distribution in the VHHP homeless participants by gender.

Table 3.

TRAUMATIC BRAIN INJURY (TBI) IN VHHP HOMELESS PARTICIPANTS

Number of TBI Reported	Number (%)
No TBI	30 (24%)
1 TBI	10 (8%)
2 TBIs	12 (9.6%)
3 TBIs	37 (28.8%)
4 TBIs	28 (22.4%)
5 or more TBIs	9 (7.2%)
Reported Causes of Worst TBI	
Assault (fight/domestic violence/attack)	35 (27.3%)
Other Unknown	18 (14%)
Fall	21 (16.2%)
Motor vehicle/Motorcycle accident	28 (22.2%)
Bike-related	8 (6.5%)
Assault (object - brick/bottle/bat)	9 (6.9%)
Sports	9 (6.9%)

cal trauma and actual physical brain injuries experienced almost universally by this population, often during childhood. It is our opinion that resolving the physical and psychological wounds from these major childhood events will require significant and lifelong psychosocial and cognitive support.

There is also a very significant implication about the prevention of homelessness. Many of the subjects in this study were born into families with mental illness, substance abuse, criminality, poverty, and housing and relational instability, where the psychological, physical, and sexual abuse of the children and their mothers were commonplace. Any serious attempt to reduce homelessness must address the plight of children living in these kinds of environments.

In the heart of Silicon Valley, Santa Clara County has the distinction of having the highest median income[23] and the highest rate of people who are unsheltered and homeless in the nation.[4] The uneven distribution of 45% of households with incomes greater than $100,000, and 14% with less than $25,000 highlights the challenges of surviving and competing in an area with a high cost of living, high rental prices, and few low income housing options. Elected officials, nonprofit workers, government entities, charities, and benefactors should work together to build individual and family shelters, detoxification facilities, mental health centers, and substance use treatment facilities with ACE-informed programming and parenting support programs.

The homeless population of the future is being developed now. More studies are needed to determine if improving home and family stability would reduce the future incidence of homelessness. In particular, it would be helpful to look at the possible benefit afforded by protecting housing stability in childhood, foster care placement,

Table 4.

HOUSEHOLD DYSFUNCTION AND CAREGIVER CHANGES IN THE VHHP HOMELESS PARTICIPANTS

	Number (%)
Primary Caregivers	
Biological mother & father	68 (53.4%)
Biological mother only	44 (34.4%)
Biological father only	10 (7.6%)
Biological mother & step-parent	17 (13.7%)
Biological father & step-parent	10 (7.6%)
Other relative	35 (27.5%)
Other non-relative	19 (15.3%)
Times Primary Caregiver Changed	
0	68 (53.4%)
1–2	27 (21.4%)
3–6	15 (12.2%)
7–10	9 (6.9%)
>10	5 (3.8%)
Missing Data	3 (2.3%)
Household Dysfunctions	
Parents ever separated/divorced	81 (64.1%)
Household member in prison/jailed	45 (35.1%)
Primary caregiver changed	60 (47.2%)
In formal foster care system	25 (19.5%)
Feel like move too much	67 (53.1%)
Ever experience homelessness	41 (32.0%)
Live outdoors or sleep outside before age 18	48 (37.5%)
Childhood Exposures	
Run away for more than 1 day	62 (49.2%)
In Juvenile Hall as a child	61 (48.0%)
In special education or diagnosed learning disability	50 (39.4%)
Chronic pain as a child	17 (13.4%)
Had a regular doctor as a child?	81 (63.8%)
Hospitalized as a child?	79 (62.2%)
Had a regular social worker as a child?	23 (18.1%)
Witnessed a traumatic or violent event as a child?	100 (78.7%)

appropriate family reunification, and interventions which promote constancy and attachment among caregivers of vulnerable youth.[24]

    Limitations. This convenience sample may be limited in representing the homeless population as a whole. The sample consisted entirely of volunteers who were patients waiting at a medical clinic, which introduces a selection bias. Information about those who declined to participate in the study was not collected. However, there is some

evidence that these biases may have been mitigated. Research assistants noted that in general, an entire waiting room would either participate *en masse* or decline to do so; when the first person on a given day chose to participate, everyone would generally agree to participate, and vice versa. This may have been beneficial for the applicability of the data, as it seems that it was uncommon that a person would decline to participate for personal reasons. Additionally, the racial/ethnic breakdown of the sample reflected the demographic profile of a Santa Clara County homeless census (which was assessed by the office of Housing and Urban Development during the same time period as the study).[3,4] This stands in contrast to the racial breakdown of the county's general public census data. Additionally, the participants were asked about events that happened in the past, which can be limited by a recall bias, especially in a population with such a high prevalence of self-reported TBIs and mental illness. Interestingly, some longitudinal follow-up studies of adults whose abuse was documented as children has shown the their retrospective reports of abuse underestimated the actual occurrence, so the actual amount of trauma experienced by the homeless could be even higher than reported.[19] Determining unofficial foster care proved to be more complicated than expected, as many subjects moved multiple times among multiple people, so the data from this variable were considered to be less firm than other variables studied.

Conclusions. This research adds to the growing body of evidence that the majority of homeless people have experienced massive trauma as children, including damaging abuse, neglect, household distress, traumatic brain injuries, and home and family instability. These experiences work in multifactorial ways directly and indirectly to increase the individual's risk of homelessness and to decrease his ability to escape it. Society should work to support and protect this vulnerable population, as well as to prevent future trauma to the next generation.

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