Annals of Global Health

VOL. 83, NO. 5–6, 2017

ISSN 2214-9996/$36.00

https://doi.org/10.1016/j.aogh.2017.10.023

Comparison of Modes of Administration of Screens to Identify a History of Childhood Physical Abuse in an Adolescent and Young Adult Population

Angela Diaz, MD, PhD, Ken Peake, DSW, Anne Nucci-Sack, MD, Viswanathan Shankar, DrPH

New York, Bronx, NY

Abstract

BACKGROUND Childhood physical abuse is a major public health issue with negative consequences to health and well-being manifested in childhood and adolescence, and persisting into adulthood. Yet much childhood physical abuse is not identified when it occurs and little is known about how to screen for it.

METHODS To address this gap, the effectiveness of 4 modes of administration of screens to identify childhood physical abuse were compared in a sample of 506 adolescents and young adults aged 12-24 years seeking general health services at a primary care clinic. Comparisons were made between paper and pencil screen, audio computer-assisted self-interview screen, face-to-face structured screen (all 3 using the same measure), and face-to-face unstructured interview.

FINDINGS Overall, 44.5% of the sample disclosed that they had been physically abused. Compared to paper and pencil screen, the odds of reporting physical abuse were 1.5 (95% confidence interval [CI]: 0.92, 2.58) and 4.3 (95% CI: 2.49, 7.43) higher among participants using face-to-face structured screen and face-to-face unstructured interview methods, respectively. The face-to-face unstructured interview identified significantly more reports than the paper and pencil screen.

CONCLUSIONS Although the unstructured interview was the most effective mode for screening for childhood physical abuse, additional research is needed to confirm whether this holds true in other health care settings. Further research should examine how a health provider's training, experience, and comfort level might influence the identification of physical abuse disclosure in primary care settings using face-to-face unstructured interview.

KEY WORDS adolescents, childhood physical abuse, mode of administration, screening tool, young adults.

INTRODUCTION

Childhood physical abuse is a major public health issue with tremendous emotional and financial burden.[1] Though much abuse goes unreported,[2] the number of reported cases among children and adolescents nationally is high: In 2013 there were 3.5 million reports of child maltreatment involving 6.4 million children, of which 18% were for physical abuse.[3]

Childhood physical abuse has both short- and long-term negative consequences that affect all aspects of functioning throughout the victim's life course.[2,4,5] In adolescents the problems associated with abuse include teen pregnancy,[6] high stress, poor self-esteem, cigarette smoking, drug and alcohol abuse,[7,8] and depression and suicidality.[9] These negative effects can be diminished through treatment interventions if the abuse is identified by a health care provider.[1,2,10,11] Although most victims do not spontaneously disclose a history of childhood physical abuse, they are likely to disclose if asked in a medical setting as part of a comprehensive health history.[12-14] Unfortunately most

From the Department of Pediatrics and Environmental Medicine and Public Health, Icahn School of Medicine at Mount Sinai, New York, NY (AD); Icahn School of Medicine at Mount Sinai, New York, NY (KP, AN-S); and Albert Einstein College of Medicine, Bronx, NY (VS). Address correspondence to A.D. (angela.diaz@mountsinai.org).

health care providers do not ask about abuse when there are no obvious signs or symptoms, as is most commonly the case.[15] Though very few studies have focused on understanding why providers do not assess for childhood abuse,[16] there is evidence that they feel ill prepared and lack the knowledge of effective methods for identification.[17,18]

A number of modes of administration of screens have been used to identify a history of childhood abuse including paper and pencil questionnaires, interviewer-conducted questionnaires, computer-assisted questionnaires, and face-to-face interviews.[18] Each has its merits. The paper and pencil questionnaire is easy to administer but depends on the reader understanding and correctly interpreting questions.[19] In contrast the audio computer-assisted self-interview (ACASI) has an audio component that speaks the questions to the participant and does not require the same level of reading skills.[20] Structured screens, such as the Childhood Maltreatment Interview Schedule—Short Form (CMIS-SF)[21] or the Computer Assisted Maltreatment Inventory (CAMI),[22] use a defined set of questions. In contrast, the face-to-face unstructured interview allows the give and take of a conversation,[20,23] allowing the interviewer to probe. Thus an experience of physical punishment that a participant might initially define as nonabusive might, on further probing, become redefined as abuse. ACASI, which has not previously been studied in childhood abuse per se, has been found to be more effective than other modes of inquiry in research on highly sensitive issues in adolescents and young adults[24-29] because it has also been found to enhance the participants' sense of privacy and to reduce the influence of social desirability in shaping participants' responses.[30]

Our aim was to compare the effectiveness of 4 modes of administration of screens—paper and pencil screen, ACASI screen, face-to-face structured screen, and face-to-face unstructured interview—to identify a history of childhood physical abuse during a clinical visit.

