Childhood Adversity and Health After Physical Abuse

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abstract

BACKGROUND: Involvement with Child Protective Services (CPS) provides an opportunity to recognize those children at risk for ongoing adverse childhood experiences (ACEs). The relationship between ACEs and child health among CPS-involved children and the role of primary care providers (PCPs) in moderating this relationship is unknown.

METHODS: We conducted a convergent mixed-methods study of caregivers of children age 2 to 12 years with a CPS finding of physical abuse, modeling the association between cumulative ACEs and child health-related quality of life (HRQoL) using the PedsQL4.0, a validated 23-item survey of multidimensional health, with and without the moderator of a patient-centered medical home. Interviews elicited descriptions of a child's experience with ACEs, the impact of ACEs on child health, and the role of a PCP in this context.

RESULTS: One hundred seventy-eight surveyed caregivers reported a mean of 5.5 ($\pm$3.3) ACE exposures per child. In a fully adjusted model, each ACE resulted in a 1.3-point (95% confidence interval: 0.7–2.0) reduction in HRQoL, a clinically important difference in HRQoL associated with ACE exposures. This association was explained by reduced psychosocial HRQoL and was not moderated by a patient-centered medical home. Twenty-seven interviewed caregivers described the influence of ACEs on a child's health. Many felt that a trusted PCP could support a child's well-being after such experiences.

CONCLUSIONS: Children with CPS involvement have ACE exposures that are associated with reduced HRQoL. Although PCPs are often unaware of CPS involvement or other ACEs, many caregivers welcome the support of a child's PCP in improving child well-being after adversity.

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Dr Campbell conceptualized and designed the study, designed the data collection instruments, coordinated and supervised data collection, conducted analyses, drafted the initial manuscript, and reviewed and revised the manuscript; Ms Gamarra designed the data collection instruments, coordinated and collected data, conducted initial analysis, and reviewed and revised the manuscript; Drs Keenan and Frost conceptualized and designed the study and critically reviewed the manuscript for important intellectual content; Ms Choi conducted initial analysis and critically reviewed the manuscript for important intellectual content; and all authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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WHAT'S KNOWN ON THIS SUBJECT: An accumulation of childhood adversities is associated with lifelong physical and mental health challenges. The moment of Child Protective Services involvement for abuse is a moment to provide medical and social supports for children with risk for ongoing adverse experiences.

WHAT THIS STUDY ADDS: Children with a Child Protective Services finding of physical abuse carry a high burden of accumulated adversities. These adversities are associated with lower health-related quality of life. Caregivers identify pediatricians as potential support for children struggling with health after adversity.

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Every year, 1 in 100 children in the United States is identified as a victim of child abuse by Child Protective Services (CPS).[1] Despite mandated child welfare involvement, many children remain at high risk of ongoing exposure to adverse childhood experiences (ACEs) such as parental substance abuse, mental illness, and family violence. Past researchers have identified associations between cumulative ACEs and negative health outcomes.[2–6] Recent findings suggest that negative outcomes associated with ACEs may be ameliorated through interventions to treat effects of previous adversities and prevent accumulation of additional adversities.[7,8] Our research grows from a recognition that CPS involvement provides a window of opportunity to identify and engage with children most likely to benefit from such interventions.

Yet CPS is not designed to provide longitudinal relationships necessary to improve the health and well-being of children after abuse. In contrast, longitudinal relationships are central to the continuous care from birth through early adulthood provided in the patient-centered medical home (PCMH).[9,10] Although commonly associated with the care of children with complex, chronic medical needs, the PCMH may also serve as a safety net for children with complex, chronic social needs to prevent abuse in children at risk and to address toxic stress in children after abuse.[11,12]

Our previous research with mothers of children with a history of abuse identified a common desire for longitudinal support after CPS case closure to address challenges such as caregiver mental illness, financial insecurity, and child behavior problems.[13] Few mothers identified a child's primary care provider (PCP) as a potential source of such support despite growing recognition that a PCMH can and should provide the resources needed to effectively address these issues.[14–16] We undertook the current study to (1) examine the association between parent-reported ACEs and child health-related quality of life (HRQoL) and (2) understand the role of a PCMH in supporting child well-being among children with a recent CPS finding of physical abuse.

METHODS

Design

Quantitative survey data and qualitative interview data were collected simultaneously and assigned equal priority throughout data collection, analysis, and interpretation in this convergent mixed-methods study.[17]

Participants

Participants were English- or Spanish-speaking parental caregivers of children 2 to 12 years of age remaining at home after a CPS investigation resulting in a substantiated finding of child physical abuse between November 2015 and March 2017.

Recruiting and Enrollment

The Utah Division of Child and Family Services (DCFS) introduced this research to eligible caregivers within 6 weeks of CPS case closure. Interested caregivers were contacted by a University of Utah investigator to obtain informed consent. Consenting caregivers completed a 45- to 60-minute telephone survey. A subset completed a 30- to 75-minute interview, with purposeful sampling to maximize variation across child and caregiver characteristics. Interviews were conducted by 2 investigators (EG and KAC), audio-recorded, and transcribed in Spanish or English.

Ethics Review

The Institutional Review Boards of the University of Utah and the Utah Department of Human Services approved all study procedures.

