'We Need to Really Up Our Game' – Trainee and Clinician Perspectives on Adverse Childhood Experiences Screening

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ABSTRACT

Introduction: Despite the negative health effects of adverse childhood experiences, few pediatricians regularly screen for them. We sought to investigate clinician and trainee knowledge and practices regarding adverse childhood experiences in Wisconsin clinics.

Methods: We undertook a sequential mixed methods study. We administered a cross-sectional, web-based survey to medical trainees and clinicians associated with the University of Wisconsin-Madison or subscribing to the Wisconsin chapter of the American Academy of Pediatrics. The survey was developed and pretested by experts in medical education and survey methodology. Data were analyzed descriptively and categorically. We then conducted semistructured interviews using thematic analysis and inductive and deductive coding to characterize facilitators and barriers to screening.

Results: Survey respondents included 110 medical students, 103 attending physicians, 51 residents, and 10 advanced practice providers. Respondents were familiar with adverse childhood experiences, yet only 26% had adequate knowledge to impact their clinical practice. More residents (69%) and medical students (50%) received education about adverse childhood experiences than attending physicians (20%). Few respondents (13%) regularly screen for adverse childhood experiences, but the majority (80%) expressed interest in screening. Nine respondents completed interviews, revealing 3 themes: (1) knowledge is not enough; (2) demand for a multilevel approach; and (3) impact of systems of oppression.

Conclusions: Wisconsin trainees and clinicians have limited experience with adverse childhood experiences resulting in low screening rates but express a strong desire to learn more. Increasing screening practice will require targeted efforts to enhance clinician experiential learning, minimize systemic barriers, and address systems of oppression.

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INTRODUCTION

Exposure to childhood trauma is a widespread public health concern with long-lasting effects across the lifespan. Discrete childhood trauma experiences – or adverse childhood experiences (ACEs) – include 10 types of negative childhood events, such as various forms of abuse, neglect, and family dysfunction.[1] These include physical, sexual, or emotional abuse; physical or emotional neglect; mental illness, substance use, incarceration, or interpersonal violence of a relative; and parental divorce. ACEs are concerningly common, with 61% of US adults having experienced at least 1 ACE, and 1 in 6 adults experiencing 4 or more ACEs.[2] ACEs are also more prevalent among children with marginalized identities. Children with lower socioeconomic status; those who identify as female; and those who identify as lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual, and more (LGBTQ+) youth are more likely to experience ACEs than peers without these identities.[3,4]

Without loving, supportive adults, traumatic experiences can lead to toxic stress – prolonged activation of the body's stress response system – which can have profound effects on children's future health and well-being.[5] A graded relationship exists between the number of categories of childhood exposure and future adult risk behaviors and disease.[1] Increased ACEs exposure is linked to increased risks for chronic conditions, including heart disease, diabetes, depression, obesity, stroke, and cancer, as well as increased rates

of alcohol misuse, intravenous drug use, and suicide attempts.[6] Importantly, experiencing ACEs not only increases morbidity but also can profoundly affect mortality. Those who have experienced 6 or more ACEs have an average lifespan 20 years shorter than those who have not experienced ACEs.[7] Finally, children who experience ACEs are at risk for negative social and economic outcomes. ACEs are associated with increased interaction with the juvenile justice system and decreased graduation and employment rates.[8-10] Trauma has the potential to impact every aspect of a young person's future well-being, and, as such, actions must be taken to support youth and promote their flourishing as they transition into adulthood.

This increasing recognition of the prevalence and impact of ACEs highlights the need for integrating ACEs content into medical training.[11,12] However, broader integration within routine clinical care and medical training curricula has been limited.[11] Furthermore, while various health care professionals who serve children can screen for ACEs—family medicine and pediatric physicians, residents, advanced practice providers (APPs), and supervised medical students—differences in familiarity, comfort, and practice among clinician types have not been well characterized. We sought to investigate clinicians' and trainees' familiarity, comfort, and clinical and educational experiences with ACEs screening with pediatric patients in Wisconsin.