METHODS

Study Population. The study sample was recruited from English-speaking youth ages 12-24 years, seeking general health services, between December 5, 2005, and April 13, 2007, at a New York City primary care clinic specifically designed for young people. A total of 532 young people were screened for history of childhood physical abuse.

Study Recruitment. Institutional Review Board approval was obtained from the Icahn School of Medicine at Mount Sinai along with a waiver of parental consent to allow consent from adolescents younger than age 18. A certificate of confidentiality was obtained to protect participants' privacy.

While waiting to see their medical provider, patients were approached by a research assistant who described the project as a confidential study on how to best take a psychosocial history from young people. Patients were told that they could decide against participation at any time without this affecting their care. Those who had difficulty understanding the study materials and consent form were not enrolled. No formal sampling or selection protocol was used. Patients who agreed to participate, once they provided consent, were randomly assigned within clinician and nonclinician arms to 1 of 4 modes of administration of screens to identify a history of childhood physical abuse. Participants received 2 movie tickets on completion of all the study instruments. Safety protocols were put in place to ensure an immediate assessment for any participant who disclosed childhood abuse or suicidality. For those younger than 18 years who disclosed abuse, child protection reporting protocols were followed.

Study Randomization. The study was limited by the fact that only 1 clinician was assigned to conduct the 2 face-to-face screening groups. Therefore, random allocation was stratified based on clinician's availability. When the clinician was not available, participants were randomly assigned to paper and pencil screen versus ACASI screen, and when the clinician was available participants were randomly assigned to face-to-face structured screen versus face-to-face unstructured interview.

Outcome. The study outcome was self-reported history of childhood physical abuse occurring before 17 years of age disclosed during any of the 3 structured screening methods (paper and pencil, ACASI, or face-to-face structured screens) or a face-to-face unstructured interview. The outcome was specified as childhood physical abuse or no childhood physical abuse regardless of the screening method used. For all 3 structured methods, childhood physical abuse was identified using the CMIS-SF (see Appendix) modified to better fit the speech used by the study population.

Predictors. Once participants completed the history of childhood abuse using 1 of the 4 randomly assigned modes of administration of childhood abuse screens, the participants completed a demographic questionnaire and the Beck Depression Inventory for Primary Care—Fast Screen (BDI-FS)[31] using ACASI.

Annals of Global Health, VOL. 83, NO. 5–6, 2017
September–December 2017: 726–734

The primary predictor of interest is the mode of screening to identify a history of childhood physical abuse. The covariates age, gender, race, ethnicity, zip code, nativity status (immigration status), last grade completed, school enrollment status, school performance, and living arrangement most of the time within the last year were considered as potential confounders and were adjusted for in the statistical model.

Statistical Analysis. The statistical analysis was conducted by author V.S. The distribution of sociodemographic variables was presented as frequencies and percentages, and bivariate associations were examined using the Pearson χ^2 statistics.

Approximately 5% of the covariates had missing information; thus we modeled the data both as complete case data (n = 506) and as multiply imputed data (532 × 10 dataset). Multiple imputation was done using fully conditional specification method, which is a flexible imputation procedure that models incomplete variables by a set of conditional densities using different regression procedure. Ten imputation datasets were created with 200 burn-in iterations under the missing at random assumptions.

Multivariable logistic regression models were fitted to examine the effect among the modes of administration and physical abuse status after adjusting for potential confounders for both complete case and multiple imputation data. Potential covariates that were associated with the outcome at a 20% level were selected for final models.