Exposure

Quantitative

Caregivers identified adverse experiences for their child through a modified ACEs instrument capturing 10 traditional ACEs and 7 additional ACEs drawn from the literature to provide a total score between 0 and 17 (Supplemental Figure 3).[2,18,19]

Qualitative

We conducted semistructured interviews in which caregivers described a difficult experience for their child (Question 1, Supplemental Figure 4). We adopted a phenomenological approach to explore the lived experiences of caregivers guiding a child through a traumatic event.[20]

Quantitative Outcome

Child well-being was expressed as caregiver-reported HRQoL. The PedsQL4.0 is a 23-item survey of physical and psychosocial health that provides total and subscale scores between 0 and 100. Higher scores reflect better HRQoL. The PedsQL4.0 has been validated in multiple settings, with a mean total score of 83.0 ± 14.8 among healthy children age 2 to 18 years and a minimal clinically important difference of ± 4.5.[21–23]

Moderator

Quantitative

We hypothesized that support provided by a PCMH might moderate negative effects of ACEs on HRQoL. PCMH was defined by caregiver responses to the AHRQ Consumer Assessment of Healthcare Providers and Systems Clinician and Group Surveys.[24]

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Qualitative

Caregivers were asked to describe their child's PCP and when that provider had helped with a "difficult problem" (Question 7, Supplemental Figure 4). If caregivers could not provide an example, probes explored the response of the PCP to recent CPS involvement.

Quantitative Covariates

We used DCFS-reported demographics to describe the eligible sample and caregiver-reported demographics to describe surveyed participants. The 5-item Children with Special Health Care Needs (CSHCN) Screener was used to identify CSHCN, who were expected to have lower HRQoL.[25,26] The General Self-Efficacy Scale identified low caregiver self-efficacy, because this might reduce caregiver ability to identify and access resources supporting child well-being.[27] The Patient Health Questionnaire-4 captured symptoms of caregiver depression and anxiety, which might influence perceptions of child well-being.[28]

Sample Size

Quantitative

A total of 174 survey participants was needed for 90% power to detect the minimal clinically important difference in HRQoL ($\pm$4.5 points) between children with low, medium, and high levels of ACEs.

Qualitative

We sought to interview caregivers to thematic saturation, or the point at which no new themes emerged from the narratives.[20]

Analysis

Quantitative

Descriptive statistics of the eligible population and the participating sample were compared. We defined total ACEs as the count of different adversity types (0–17) and categorized children into low, moderate, and high exposure groups based on counts falling below, within, and above the interquartile range of ACEs for the survey sample, respectively. We compared HRQoL reported for our sample to previously published population norms of children with and without chronic illnesses including ADHD, asthma, and diabetes.[22,29] Covariates with a bivariate association with our exposure (ACEs), outcome (HRQoL), or moderator (PCMH) at a level of $P \leq .25$ were included in multivariable linear regression models to provide adjusted estimates of the association between ACEs and HRQoL.

Qualitative

Interviews were initially read by 2 investigators (EG and KAC) in the original language. These investigators proposed codes for salient concepts as they emerged during rereading. To ensure code consistency and reduce potential bias, transcripts and proposed codes were provided to a University of Utah qualitative research team composed of 4 coders. This team reanalyzed English-language transcripts using a similar open-coding approach, meeting regularly for intercoder adjudication for code reliability and agreement. Exemplar quotes for codes were identified through both of these processes, with Spanish-language quotes translated by a native Spanish-speaking investigator (EG).

Convergent

During data collection, descriptive statistics of survey participants were maintained to ensure sampling of caregivers with both typical and outlier experiences for interviews. The sampling matrix and interview guide were revised on the basis of emerging results. During data analysis, quantitative findings were used to explore emerging qualitative themes, while unanticipated qualitative themes inspired secondary quantitative analyses. During interpretation, qualitative themes provided context for quantitative findings, whereas quantitative findings highlighted themes within our qualitative data with potentially generalizable implications.[17,30]

RESULTS

Recruiting and Enrollment

DCFS identified 646 eligible caregivers with a recent CPS finding of physical abuse in a child age 2 to 12 years. Caregivers contacted by the study team (n = 319, 49.4%) had fewer maltreatment types supported in the recent CPS investigation (1.5 vs 1.7), lower rates of previous CPS involvement (24.8% vs 35.8%), and less concern for domestic violence–related child abuse (13.5% vs 19.3%) or drug exposure and/or child endangerment (6.9% vs 14.1%) than noncontacted caregivers (all $P < .05$).

Among caregivers contacted for study consent, 178 (55.5%) completed the survey. Twenty-seven caregivers completed an interview. Participating caregivers were less likely to have a finding of neglect (3.4%) than caregivers declining participation (9.2%). Spanish-speaking caregivers were more likely to consent (88.0%) than English-speaking caregivers (52.7%) (all $P < .05$).

Participants

Surveyed caregivers averaged age 34.2 years, with 39.1% living in households below the federal poverty level. Fourteen percent endorsed concerning levels of emotional distress, and 15.3% had low self-efficacy. Children averaged age 7.2 years, with 14.7% identified as a racial minority and 29.4% of Hispanic or Latinx ethnicity. Almost half (46.3%) met CSHCN criteria (Table 1).