METHODS

This sequential mixed methods study included a survey followed by semistructured interviews. Surveys were designed to elicit trainees' and clinicians' perspectives of and experiences with ACEs screening. Semistructured interviews were then conducted with a sample of survey participants to enrich survey findings and investigate identified barriers and facilitators to screening. The institutional review board at the University of Wisconsin School of Medicine and Public Health (UWSMPH) determined this study to be exempt from review.

Survey Design

We electronically distributed a cross-sectional, web-based survey to eligible participants in summer 2020. Eligible trainee participants included medical students and pediatric and family medicine residents affiliated with UWSMPH programs. Eligible clinician participants included APPs, family medicine physicians, and pediatricians affiliated with UWSMPH or subscribed to the Wisconsin chapter of the American Academy of Pediatrics. We sent an initial email introducing the study and survey followed by reminder emails to participate. The survey was open to respondents for 1 month.

Survey Development

Based on our prior comprehensive review of the literature,[11] we developed preliminary domains of inquiry. Next, we convened a panel of 3 pediatricians with survey, education, and ACEs expertise to develop and refine survey items, content, and design. We then pilot tested the survey with stakeholder trainees and clinicians, made modifications, and established the final version. The survey included 21 questions—primarily close-ended questions with multiple choice and 5-point Likert response options.

Final domains included training and education, physician familiarity and comfort, and current ACEs screening practices. We specifically queried (a) receipt of prior ACEs educational training (multiple choice), (b) familiarity with ACEs and the foundational Kaiser study[1] (Likert scale), (c) desire for additional ACEs education (multiple choice), (d) current screening practices (multiple choice), and (e) comfort with discussing ACEs in practice (Likert scale). We also obtained demographic information, including gender, practice location and rurality, years in practice, specialty or interest area, average daily number of patient encounters, and primary insurance coverage of children in their practice. Participants could choose to provide their email address at the conclusion of the survey if interested in completing a follow-up interview.

Data Management and Statistics

Study data were collected and managed using UW-Madison Qualtrics XM Survey Hosting Service (Qualtrics XM). Clinicians were categorized into 4 groups for analysis: medical students, residents, APPs (nurse practitioners, physician assistants, other), and attending physicians. To accurately characterize the diverse racial and ethnic identities represented and maintain respondent anonymity, we dichotomized respondents as "underrepresented in medicine" (UIM) or not, with UIM defined as those underrepresented in the medical profession relative to the general population, including African-American/Black, Hispanic/Latino, American Indian/Alaska Native, or Native Hawaiian/Pacific Islander respondents.[13] Practicing respondents were defined as those already in medical practice, including residents, attending physicians, and APPs. In questions of interest in future ACEs education, responses were dichotomized as "interested" ("somewhat," "moderately," or "extremely" response selections) versus "not interested" ("not interested" or "neutral" response selections). In questions of comfort with screening, responses were similarly dichotomized. Descriptive statistical analyses were performed to describe overall trends in ACEs perspectives and practices based on participants' level of training, years of experience, and practice type. Data were tabulated and summarized separately for each group and comparisons made among groups using either chi-square tests or Fisher exact test (for categorical factors) or the nonparametric Kruskal-Wallis test for ordered responses with follow-up pairwise comparisons based on Nemenyi's procedure.[14] P values < 0.05 were considered statistically significant. Analyses were conducted using R Statistical Software version 4.0.3 (R Core Team).

Qualitative Interviews

Of 274 survey participants, 114 (42%) stated interest in completing a follow-up interview. We grouped participants according to training background and then randomly invited a convenience sample of medical students, residents, APPs, and attending/independent physicians to participate. Of those approached, all agreed to participate. They were offered a $50 gift card as compensation.

Clinicians completed interviews lasting on average, 30 minutes, using Zoom version 5.17.0 (Zoom Communications). Interviews were conducted using a semi-structured interview guide designed to elicit participants' experiences and perspectives of ACEs and screening and enrich understanding of survey findings. The interview guide was informed by literature review, survey findings, and stakeholder and expert opinion including 1 medical student (H.S.), 2 pediatric residents (P.C., S.W.A.), and a pediatrician with extensive qualitative training and experience (M.M.). Interviews were conducted by a medical student (H.S.) or pediatric resident (P.C., S.W.A.). All interviews were audio-recorded, transcribed verbatim, deidentified, and entered into Dedoose software version 10.0.34.