All analyses were performed using SAS Software Version 9.4 (SAS Institute Inc., Cary, NC).[32]

RESULTS

The distribution of participant characteristics by study arms (modes of screen) is presented in Table 1. More than half the participants were age 18 and older (52.2%). Most were female (85.3%) and Hispanic/Latino or black (93.3%), and almost one-third resided in Harlem (32.7%). The majority were US born (81.6%), currently in school (79.5%), and most had graduated from high school or were still in school at the right grade for their age (88.3%). More than one-quarter of participants (27.2%) were found to have depression on the BDI-FS. A total of 67 of the 520 research participants (12.9%) disclosed suicidal thoughts within the previous 2 weeks via the BDI-FS. None of these 67 participants were determined to be actively suicidal.

The distribution of characteristics of the total sample was similar across the methods of administration with the exception of age, last grade of education completed, and depression. The prevalence of child physical abuse reported under each screening mode is presented in Figure 1. Overall, 43.4% of participants disclosed childhood physical abuse. The face-to-face unstructured interview identified higher percentages of abuse (66.3%), followed by face-to-face structured screen (45.4%), ACASI (35.5%), and paper and pencil (35.1%), and was significantly different ($P < .0001$).

Childhood physical abuse was not associated with the selected covariates in the study population with the exception of depression (Table 2). Participants who reported childhood physical abuse had a positive association with depression, with 31% of those who had experienced physical abuse screening positive for depression compared with 23% of those who did not ($P = .0380$).

We examined the effect of different screening modes to identify child physical abuse. Our multivariable model adjusting for potential confounders indicated that in both types of face-to-face interviews, the participants were more likely to report abuse. Specifically in complete case models, the estimated odds of identifying child physical abuse (ie, abuse being reported) was 4.3 times greater in the unstructured face-to-face interviews with more probes compared with the paper and pencil screens, as shown in Table 3. Similarly, the estimated odds of child physical abuse reported in structured interview was 1.5 times greater compared with paper and pencil screen, though the effect was not statistically significant. Multiple imputation results indicated similar results to the complete case, but the confidence intervals were a bit tighter and the structured face-to-face interview had a marginal significance.

DISCUSSION

The prevalence of childhood physical abuse identified by the face-to-face unstructured interview was 4.5 times that of paper and pencil screen, significantly more than all 3 structured modes of administration. The interviewer who conducted the face-to-face interviews was a very experienced physician with an expertise in childhood abuse assessment, which may account for some of this difference. Another possible contributor is the fact that the face-to-face unstructured interview allows further probing.

Only one prior study, by DiLillo et al,[33] has compared different modes of administration of screens to identify a history of childhood physical abuse, comparing 3 modes (paper and pencil questionnaire, computer-assisted survey, and face-to-face structured interview)

Table 1. Distribution of Study Participants' Characteristics by Modes of Administration of Screens to Identify Childhood Abuse