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TABLE 1 Baseline Demographics

	Surveyed Caregivers n = 177 (%)	Interviewed Caregivers n = 27 (%)
Caregivers		
Age, y, mean (± SD)	34.2 (±7.4)	33.9 (±8.5)
Maternal caregiver[a]	153 (86.4)	22 (81.5)
Spanish-language preference	22 (12.4)	8 (29.6)
No high school degree	27 (15.3)	6 (22.2)
Below federal poverty level	69 (39.0)	11 (40.7)
Anxious or depressive symptoms[b]	25 (14.1)	5 (18.5)
Low self-efficacy[c]	27 (15.3)	7 (25.9)
Children		
Age, y, mean (± SD)	7.2 (±2.7)	7.3 (±2.6)
Male sex	113 (63.8)	18 (66.7)
Minority race or ethnicity[d]	74 (41.8)	15 (55.6)
Special health care need[e]	82 (46.3)	13 (48.2)
Health care		
Public payer	84 (48.0)	16 (59.3)
Uninsured	17 (9.6)	3 (11.1)
Identified PCP	159 (90.4)	25 (92.6)
Child welfare[f]		
>1 form of child maltreatment	43 (24.3)	8 (29.6)
Past CPS involvement in household	49 (27.7)	10 (37.0)
In-home postinvestigation services	40 (22.6)	9 (33.3)

Italicized variables are included in all multiple variable regression models based on association with predictor (total ACEs), outcome (total HRQoL), or moderator (PCMH) at a level of $P \leq .25$.

[a] Includes biological mother, adoptive mother, grandmother, or aunt.

[b] Moderate or severe psychological distress in parental caregiver as indicated by a score ≥6 on the Patient Health Questionnaire-4.

[c] Low self-efficacy in parental caregiver as indicated by a score ≤30 on the General Self-Efficacy Scale.

[d] Includes 26 children of minority race (14.8%) and 51 children of Hispanic or Latinx ethnicity (29.0%).

[e] Caregiver identifies ≥1 current functional limitations or service needs as a result of ongoing physical, emotional, behavioral, developmental, or health conditions on the CSHCN Screener.

[f] Child welfare history was associated with ACEs and HRQoL in bivariate analysis but not included in multivariable model because of theoretical collinearity with ACEs.

ACEs

Surveyed caregivers endorsed an average of 5.5 (±3.3) ACEs for each child. Low-, moderate-, and high-exposure categories were defined by 0 to 3, 4 to 7, and 8 to 17 ACEs, respectively. The frequency of different ACEs ranged from parental divorce or separation (61.6%) to severe social isolation (1.1%) (Fig 1). Although all children in the study had a recent CPS investigation finding of physical abuse, 40.7% of caregivers did not identify physical abuse as an adversity experienced by their child.

Interviews supported these findings. Although some participants described physical abuse or witnessed violence when asked to share a difficult experience for their child, many identified emotional traumas, such as kidnapping by an abusive parent, witnessing arrest of a parent, or separation from a supportive parent because of divorce, foster care, or incarceration (Table 2A).

Child Well-Being

Surveyed caregivers reported a mean HRQoL of 76.6 (±15.4) for children with a recent history of physical abuse, 4.7 points lower than published norms (P = .001) and comparable to CSHCN (Tables 3 and 4). This reduction in total HRQoL was entirely attributable to low psychosocial health. Although physical HRQoL for the surveyed population was 6.7 points higher than described in a general population, psychosocial HRQoL was 8.1 points lower (both $P < .001$).[22]

Child Well-Being and ACEs

We identified a significant, stepwise reduction in HRQoL between children with low, moderate, and high ACEs exposures (Table 5). Children with high ACEs had HRQoL 14.5 points lower (95% confidence interval [CI]: −20.1 to −8.9) than children with low ACEs. Stepwise reductions in physical HRQoL (−4.1 points, 95% CI: −9.4 to 1.1) and psychosocial HRQoL (−17.9 points, 95% CI: −24.3 to −11.4) were seen with rising ACEs.

In unadjusted linear regression, each reported ACE was associated with a 2.0-point (95%CI 1.4 to 2.6) reduction in total HRQoL (Fig 2). In a fully adjusted model, this association persisted with attenuated strength, with each reported ACE associated with a 1.3-point (95% CI: 0.7 to 2.0) reduction in HRQoL (Tables 3 through 5).

Consistent with these quantitative findings, interviewed caregivers often voiced concerns for the emotional or behavioral health of their children. Although few identified any association between ACEs and physical health, many made clear connections between these experiences and the emotional well-being of their children (Table 2B).

PCPs, Child Well-Being, and ACEs

Ninety percent of caregivers identified a PCP for their child; 83.1% reported ≥1 visit with this PCP in the previous year. Of this sample, 29.9% met PCMH criteria.[24] In bivariate analysis, a PCMH was associated with a significantly lower HRQoL (−9.1 points, 95% CI: −14.6 to −3.6). No association was identified in a model accounting for special health care needs (−0.8 points, 95% CI: −5.7 to +4.6) (Table 6).

The absence of any moderating effect of a PCMH was explored through qualitative interviews. Few