Table 1. Comparison of Respondent Characteristics

Characteristic[a]	Medical Students N = 110	Residents N = 51	Attending Physicians N = 103	APPs N = 10
Sex, n (%)				
Female	65 (61)	38 (76)	71 (70)	10 (100)
Male	42 (39)	12 (24)	31 (30)	**0**
Underrepresented in medicine racial or ethnic identity, N (%)[b]				
Yes			22 (8)	
No			252 (92)	
Practice setting, n (%)				
Rural	N/A	2 (4)	4 (4)	1 (10)
Suburban		5 (10)	16 (16)	2 (20)
Urban		43 (86)	81 (80)	7 (70)
Years in practice, n (%)				
0–5 years	N/A	N/A	18 (18)	3 (30)
6–10 years			14 (14)	5 (50)
11–20 years			25 (24)	1 (10)
>20 years			45 (44)	1 (10)
Average number of patients seen per day, n (%)				
0–10 patients	N/A	N/A	51 (53)	10 (100)
11–20 patients			37 (39)	0
>20 patients			8 (8)	0
Practice discipline, n (%)				
General pediatrics	N/A	28 (55)	55 (53)	1 (10)
Pediatric subspecialty		10 (20)	30 (29)	4 (40)
Family medicine		13 (25)	18 (18)	5 (50)

[a]Participants were not required to answer every question; responses may not total N for each group.
[b]URiM identity not provided at the level of medical students, residents, attendings, and APPs to ensure anonymity.

Analytic Approach

We performed a thematic analysis of the interview data using inductive and deductive approaches. Pursuant to data immersion, the primary author (H.S.) and second coder (M.T.) read all deidentified clinician interviews and created memos concurrently. Next, H.S and M.T. utilized line-by-line, inductive coding to create a preliminary codebook to capture clinicians' experiences with ACEs and their impressions of survey results. H.S., M.T., and a third coder, T.R.H., participated in regular consensus meetings to discuss discrepancies and revise the codebook. When new codes emerged, coders reviewed the earlier transcripts to ensure that all new codes also were captured from prior iterations (constant comparative approach). Consensus was reached on code definition refinement after repeating this process for 6 transcripts. The finalized codebook was then compared to the Theoretical Domains Framework, a single framework informed by 33 behavioral theories clustered into 14 domains that serve as mediators of behavior.[16,17] Any domains included within the Theoretical Domains Framework and not represented by our inductively developed codes were added to the codebook (deductive coding).[18] Using the finalized codebook, H.S. and M.T. coded the remaining transcripts.

RESULTS

Quantitative Results

Respondents' Characteristics

There were 330 survey respondents. Those who failed to state their credentials or who did not complete the survey were excluded, leading to 274 for analysis: 110 (40%) medical students, 103 (38%) attending physicians, 51 (19%) residents, and 10 (4%) APPs (Table 1). Participants were not required to answer every question, so some items had lower response totals. Most respondents were female (67%) and not UIM (92%). Practicing respondents overwhelmingly served urban populations (86% of residents, 80% of attendings, and 70% of APPs) and included those in general pediatrics, pediatric subspecialty, and family medicine disciplines. Just over half of attending physicians identified as general pediatricians (53%), and 55% of residents were in a general pediatrics residency. This contrasts with APPs, only one of whom (10%) practiced general pediatrics and half of whom practiced family medicine. Of clinicians out of training, the largest group of attending physicians (44%) had been in practice for over 20 years, and the largest group of APPs (50%) had been in practice for 6 to 10 years.