Characteristics	Methods				
	Paper & Pencil N (%) 174 (32.7)	ACASI N (%) 138 (25.9)	Face-to-Face Structured N (%) 108 (20.3)	Face-to-Face Unstructured N (%) 112 (21.1)	*P*
Demographics					
Age					
14 and younger	12 (6.9)	5 (3.6)	12 (11.1)	16 (14.3)	.0010
15-17	74 (42.5)	44 (31.9)	39 (36.1)	53 (47.3)	
18 and older	88 (50.6)	89 (64.5)	57 (52.8)	43 (38.4)	
Gender					
Female	151 (86.8)	11 (86.2)	97 (89.8)	87 (77.7)	.2584
Male	23 (13.2)	19 (13.8)	11 (10.2)	25 (22.3)	
Race					
Hispanic/Latin	88 (50.6)	68 (49.3)	62 (57.4)	62 (55.4)	
Black	70 (40.2)	61 (44.2)	42 (38.9)	44 (39.3)	.5375
Asian or white	16 (9.2)	9 (6.5)	4 (3.7)	6 (5.4)	
Borough					
Bronx					
South Bronx	23 (13.32)	19 (13.8)	15 (13.9)	14 (12.5)	.2734
Other Bronx	33 (19)	17 (12.3)	13 (12.)	17 (15.2)	
Brooklyn	13 (7.5)	20 (14.5)	9 (8.3)	5 (4.5)	
Manhattan					
Central and East Harlem	54 (31.0)	51 (36.9)	37 (34.3)	32 (28.6)	
Other Manhattan	35 (20.1)	21 (15.2)	23 (21.3)	27 (24.1)	
Queens	12 (6.9)	7 (5.1)	9 (8.3)	15 (13.4)	
Other	4 (2.3)	3 (2.2)	2 (1.9)	2 (1.8)	
Nativity Status					
United States	141 (81.3)	112 (81.2)	82 (75.9)	99 (88.4)	.1214
Last Grade Completed*					
8th or lower	17 (9.8)	9 (6.5)	16 (14.8)	16 (14.3)	.0327
9th	23 (13.2)	18 (13.0)	10 (9.3)	21 (18.8)	
10th	17 (9.8)	17 (12.3)	13 (12.0)	23 (20.5)	
11th	40 (22.9)	22 (15.9)	20 (18.5)	19 (17.0)	
12th	34 (19.5)	29 (21.0)	17 (15.7)	13 (11.6)	
Some/completed college	43 (24.7)	43 (31.6)	32 (29.6)	20 (17.8)	
Education Status					
Dropped out	10 (5.8)	9 (6.5)	8 (7.4)	3 (2.7)	
Currently in k-12th grade but left behind	10 (5.8)	9 (6.5)	5 (4.6)	8 (7.4)	
Graduated HS or currently in K-12th grade and on track	154 (88.5)	120 (86.9)	95 (87.9)	101 (90.2)	
Living Arrangement for the Last Year					.2877
Both parents	42 (24.1)	27 (19.6)	21 (19.4)	27 (24.1)	
One parent & step	24 (13.8)	14 (10.1)	17 (15.7)	14 (12.5)	
Single parent, no other adults	50 (28.7)	46 (33.3)	47 (43.5)	41 (36.6)	
Single parent and other adults	25 (14.4)	20 (14.5)	11 (10.2)	15 (13.4)	
Other family member, foster care, group home	33 (18.9)	31 (22.5)	12 (11.1)	15 (13.4)	
Depression					
None	116 (66.7)	89 (64.5)	80 (74.1)	88 (78.6)	.0877
Any depression	47 (27.0)	44 (31.9)	28 (25.9)	20 (17.9)	
Missing	11 (6.3)	5 (3.6)	0	4 (3.6)	
Suicidal Ideation	21 (12.5)	16 (11.8)	18 (16.7)	12 (11.1)	.6035
Yes					
No	147 (84.5)	120 (86.9)	90 (83.3)	96 (85.7)	
Missing	6 (3.5)	2 (1.5)	0	4 (3.6)	

ACASI, audio computer-assisted self-interview; HS, high school.
* Based on complete case analysis.