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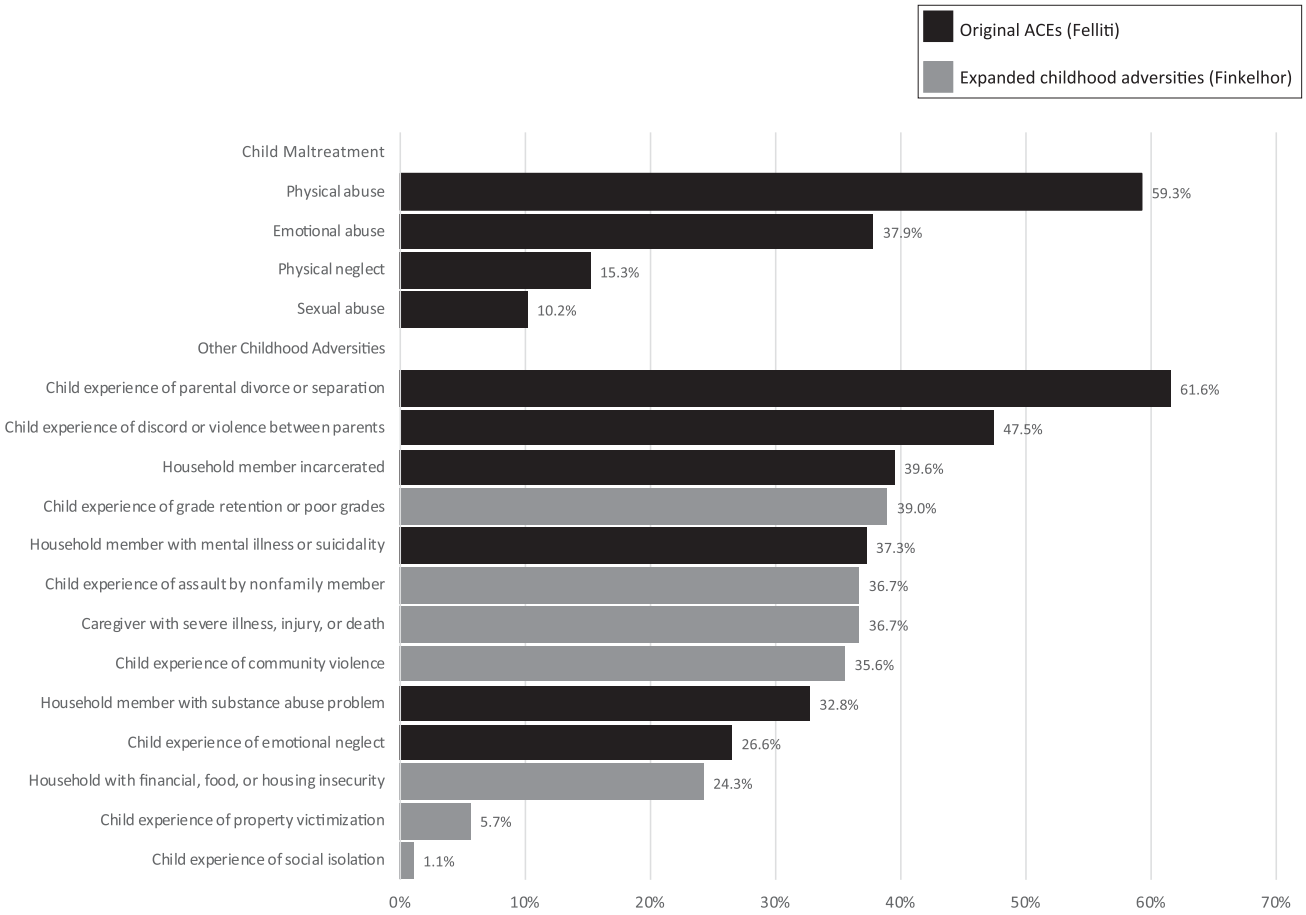

FIGURE 1
Frequency of parent-reported ACEs in children 2 to 12 years of age after a CPS finding of child physical abuse.

caregivers spontaneously identified ACEs as a "difficult problem" that a PCP had helped address, focusing instead on specific medical events such as diabetes management, constipation, and immunizations (Table 2C). To overcome this, caregivers were asked to consider the role of a PCP in response to recent CPS involvement. With this prompt, some caregivers described very positive conversations with PCPs related to CPS involvement. Those reporting that a PCP was unaware of CPS involvement offered opinions about the provider's likely response to such information. We noted that although English-speaking caregivers shared uniformly positive experiences with PCPs, Spanish-speaking caregivers often described neutral or confusing experiences.

Survey responses mirrored these interview findings. Although 86.5% of caregivers reported comfort with talking to their child's PCP "about problems with violence or abuse in the home," just 48.1% recalled such conversations and only 37.2% believed that their child's PCP was aware of the recent CPS involvement. Language differences again surfaced in survey responses. Just 71.4% of Spanish-speaking caregivers felt comfortable talking with a child's PCP about violence in the home compared with 88.7% of English-speaking caregivers ($P < .001$); 7.1% of Spanish-speaking caregivers believed that a child's PCP knew of CPS involvement compared with 40.6% of English-speaking caregivers ($P = .05$).

DISCUSSION

Children involved with child welfare often have histories of adversity far beyond those identified in a single CPS investigation. In our study, we find that the accumulation of ACEs in this high-risk population is strongly associated with clinically important reductions in parent-reported total and psychosocial HRQoL. Caregivers recognize the relationship between ACEs and their child's emotional health but commonly identify ACEs other than the known abuse to be the most influential for their child's health and well-being. Finally, we

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TABLE 2 Caregiver Descriptions of ACEs, Child Well-Being, and PCP Relationships: Participants Identified Based on Relationship to Child, Age, Race, Ethnicity, and Language of Interview