Knowledge of and Education About ACEs

Most respondents (93%) had heard of ACEs; however, familiarity varied across groups (Figure 1). All residents and APPs had heard

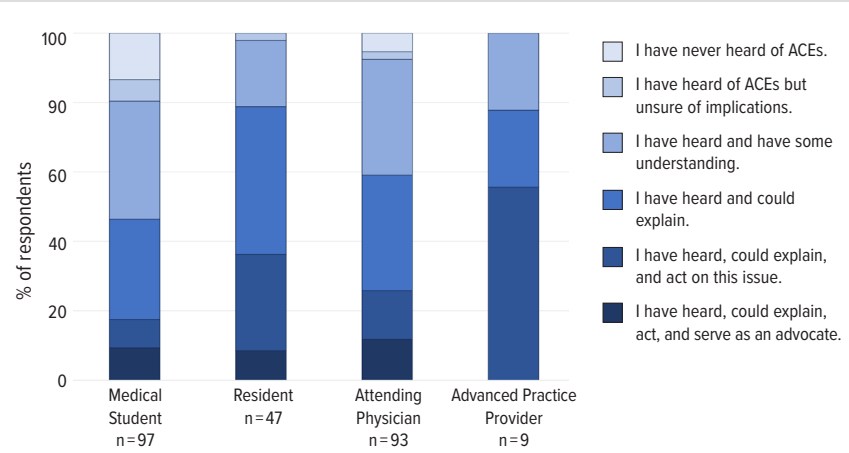
of ACEs, but 13% of medical students and 5% of attending physicians indicated that they had never heard of ACEs. Degree of familiarity significantly differed among the 4 groups ($P=0.001$). APPs were most commonly prepared to address ACEs, with over half (56%) stating that they could act on ACEs in their practice compared to 37% of residents, 26% of attending physicians, and 17% of medical students. When asked about their familiarity with the landmark Centers for Disease Control and Prevention-Kaiser Permanente study on ACEs,[1] most respondents had heard of the study (80%). Familiarity differed significantly between groups ($P<0.001$), with 78% of APPs, 74% residents, 57% of attending physicians, and 39% of medical students stating that they were familiar with the study.

When asked about their ACEs educational experiences, 41% of all respondents reported having learned about ACEs during their training. Residents were most likely to have received education about ACEs (69%), followed by medical students (50%), APPs (43%), and attending physicians (20%). Of those who had received ACEs education, all were aware of the association between increased ACEs and poor health outcomes later in life. Additional topics most addressed in their education included the prevalence of children affected by ACEs (64% of respondents) and physiologic changes associated with toxic stress (58% of respondents). Only 39% learned how to screen for ACEs. Finally, when asked about their future educational interest in ACEs, all APPs, 97% of medical students, 93% of residents, and 91% of attending physicians expressed a desire to learn more (Figure 2).

ACEs Screening in Practice

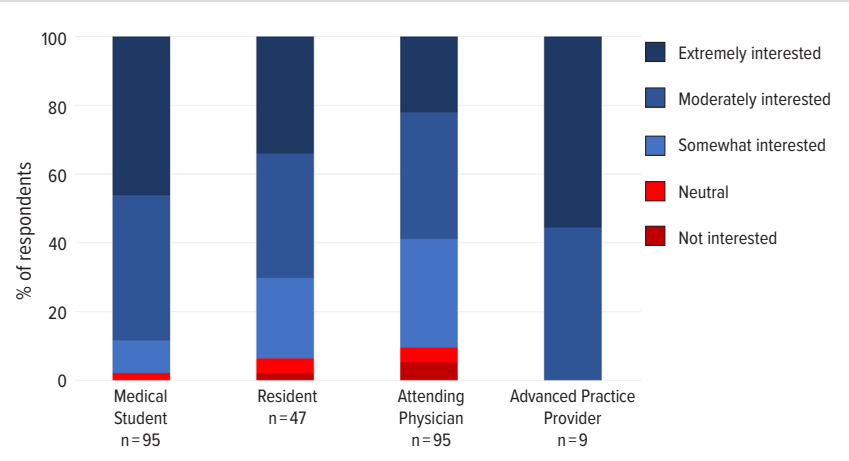
Few participants regularly screened for ACEs. One medical student (4%), 11% of residents, and 18% of attending physicians reported that they regularly screened for ACEs, and no APPs did so. For those who screened at least "sometimes" in their practice, just under half (44%) screened

Figure 1. Participant Familiarity with Adverse Childhood Experiences (ACEs)