Annals of Global Health, VOL. 83, NO. 5–6, 2017
September–December 2017: 726–734

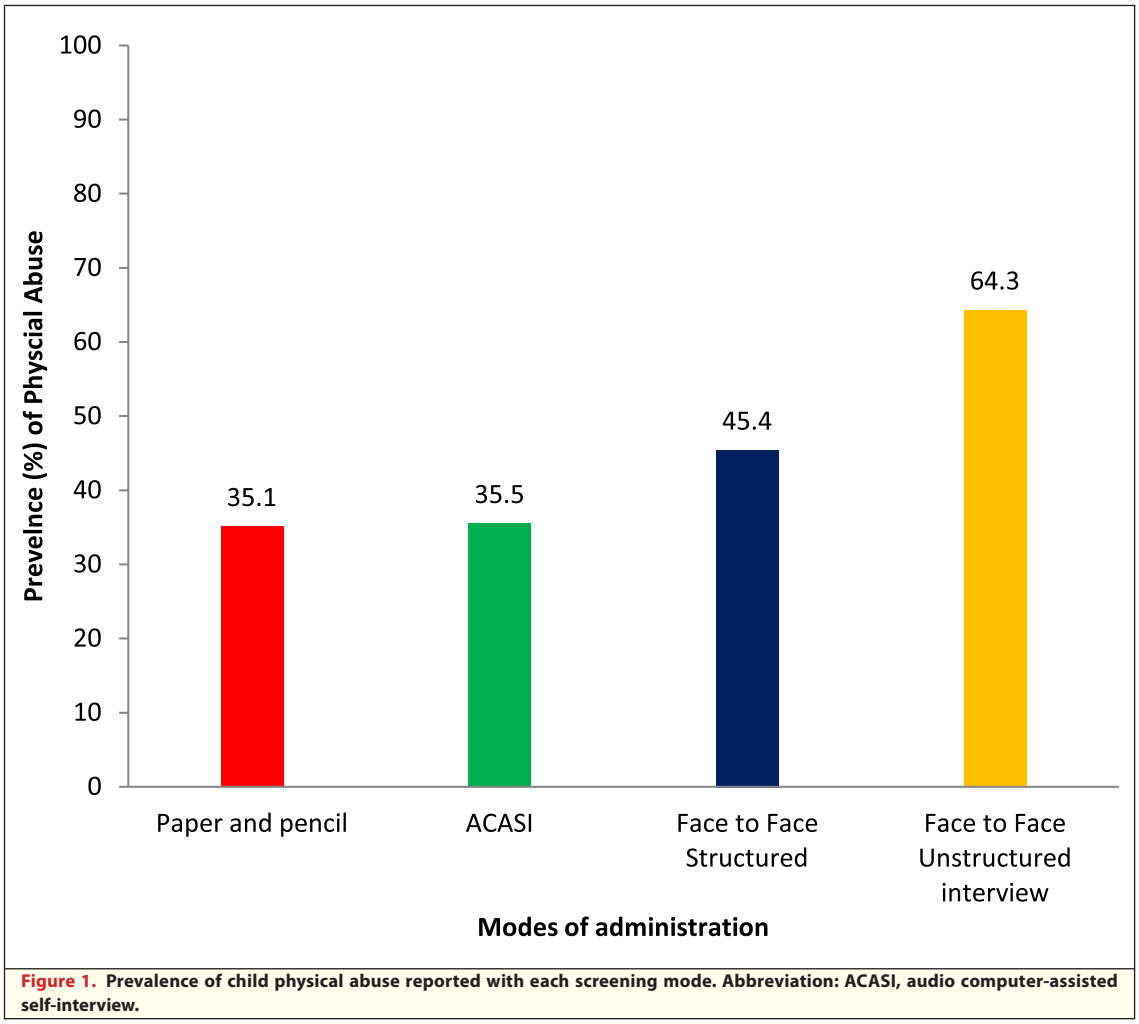

Figure 1. **Prevalence of child physical abuse reported with each screening mode. Abbreviation: ACASI, audio computer-assisted self-interview.**

in a sample of female college students. The DeLillo study reported an overall prevalence of childhood physical abuse of 15.5% but concluded that the mode of administration was unrelated to disclosure of a history of childhood physical abuse ($\chi^2 = 1.1$; $P = .58$). The present study found prevalence that was more than twice that (38.6% vs 15.5%), despite the DeLillo study asking about a history of childhood abuse that occurred before age 18 years and the present study using age 17 years as the cutoff. The large difference in prevalence between the 2 studies when comparing the structured modes of screening is most likely to be explained by differences between the study populations: The former sampled female students in a college setting—an overwhelmingly white and middle class group. In contrast, the present study sampled male and female participants aged 12-24 years, who were 53% Hispanic and 41% non-Hispanic black, recruited from an urban poor population.

The 2 studies used 2 different measures to identify physical abuse: The former used the Computer Assisted Maltreatment Inventory and the present study used the CMIS-SF, but it is unlikely that the difference in the instruments used in each study accounts for the large difference in prevalence, because both measures use detailed and behaviorally specific questions, which is considered to be the most effective type of screen.[34,35] The inclusion of the face-to-face unstructured interview as a fourth mode of administration in the present study is likely to account for the fact that when looking at overall prevalence of childhood physical abuse in this study, we found a prevalence triple that of DiLillo (44.5% vs 15.5%).