Theme	Code	Quote
A: ACEs: tell me about something that your child has experienced in his or her life that has been particularly hard or difficult for him or her.	Physical trauma	ID5:Mother:41:W:NH:English
		It was over my son having an accident in his pants. And my ex, who is not his biological father, started beating on him, so I threw myself over him and I got kicked off of him across the room. And [child] started being beaten, so I threw myself back on top of him. Then I got punched in the head repetitively. [My child] was screaming. I was screaming, obviously. We were punched, kicked, drop-kicked, and everything. It was very fearful, very emotional, very scared.
		ID226:Mother:29:W:NH:English
		[My son] said that he had a really hard time even saying the words, you know, "Daddy smacked me in the face," or he had a really hard time describing how it felt. That incident you can tell was very traumatic, which was hard for me because we had never talked about that incident since it occurred.
		ID47000:Mother:33:W:H:Spanish
		He didn't want to tell me when the teacher hit him, he didn't want to tell me…he finally says, "I do not want to tell you because you're going to go fight with the teacher." I said, "Fight for what reason? What did the she do? What did the teacher do to you?" Then he said, "Well, she hit me." "What do you mean she hit you?" "Yes, she hit me," he told me. I said, "Where did she hit you?" This was the moment he showed me his head. He told me, "She hit me here."
	Emotional trauma	ID46000:Mother:31:W:H:Spanish
		What happened was that the aunt of my son...entered my house and hit me. She hit me…. So then I just grabbed my son, because he was crying. I just grabbed him and I told him to calm down, that everything was fine. Then, when I grabbed my son, I just grabbed the only thing I could, I grabbed my phone and dialed 911 and told them what was happening. And then the police arrived.
		ID328:Mother:29:AI/AN:NH:English
		Her seeing her dad pick me up and throw me like that and then lie about it. Because he said that I slipped and I didn't slip, and she just – it just affected her so bad, I mean, emotionally and mentally. Because she saw it and she had to lie about it and she didn't feel safe around her dad.
		ID131:Aunt:36:W:NH:English
		[Their mother] left them in a car for I guess some time while she was, who knows, doing what, I have no idea. But I do recall that conversation. They were very scared. They didn't know where she was, they didn't know where they were. We were able to find them through the find my iPhone app, which was obviously good, but…very traumatic experience, very scared…something kids just don't need to go through, period.
		ID94:Grandmother:61:W:NH:English
		What ended up happening is my husband ended up dying. So [my grandson], again, 3 years after he met him, and he's the only daddy that he remembers. He died of lung cancer. He watched him go down. That also is a trauma for him. So every way, if he's loved somebody, if something has happened where he has said something where they can't see him anymore or they have died.
		ID21000:Father:29:W:H:Spanish
		[His mother] preferred to go with that man, with that person, than to have her children by her side. Without any explanation she just grabbed and left. I mean, she abandoned them then. … Well [my son] was very attached to her and would say, "Well, how…? I am very attached to her and she is abandoning me"
B: ACEs and child well-being: How do you think that this difficult experience might have affected your child's well-being?	Physical well-being	ID209:Mother:32:W:NH:English
		His physical health is pretty good, he has an immune system like steel box, nothing gets in there. If he does get sick, it kicks his butt, but within 3 days, he is right back to being healthy. I have 3 kids and he is the only one who will eat broccoli before he will even touch cupcakes.
		ID47000:Mother:33:W:H:Spanish
		Well, I think it is that my son is well, both emotionally and physically, that they care about my child's health, about his total well-being, which would be about how my son lives. Well, everything. Be aware and worry about everything, both for education and health, for everything.
		ID328:Mother:29:AI/AN:NH:English

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TABLE 2 Continued

Theme	Code	Quote
		Her physical health and stuff, she's excellent. Like her height and her weight and stuff just like health wise, she's above average. So she's really good and she doesn't have any allergies or anything like that. She's very healthy. She's tall for her age. Health wise and dental wise, she's good. Like she's perfect.
	Emotional well-being	ID494:Mother:35:W:NH:English
		I feel like she's still dealing with that anger. Right now she's exhibiting signs of not hearing me when I talk to her and when I tell her to do something, she will ignore me.
		ID131:Aunt:36:W:NH:English
		She's 4 now, I've had her more of her life than her mother or her father has had her. So, I think that that right there is just a super traumatic experience, and it's very confusing for her, not knowing where she belongs or where her place is, where her parents are, why doesn't she have a mom and dad, why does she go back and forth from my house to another person's house. I think that that has been a big effect on her and her view on life.
		ID46000:Mother:31:W:H:Spanish
		When my son falls asleep, at night he gets up scared. He gets up and tells me, "Mommy, mommy, there comes [my aunt], get up, mommy, mommy" and shouts it. And there are times he still does. Yes, it is the most difficult thing he has seen, because he has never seen anything like that. He had never seen anything, nothing, absolutely nothing like this. He had never seen this.
		ID28000:Mother:33:W:H:Spanish
		He sits down and stays quite sad. "What's going to happen, mommy? Are you okay?," he always becomes pensive, he sits down and remains quite calm. "What happened?" or "what will happen?" or "what is this?" He's small, he doesn't know, he just asks.
C: PCP response: Tell me about the person who sees your child for medical care.	Help with a difficult problem	ID494:Mother:35:W:NH:English
		We really haven't had any difficult problems with her where [my child's doctor] been able to help.
		ID541:Father:32:W:NH:English
		She's cried when he gave her a shot and then helps to make her feel better afterward. Besides that I don't really have any examples…
		ID336:Mother:27:W:H:English
		Just seeing her about diabetes, giving us information on how to change his diet, more things to do. I can call her any time if I have any questions, anything; she just gives me so much information that's helpful. You know, like explaining like his blood work to me and what this is or what she tested for.
		ID514:Father:31:W:NH:English
		[My son] was having problems going to the bathroom…It was like 2:30 or 3 o'clock in the morning. [My son's doctor] helped us with everything. We ended up going over and getting some blood tests done at [the hospital]. He kept us in the loop every minute that the tests were going on.
		ID5:Mother:41:W:NH:English
		[My son] had started being very depressed, very closed off, very angry, very always wanting to be alone. So I took him to the doctor and they got concerned about depression, and how there was nothing enjoyable to him anymore. So they put him on antidepressants and we did weekly check-ins to make sure that the antidepressant wasn't going to cause any suicidal thoughts or anything like that…his doctor would always have me leave the room and ask [my son], "How are you doing? Your mom isn't in here. You don't have to worry about hurting her feelings or worrying her. How are you doing?"
	Support after CPS involvement	ID28000:Mother:33:W:H:Spanish
		He has been my doctor since I was pregnant. And when my son was born, he was ill for 1 month. He had pneumonia and he got very sick. And [the doctor] was, really, well aware of my son. And I think that is how he has helped me, in that my child is well. Then regularly, he has continued to see him when he goes to his vaccination appointments and…I feel confident in them. Because my son was very sick since he was little. They gave me confidence that everything would be fine.
		ID209:Mother:32:W:NH:English
		[The doctor] always said, if you have a problem bring [your son] in to me and I will do whatever I can to help you. He reminds me every time we see him, even if it is an appointment for one of my other kids. He knows that there is that history for my son, but he