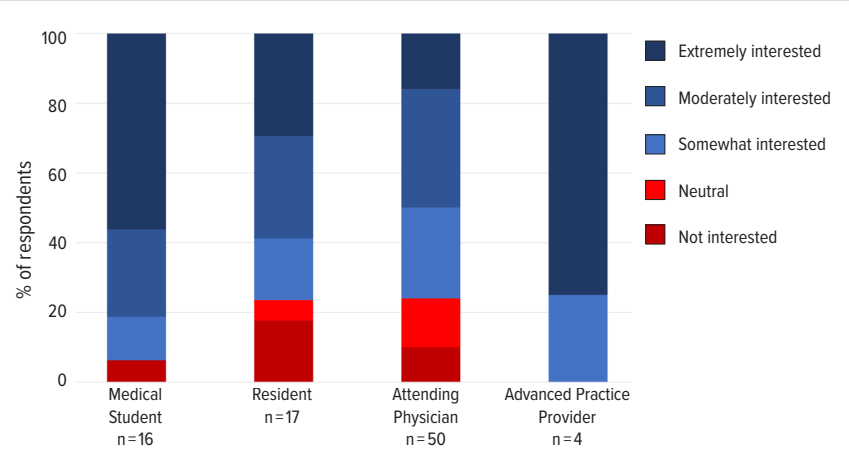
Across groups, survey respondents (N=246) demonstrated familiarity with ACEs, though familiarity differed among the 4 groups ($P=0.001$). However, few felt they had enough education to apply and act on ACEs knowledge in their clinical practice or as a clinical advocate.

Figure 2. Participant Interest in Learning More About Adverse Childhood Experiences (ACEs)



The majority of respondents (N=246) across groups indicated interest in learning more about ACEs. Interest in learning about ACEs differed by group ($P<0.001$).

Figure 3. Respondent Interest in Screening for Adverse Childhood Experiences (ACEs)



Of those not already screening for ACEs (n=87), most respondents across groups indicated interest in incorporating screening into their practice. The degree of interest in screening for ACEs differed among the 4 groups ($P=0.014$).

Table 2. Illustrative Quotes Supporting Thematic Analysis of Barriers to ACEs Screening

Theme 1: Knowledge Insufficient for Action
Quote 1: "A lot of times, it's not even that [doctors] don't feel like ACES aren't important, but they don't feel like they can do anything about it, and so you just kind of avoid the areas you feel helpless in." (Medical Student)
Quote 2: "I think a lot of people are really uncomfortable talking about topics that might make other people uncomfortable. And they just don't feel like they're able to talk about really difficult experiences like abuse and neglect, and then there's also not always a clear way to talk about it…like, okay, if I open this can of worms…if I potentially upset this person…" (Medical Student)
Quote 3: "I hear a lot of people being uncomfortable with the possibility of retraumatizing people if they bring up ACEs in an insensitive way." (Resident)
Quote 4: "I think a lot of people know how ACEs affect patients, but how to sort of do something with that in a practical sense is challenging." (APP)
Quote 5: "I think without any training or mentorship and like how to do it, you probably aren't going to find a lot of people who are really comfortable just bringing that sort of thing up with patients." (APP)
Theme 2: Multisystem Approach to ACEs Screening
Quote 6: "That's another element of why some pediatricians would say, look, I've got to see 25 to 30 patients a day, whatever it is. Where am I going to fit in the half hour conversation with this poor kid who's really in trouble?" (Attending Physician)
Quote 7: "EHR is a big one, right? We don't have it built into workflows, we don't have nurses handing out forms at the door. Also, I know there's like there's different ACE screeners - there's a 10-question one, and then there's the revised one that has maybe 20 or so. So I think you'd have to figure out within your organization or wherever you are working, which one are we going to pick and why and where we are going to record it, like, all that sort of stuff." (APP)
Quote 8: "It has got to be something that's not really burdensome, but it also has to capture the importance of it…I know everybody kind of has a screen fatigue." (Attending Physician)
Quote 9: "One of the ways to really do it is to attach it to the developmental surveillance screening or behavioral health surveillance – and that the parents have noticed as well that a screening becomes part of it, you know, either through a developmental or behavioral lens. I just think something specific to the ACEs." (Attending Physician)
Quote 10: "I think the least amount of burden would be the model of sending it home to people or sending it through My Chart, like communication happens to patients before a well child visit and then having them score it themselves and just send the number…I think, generally speaking, it would be less burdensome to the system as it exists right now to first introduce it as something that parents or the child, if they're old enough, does beforehand and then just submits the number and then you kind of choose whether to just use it as data or to do something about it further." (Resident)
Quote 11: "I think having providers who are very passionate about this and good at it. Encourage medical students and residents to not just be there for these kinds of discussions, but also to participate and to engage them in conversation afterwards about what they noticed and things like that." (Resident)
Quote 12: "I think advocacy from people probably like [research team] to the AAP, people who have more degrees in weight behind their name. At this point in their career like 50- to 60-year-old people who say, 'Hey, AAP board, this needs to happen. And here's some ideas for how to do it and let's have a study group about it' and the AAP has clinical practice guidelines for all kinds of things, and they could make something for this." (Attending Physician)
Theme 3: Systems of Oppression
Quote 13: "My favorite answer to this would be just diversifying the medical field in general, you know? If [clinicians] interact with more people from various backgrounds, I think they'd be more interested to know about [ACEs], know more about their perspectives, they'd be more interested in serving patient populations that are more diverse, I guess, so, yeah. I guess I think that that would truly be the ultimate way." (Medical Student)
Quote 14: "I think the other piece is going to be really important to look at any racial inequity and changes, so we adapt the screening in any way or the follow up. I think that's the lens. We're just starting to see we've missed a lot of the boat on and it certainly does have real life consequences and importance." (Attending)