The present study has some limitations. The retrospective self-report has been found in some research on history of childhood physical abuse to be somewhat unreliable because of errors in recall resulting in false positives and false negatives.[36,37] Some

Table 2. Distribution of Participant Characteristics by Physical Abuse

Characteristics	No Physical Abuse 301 (56.6) N (%)	Physical Abuse 231 (43.4) N (%)	*P**
Mode			
Paper and pencil	113 (37.5)	61 (26.4)	
ACASI	89 (29.6)	49 (21.2)	<.0001
Face-to-face structured	59 (19.6)	49 (21.2)	
Face-to-face unstructured interview	40 (13.2)	72 (31.2)	
Age			
14 and younger	29 (9.6)	16 (6.9)	.4259
15-17	121 (40.2)	89 (38.5)	
18 and older	151 (50.2)	126 (54.6)	
Gender			
Female	259 (86.1)	199 (86.2)	.9735
Male	42 (13.9)	32 (13.9)	
Race			
Hispanic/Latin	160 (53.6)	120 (51.9)	.6133
Black	124 (41.2)	93 (40.3)	
Asian or white	17 (5.7)	18 (7.8)	
Borough			
Bronx			
South Bronx	41 (13.6)	30 (12.9)	.0788
Other Bronx	44 (14.6)	36 (15.5)	
Brooklyn	24 (7.9)	23 (9.9)	
Manhattan			
Central and East Harlem	111 (36.8)	63 (27.3)	
Other Manhattan	58 (19.3)	48 (20.8)	
Queens	16 (5.3)	27 (11.7)	
Other	7 (2.3)	4 (1.7)	
Nativity Status			
United States	253	181 (78.4)	.09029
Last Grade Completed			
8th or lower	39 (12.9)	19 (8.2)	.2204
9th	42 (13.9)	30 (12.9)	
10th	42 (13.9)	28 (12.1)	
11th	54 (17.9)	47 (20.4)	
12th	56 (18.6)	37 (16.0)	
Some/completed college	68 (22.6)	70 (30.3)	
Education Status			
Dropped out	18 (5.9)	12 (5.1)	.7141
Currently in k-12th grade but left behind	20 (6.6)	12 (5.2)	
Graduated HS or currently in K-12th grade and on track	263 (87.4)	207 (89.6)	
Living Arrangement for the Last Year			
Both parents	69 (22.9)	48 (20.8)	.4885
One parent & step	35 (11.6)	34 (14.7)	
Single parent, no other adults	98 (32.6)	86 (37.2)	
Single parent and other adults	43 (14.3)	28 (12.1)	
Other family member, foster care, group home	56 (18.6)	35 (15.1)	
Depression			
None	218 (72.4)	155 (67.1)	.0380
Any depression	67 (22.3)	72 (31.3)	
Missing	16 (5.3)	4 (1.7)	
Suicidal Ideation			
Yes	31 (10.3)	36 (15.6)	.0806
No	261 (86.7)	192 (83.1)	
Missing	9 (2.9)	3 (1.3)	

ACASI, audio computer-assisted self-interview; HS, high school.

* Based on complete case analysis.

Annals of Global Health, VOL. 83, NO. 5–6, 2017
September–December 2017: 726–734

Table 3. Adjusted odds ratios, 95% confident intervals and P value of the relationship of mode of administration of screens to identify childhood physical abuse and proportion of childhood abuse: Complete case and Multiple imputation model

Exposure	Complete Case Model (N = 512)	*P*	Multiple Imputation Model (N = 532 × 10)	*P*
Mode of Administration				
Paper & pencil	1.0		1.0	
ACASI	1.02 (0.63, 1.67)	.9297	0.99 (0.61-1.61)	.9781
Structured face-to-face	1.53 (0.92, 2.58)	.1029	1.58 (0.95-2.65)	.0779
Unstructured face-to-face	4.30 (2.49, 7.43)	<.0001	4.16 (2.45-7.08)	<.0001

Final model was adjusted by age, gender, race/ethnicity, depression, living arrangement, and last grade completed in both complete case and imputation model. ACASI, audio computer-assisted self-interview.

researchers suggest that official child protective service reports and self-reports used together should be the gold standard,[38] but this is not practical for studies in most settings, where official childhood abuse records are not available. More important, a significant proportion—perhaps even a majority—of childhood abuse cases go unreported, so studies using only verified reported cases are likely to undercount.[1,2,24] Indeed, a number of studies have found that retrospective self-report has had high stability over time.[39]

Having 1 sole clinician for the administration of the unstructured interview rather than a number of clinicians with different levels of experience and comfort, an approach taken to reduce the influence of clinician variability on disclosure, limits the generalizability of the findings.