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TABLE 2 Continued

Theme	Code	Quote
		has also said that in regards to my other kids. It is comforting to know that he has been so supportive. ID292:Mother:29:W:H:English
		So we always talk and I told [the doctor] [about the abuse], and he was concerned…I was like 16 when I had my first son. I was just a small kid taking my baby to him and with no support. So he seen me go through a lot, and I would always talk to him. And he would just tell me there's always help. ID328:Mother:29:AI/AN:NH:English
	Imagining the unknown	I think [the doctor] probably would be really concerned to make sure [my daughter] is getting the help she needs to overcome it. Like therapy, she'd probably ask to make sure she's eating well and suggesting things in a good manner. ID48000:Mother:30:W:H:Spanish:
		He is a good pediatrician, pediatrician; he is one of those doctors who not only goes to the office and sees you and remembers you. He is one of the doctors that if he sees you in the street, he… will greet you and remember you by name and asks me about my son, my children. And if I have not taken them to the check-up, he is on the lookout and says, "Hey, you have not taken the children to the pediatrician, to have them checked. You need to make an appointment" and so on. [But]…I hardly comment much on [CPS involvement] to him. Simply, when I go to visit him, he begins to talk about the changes in his body, in the way that he should not let anyone touch him unless his mother is there, so that's it. ID396:Mother:24:W:H:English
		I don't know what [the doctor's] reaction would be. I really don't know. I'd hope she doesn't judge. ID268:Mother:28:AI/AN:NH:English
		I think that [the doctor] would be a little more understanding with [my child]. I think he'd slow down and take more time and I guess he'd be more understanding, and a little more attentive.

AI/AN, American Indian/Alasanka Alaska Native; H, Hispanic; ID, subject identifier; NH, non-Hispanic; W, white.
[a] Comparison $P \leq .001$.

found that the PCMH is often an untapped resource in supporting child health and well-being after adversity.

Researchers in previous studies describe lower unidimensional health among children with a history of child welfare intervention and lower multidimensional HRQoL among children in foster care.[31–34] To our knowledge, our study is the first to in which multidimensional HRQoL were measured among children remaining at home after CPS involvement for abuse. Overall, HRQoL among children with this history is significantly lower than general population norms and is comparable to CSHCN. With this finding, we support previous recommendations that children with a history of abuse be included within an expanded definition of CSHCN.[12] We also take a hopeful lesson from our findings. Although children with a history of abuse and high cumulative ACE exposures have total and psychosocial HRQoL comparable to children with ADHD, asthma, diabetes, or depression, those children with a history of abuse but few additional ACEs have HRQoL at or above that reported for healthy children.[21,22,29] These findings highlight the need to reduce ongoing exposure to childhood adversity after abuse.

We were encouraged to find that 90% of caregivers of children with recent

TABLE 3 Parent-Reported HRQoL Among Children With Recent CPS Involvement for Child Physical Abuse Compared to HRQoL in a General Pediatric Population

HRQoL Scores in CPS-Involved Children Versus General Pediatric Population[c]	Clinically Important Difference[a]	General Population	CPS-Involved Sample	Difference: CPS-Involved Versus Population Norms
Total HRQoL	4.5	81.3 (±15.9)	76.6 (±15.4)	−4.7[b]
Physical HRQoL	6.9	83.3 (±20.0)	89.9 (±13.5)	+6.7[b]
Psychosocial HRQoL	5.5	80.2 (±15.8)	72.1 (±17.8)	−8.1[b]

[a] Child well-being reflected as parent-reported HRQoL measured with the PedsQL4.0, a 23-item survey of physical and psychosocial health that provides total and subscale scores between 0–100. Higher scores reflect better HRQoL.
[b] The minimal clinically important difference reflects the smallest difference that a patient perceives as beneficial and would support a change in patient management.[22]
[c] Comparison $P \leq .001$.