Abbreviations: ACEs, adverse childhood experiences; APP, advanced practice provider; AAP, American Academy of Pediatrics.

for 1 or 2 ACEs. Only 18% of attending physicians, 11% of residents, and no medical students or APPs screened for more than 6 ACEs. The number of ACEs screened did not significantly differ across groups. About two-thirds (66%) of respondents who screened indicated the process was not standardized. Among those who screened for ACEs, the most offered resources in response to a positive screen were counseling referral (92%), social work referral (80%), and early intervention referral (80%).

Among the 87 respondents not screening for ACEs in their practice, all APPs, 94% of medical students, 76% of residents, and 76% of attending physicians expressed interest in starting to screen (Figure 3). Comparing across groups, degree of interest differed significantly, with attending physicians indicating the lowest level of interest ($P = 0.014$).

Participants reported limited comfort talking with patients about ACEs. Only 11% of residents, 13% of medical students, 22% of APPs, and 25% of attending physicians indicated feeling very comfortable doing so. Participants' comfort levels were not associated with receipt of prior ACEs education.

Qualitative Results

Nine qualitative interviews were conducted with 2 medical students, 3 residents, 1 APP, and 3 attending physicians. Three major themes emerged from interview transcripts reflecting barriers to ACEs screening: (1) knowledge is not enough, (2) demand for a multilevel approach, and (3) impact of systems of oppression. Representative quotes are shown in Table 2.

Knowledge is Not Enough

Knowledge alone was insufficient to generate action in ACEs screening, and clinician emotions specifically could pose a barrier to implementing screening. Some described a tension between wanting to screen and wanting to avoid negative emotions, such as helplessness (quote 1). Interviewees were uneasy with the potentially sensitive nature of ACEs and feared creating discomfort for

families (quote 2) or "retraumatizing" patients who disclose ACEs (quote 3). Interviewees also distinguished the difference in being conceptually knowledgeable about ACEs and practically knowing how to screen and properly respond to a positive screen (quotes 4 and 5).

Demand for a Multilevel Approach

Interviewees proposed strategies for ACEs screening integration, emphasizing the need for a multilevel approach. They stressed health care barriers requiring intervention, including time constraints (quote 6), lack of standardized screening protocol (quote 7), and screening fatigue (quote 8). Interviewees suggested coupling an ACEs screen with other developmental or behavioral screens (quote 9) sent to families prior to visits to minimize time constraints and screening fatigue (quote 10). Additionally, interviewees suggested having champions for ACEs screening, both on the clinic level and more broadly through advocacy organizations, to accelerate ACEs screening integration (quotes 11 and 12).