CONCLUSIONS

Although research on how best to identify childhood physical abuse history is in its infancy, this study suggests that face-to-face methods may offer the most effective ways to screen young people in primary care settings. However, because health care providers do not routinely inquire about it, we need to better understand the trajectory from suspicion of abuse to the reporting of it in the primary care setting[18,19] Although the present study tells us nothing about how health provider training, experience, competency, and comfort level influence the willingness to inquire about abuse, it does underline the need for further lines of research inquiry.

The effectiveness of a given mode of administration of screens to identify childhood abuse should not be confused with its practical application in the clinical setting. Health care providers in primary care practice settings face significant time pressures,[40] and therefore we need to examine whether face-to-face modes are the most labor intensive and time consuming compared with computer and paper or pencil questionnaires. Furthermore, although computer technology is increasingly shaping health care, it is unclear how we will see the adoption of computer-based screening for a range of health issues.[41] Computer-based methods for communication between patient and health care provider still present significant challenges for primary care settings, where they are not yet seen as practical.[42] Finding the screening method to identify childhood abuse that will prove to be most practical in the primary health care environment, where the use of technology is ever evolving, is a complex issue. Which mode of screening is most practical in the health care setting remains an open question.

APPENDIX

Modified Childhood Maltreatment Interview Schedule—Short Form (mCMIS-SF)

Structured Interviews

Before you were 17 years of age ***(Each question had answer choices of "Yes" or "No)*:**

1. Did a parent or guardian ever do something to you on purpose (for example, hit or punch or cut you, or push you down) that made you bleed or gave you bruises, or that broke your bones and teeth.
2. Did either of your parents or guardians get so mad at you that they hurt you physically?
3. Did either of your parents or guardians use physical punishment for discipline?

Face-to-Face Unstructured Interview Method

1. How do your parents or guardians discipline you?
2. Do they ever physically hit you?
3. How do they punish you?
4. Further probing was done depending on the responses to the questions: having been hit, punched, kicked, or otherwise struck or pushed down; cut, bruised, made to bleed, scratched, having broken bones, broken teeth, or having been hurt physically.