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TABLE 4 Parent-reported HRQoL Among Children With Recent CPS Involvement for Child Physical Abuse Compared to HRQoL in a General Pediatric Population, Stratified by Child Health Status

HRQoL Scores in CPS-Involved Children Versus General Pediatric Population Stratified on Child Health Status[a]	Children in Good Health	Children With Chronic Illness[b]	CPS-Involved Sample	Difference: Good Health	Difference: Chronic Illness
Total HRQoL	87.6 (±12.3)	74.2 (±18.4)	76.6 (±15.4)	−11.0[c]	+2.4
Physical HRQoL	89.3 (±16.4)	73.3 (±27.0)	89.9 (±13.5)	0.6	+16.6[c]
Psychosocial HRQoL	86.6 (±12.8)	74.8 (±18.2)	72.1 (±17.8)	−14.5[c]	−2.8

[a] Child well-being reflected as parent-reported HRQoL measured with the PedsQL4.0, a 23-item survey of physical and psychosocial health that provides total and subscale scores between 0–100. Higher scores reflect better HRQoL.
[b] Total and domain scores among children with chronic illnesses, including diabetes, asthma, and attention deficit disorder.[23,29]
[c] Comparison $P \leq .001$.

CPS involvement identify a known PCP for their child, with many describing trusted longitudinal relationships with these providers. Caregivers who reported sharing experiences of adversity and abuse with a PCP described feeling supported by careful evaluation of a child's emotional well-being, the assurance of close follow-up, and an "open door" for future conversations. Despite this, we did not find that these relationships were associated with higher HRQoL results. We suggest that interactions between a child's caregiver and a trusted PCP too often fail to directly address those factors most relevant to HRQoL among children with a history of abuse. Despite calls by primary care pediatricians for increased sharing of child welfare information related to their patients and surging academic efforts to address social risk and toxic stress in primary care settings, caregivers in this high-risk population told us that conversations with a PCP about violence, abuse, or other social risks were unusual.[14,15,35,36] Most believed that PCPs were unaware of a recent history of CPS involvement with their child. Nonetheless, many interviewed caregivers felt that their child's PCP could be helpful in identifying resources to help a child struggling after a traumatic experience.

There are important practical and policy barriers to initiating these difficult conversations. Caregivers reported a reluctance to bring up subjects of violence and abuse, even if they felt that a PCP might be helpful in addressing these issues. Although it was not studied in this article, PCPs may feel similarly uncomfortable. Previous research highlights policies and practices that prevent CPS agencies from sharing information with PCPs related to investigations.[35,37] Our findings support efforts to screen for social needs and traumatic stress in primary care settings, to improve collaboration between child welfare and child health care, and to encourage PCPs to initiate difficult conversations with caregivers of children struggling with emotional and behavioral health problems.

The unexpected finding of differences in PCP relationships based on caregiver language preference is supported by previous research and deserves attention in current practice and research.[38,39] Discomfort with conversations regarding violence or abuse among Spanish-speaking caregivers is troubling, and may reflect long-standing cultural tradition or more immediate political circumstances. Regardless, cultural competency and compassion within the PCMH is critical to assuring equity in access to services for children of Spanish-speaking caregivers with a history of abuse.

LIMITATIONS

Our findings must be considered in light of important limitations. Our methodology does not allow us to determine causality in the association between cumulative ACEs and HRQoL. We attempted to address

TABLE 5 Parent-Reported HRQoL Among Children With Recent CPS Involvement for Child Physical Abuse Stratified by Number of Parent-Reported ACEs

HRQoL Scores in CPS-Involved Children With Low, Moderate, and High ACE Exposures[a,b]	Low ACEs (0–3)	Mod ACEs (4–7)	High ACEs (8–17)	Difference: CPS-Involved With High Versus Low ACEs
Total HRQoL	84.5 (±14.1)	75.4 (±14.8)	70.1 (±14.2)	−14.5[c]
Physical HRQoL	92.1 (±15.7)	89.6 (±12.6)	88.0 (±12.5)	−4.1
Psychosocial HRQoL	81.8 (±15.5)	70.5 (±17.0)	64.1 (±16.7)	−17.9[c]

[a] Child well-being reflected as parent-reported HRQoL measured with the PedsQL4.0, a 23-item survey of physical and psychosocial health that provides total and subscale scores between 0–100. Higher scores reflect better HRQoL.
[b] ACE score (0–17) reflects parent report of 10 traditional ACEs and 7 additional ACEs drawn from the literature.[2,18,19] Low, moderate, and high exposures defined by tertiles within study sample.
[c] Comparison $P \leq .001$.

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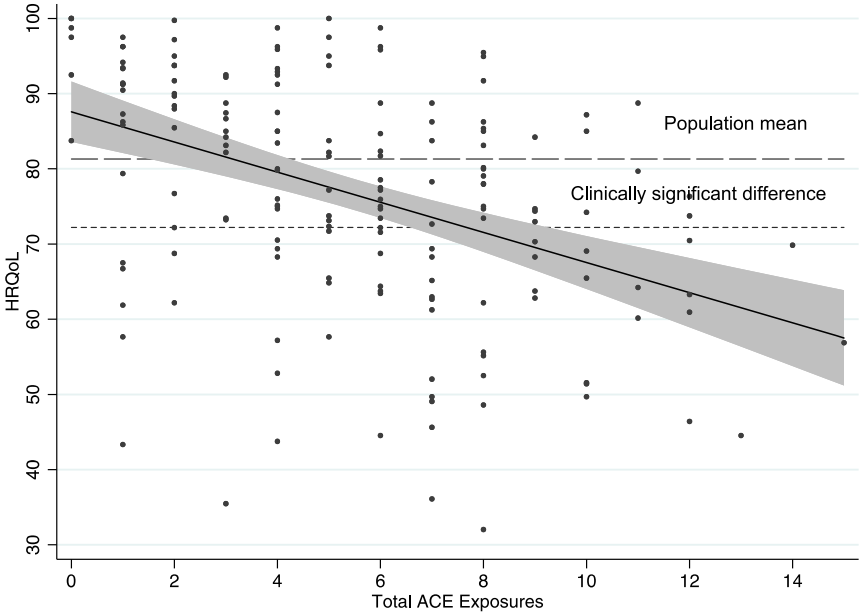