Impact of Systems of Oppression

Interviewees discussed how systemic inequities and discrimination affect if and how clinicians screen for ACEs. Clinicians from homogeneous backgrounds were perceived as less aware or interested in addressing ACEs that diverse patient populations may encounter (quote 13). Interviewees also noted how a patient's exposure to ACEs, screening, and available resources is influenced by systemic inequities (quote 14).

DISCUSSION

In this mixed methods study investigating trainee and clinician knowledge and practices regarding ACEs, we found that Wisconsin clinicians were familiar with ACEs but few could clinically apply their knowledge through screening or intervention. Respondents were interested in learning more about ACEs and implementing screening, but feelings of discomfort, barriers across health care systems levels, and perpetuation of systems of oppression were prominent impediments.

Our survey revealed that most respondents were familiar with ACEs and the science behind them, but few indicated that they could actualize that knowledge to their practice. Interviewees expressed that education regarding ACEs and trauma-informed care, at large, is still lacking in medical education. Feelings of clinician discomfort—stemming from not knowing how to screen or respond in a trauma-informed and beneficial way—prevented screening. Consistent with prior research demonstrating the value of standardized patient learning cases to enhance ACEs screening, medical education institutions should focus on increasing experiential learning opportunities to educate trainees about ACEs and trauma-informed care content and prepare them to apply this knowledge to practice.[16]

While only a fraction of practicing respondents regularly screened for ACEs, they overwhelmingly expressed interest in starting to screen. Interview participants described various systemic barriers that could impede ACEs screening despite their interest. When considering how to better integrate ACEs screening into practice, interviewees stressed the need for interventions across health care levels, and champions for screening were noted specifically as a resource to catalyze screening implementation. While our sample of responding APPs was small and prevents our ability to derive associations, our findings suggest these APPs may be more familiar with the landmark ACEs study and more prepared to intervene upon ACEs. APPs also indicated a high level of interest in screening and additional ACEs education. Prior literature has shown that APPs may be an important human resource to champion and bolster local screening.[17]

Finally, interviewees discussed the role that systems of oppression may play in ACEs screening and the impact ACEs have on families. They described the need for a more diverse health care workforce, citing that clinicians with primarily privileged identities may be less aware of or invested in the importance of ACEs screening. ACEs education and training will benefit from explicit discussions of the role of implicit bias and systemic oppression in the screening process, a family's experience of ACEs, and resources available for intervention. This finding complements other research stressing the need for culturally informed, preventive interventions aimed to address these disparities in ACEs exposure among minoritized youth.[19]

Limitations

This project has several limitations. First, while our study uniquely benefits from including and comparing perspectives of medical students, residents, APPs, and attending physicians, our focus on those practicing in Wisconsin limits generalizability to other locations and health systems. Similarly, our sample consisted primarily of medical students and clinicians who were not underrepresented in medicine and were serving in urban areas, several of whom were pediatric subspecialists. Perspectives from diverse clinicians, in primary care, and located in rural areas may be lacking. Future studies must focus on recruiting diverse populations. Trainees and clinicians who responded also may have had more (or less) experience with or interest in ACEs and screening than nonrespondents. While our small number of interviews limited our ability to achieve saturation, the addition of these interviews was vital to enrich our understanding of survey findings. In addition, our use of inductive and deductive approaches with application of the validated Theoretical Domains Framework strengthens the analysis of our limited sample size.[20,21] Childhood trauma—an event or series of events experienced as harmful or life threatening to an individual with lasting effects on their functioning and well-being—extends beyond the originally investigated ACEs.[22] Identifying ACEs is one part of a larger goal to identify youth who have experienced trauma, provide trauma-informed intervention when appropri-

ate, and promote their resilience through strengthening of positive relationships.

CONCLUSIONS

While ACEs are a prevalent public health concern with long-lasting effects, medical trainees receive inadequate education regarding ACEs, and few clinicians regularly screen for ACEs. Trainees and clinicians are interested in learning more about ACEs and screening, but lack of clinical competence and feelings of discomfort impede many from doing so. For individuals to feel confident to screen, experiential learning must be incorporated into ACEs education and training, and APPs may be well positioned to serve as local champions of ACEs screening. Finally, more research is needed to inform best practices regarding ACEs screening and intervention, and health care systems must utilize these practices to create protocols that meet the needs of the diverse patient populations they serve.

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