FIGURE 2
Child HRQoL by total ACEs.

these limitations through quantitative models adjusting for known confounders and qualitative interviews to explore parental perceptions and attributions. These mixed-method findings support but cannot confirm a causal relationship between cumulative ACEs and lower psychosocial HRQoL.

Our findings may be limited to children with a history of physical abuse. Our focus on children with recent CPS involvement is rooted in the belief that state involvement by CPS opens a window of opportunity for interventions to improve outcomes for children after abuse. Our focus on children with a history of physical abuse grew from the understanding that a PCP may be more aware of cases of physical abuse than other types of maltreatment. We recognize that physical abuse may not, as demonstrated by our findings, be the most significant traumatic experience for children with this history. Further research is needed to understand if our findings are generalizable to other at-risk populations.

Our results may be influenced by participation bias. Eligible caregivers with the most substantial CPS involvement were the least likely to participate. This bias suggests that our findings are likely to underestimate ACEs and overestimate HRQoL among children with a history of physical abuse. Finally, our results may be influenced by response bias. Caregivers may provide more positive or negative answers to questions related to child health, ACEs exposures, or personal history for any number of reasons. Although we cannot correct for this, triangulation between qualitative and quantitative observations suggests robustness in our primary conclusions.

CONCLUSIONS

Many children remaining at home after CPS involvement for physical abuse have ACEs exposures beyond those that bring them to the attention of child welfare. These accumulated ACEs are associated with HRQoL comparable to children with ADHD, asthma, and diabetes. Nine in 10 of these children has an identified PCP, but these PCPs are often unaware of

TABLE 6 Association Between Child HRQoL With ACEs

	Model 1 Total HRQoL	Model 2 Physical HRQoL	Model 3 Psychosocial HRQoL
ACEs, unadjusted β (95% CI), 0–17	−2.0 (−2.7 to −1.3)	−0.6 (−1.3 to −0.04)	−2.4 (−3.2 to −1.7)
Child, adjusted β (95% CI)			
ACEs, 0–17	-1.3 (−2.0 to −0.6)	−0.7 (−1.3 to +0.02)	−1.5 (−2.3 to −0.7)
Special health care needs	−11.1 (−15.5 to −6.8)	−6.6 (−6.9 to +6.1)	−12.4 (−17.5 to −7.3)
Age, 2–12 y	−0.7 (−1.5 to +0.13)	+0.4 (−0.5 to +1.2)	−1.0 (−2.0 to −0.02)
Female sex	+2.4 (−1.7 to +6.5)	+1.2 (−2.8 to +5.2)	+2.9 (−1.9 to +7.7)
Minority race and ethnicity	−3.5 (−7.4 to +0.4)	−2.1 (−5.9 to +1.8)	−4.0 (−8.5 to +0.6)
Medicaid	+1.2 (−3.4 to +5.9)	+1.1 (−3.4 to +5.6)	+1.4 (−4.0 to +6.8)
Uninsured	+2.0 (−4.7 to +8.7)	−0.4 (−6.9 to +6.1)	+2.9 (−4.9 to +10.8)
Caregiver, adjusted β (95% CI)			
Maternal caregiver	+0.5 (−1.9 to +0.6.2)	+2.4 (−3.1 to +8.0)	−0.05 (−6.7 to +6.6)
No high school degree	+1.4 (−4.1 to +6.9)	−4.8 (−10.2 to +0.5)	+3.4 (−3.0 to +9.9)
Below federal poverty level	−0.8 (−5.4 to +3.7)	−1.5 (−6.0 to +2.9)	−0.5 (−5.8 to +4.8)
Low self-efficacy	−3.4 (−8.8 to +2.0)	−4.6 (−9.9 to +0.6)	−3.3 (−9.6 to +3.0)
Depressive symptoms	−0.6 (−6.3 to +5.1)	+2.3 (−3.3 to +7.8)	−1.6 (−8.2 to +5.0)

Values reflect reduction in HRQoL for each additional ACE exposure in model adjusted for child and caregiver characteristics. Significant reductions in total and psychosocial HRQoL are associated with increasing ACEs and presence of special health care needs. Significant reductions in psychosocial HRQoL are also associated with increasing child age.

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a history of abuse or violence in the home. Many caregivers feel that a trusted PCP could be a source of support in helping their children after traumatic experiences, yet are uncomfortable initiating this conversation. PCPs should consider children with a history of abuse as a distinct population of CSHCN and be willing to initiate difficult conversations about social risk, emotional trauma, and household violence to support child well-being after abuse.

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ABBREVIATIONS

ACE: adverse childhood experience
CI: confidence interval
CPS: Child Protective Services
CSHCN: Children with Special Health Care Needs
DCFS: Division of Child and Family Services
HRQoL: health-related quality of life
PCMH: patient-centered medical home
PCP: primary care provider

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