REFERENCES

1. Institute of Medicine, National Research Council. New Directions in Child Abuse and Neglect Research. Washington, DC: The National Academies Press; 2013.
2. Diaz A, Petersen AC. Institute of Medicine report: new directions in child abuse and neglect research. JAMA Pediatr 2014;168:101–2.
3. US Department of Health and Human Services, Children's Bureau. Child Maltreatment 2013. Washington, DC: Department of Health and Human Services; 2013 Available at: http://www.acf.hhs.gov/sites/default/files/cb/cm2013.pdf. Accessed November 11, 2016.
4. Anda RF, Felitti VJ, Walker JW, et al. The enduring effects of abuse and related adverse experiences in childhood: a convergence of evidence from neurobiology and epidemiology. Eur Arch Psychiatry Clin Neurosci 2006; 56:174–86.
5. Berkowitz CD. The long-term medical consequences of sexual abuse. In: Reece RM, ed. Treatment of Child Abuse: Common Ground for Mental Health, Medical, and Legal Practitioners. Baltimore, MD: Johns Hopkins University Press; 2000:54–64.
6. Hillis SD, Anda RF, Dube SR, Felitti VJ, Marchbanks PA, Marks JS. The association between adverse childhood experiences and adolescent pregnancy, long-term psychosocial outcomes, and fetal death. Pediatrics 2004;113:320–7.
7. Diaz A, Simantov EY, Rickert V. Effect of abuse on health: results of a national survey. Arch Pediatr Adolesc Med 2002;156:811–7.
8. Dube SR, Miller JW, Brown DW, et al. Adverse childhood experiences and the association with ever using alcohol and initiating alcohol use during adolescence. J Adolesc Health 2006; 38:444e1–e10.
9. Brown J, Cohen P, Johnson J, Smailes E. Child abuse and neglect: specificity of effects on adolescent and young adult depression and suicidality. Child Abuse Negl 1999;38:1490–6.
10. Cohen JA, Mannarino AP, Berliner L, Deblinger E. Trauma-focused cognitive behavioral therapy for children and adolescents: an empirical update. J Interpers Viol 2000;15:1202–23.
11. Bisson JI, Ehlers A, Matthews R, Piling S, Richards D, Turner S. Psychological treatment for chronic post-traumatic stress disorder: systematic review and meta-analysis. Br J Psychiatry 2007; 190:97–104.
12. Battaglia TA, Finley E, Liebschutz JM. Victims of intimate partner violence speak out: trust in the patient-provider relationship. J Gen Intern Med 2003; 18:617–23.
13. Diaz A, Manigat N. The health care provider role in the disclosure of sexual abuse: the medical interview as a gateway to disclosure. Childrens Health Care 1999;28:141–9.
14. Diaz A, Edwards S, Neal W, Ludmer P, Sondike SB, Kessler C. Obtaining a history of sexual victimization among adolescent females seeking routine health care. Mount Sinai J Med 2004; 71:170–3.
15. Leder MR, Emans SJ, Hafler JP, Rappaport LA. Addressing sexual abuse in the primary care setting. Pediatrics 1999;104:270–5.
16. Weinreb L, Fletcher K, Candib L, Bacigalupe G. Physicians' perceptions of adult patients' history of child abuse in family medicine settings. J Am Board Fam Med 2007;20:417–9.
17. Lane WG, Dubowitz H. Primary care pediatricians' experience, comfort and competence in the evaluation and management of child maltreatment: do we need child abuse experts? Child Abuse Negl 2009;33:76–83.
18. Abbey A, Zawacki T, Buck PO, Clinton AM, McAuslan P. Sexual assault and alcohol consumption: what do we know about their relationship and what types of research are still needed? Aggress Violent Behav 2000; 9:271–303.
19. Ghanem KG, Hutton HE, Zenilman JM, Zimba R, Erbelding EJ. Audio computer assisted self-interview and face to face interview modes in assessing response bias among STD clinic patients. Sex Transm Infect 2005;81: 421–5.
20. Bryman A. Integrating quantitative and qualitative research: how is it done? Qualitat Res 2006;6:97–113.
21. Briere J. Childhood Maltreatment Interview Schedule—Short Form. In: Briere J. Child Abuse Trauma: Theory and Treatment of the Lasting Effects. Thousand Oaks, CA: SAGE Publications; 1992 Available at: http://www.johnbriere.com/cmis.htm. Accessed November 11, 2016.
22. DiLillo D, Hayes-Skelton SA, Fortier MA, et al. Development and initial psychometric properties of the Computer Assisted Maltreatment Inventory (CAMI): a comprehensive self-report measure of child maltreatment history. Child Abuse Negl 2010;34:305–17.
23. Patton MQ. Qualitative Research and Evaluation Methods. Thousand Oaks, CA: SAGE Publications; 2002.
24. Dolezal C, Marhefka SL, Santamaria EK, Leu CS, Brackis-Cott E, Mellins CA. A comparison of audio computer-assisted self-interviews to face-to-face interviews of sexual behavior among perinatally HIV-exposed youth. Arch Sex Behav 2012;41:401–10.
25. Kurth AE, Martin DP, Golden MR, et al. A comparison between audio computer-assisted self-interviews and clinician interviews for obtaining the sexual history. Sex Transm Dis 2004; 31:719–26.
26. Reddy MK, Fleming MT, Howells NL, Rabenhorst MM, Casselman R, Rosenbaum A. Effects of method on participants and disclosure rates in research on sensitive topics. Violence Vict 2006;21:499–506.
27. Tourangeau R, Smith TW. Asking sensitive questions: the impact of data collection mode, question format, and question context. Public Opin Q 1996; 60:275–304.
28. Turner CF, Ku L, Rogers SM, Lindberg LD, Pleck IH, Sonenstein FL. Adolescent sexual behavior, drug use, and violence: increased reporting with computer survey technology. Science 1998;280:867–73.
29. Williams ML, Freeman RC, Bowen AM, et al. A comparison of the reliability of self-reported drug use and sexual behaviors using computer-assisted versus face-to-face interviewing. AIDS Educ Prevent 2000;12:199–213.
30. Jones R. Survey data collection using audio computer assisted self-interview. West J Nurs Rese 2003;25:349–58.
31. Beck AT, Guth D, Steer RA, Ball R. Screening for major depression disorders in medical inpatients with the Beck Depression Inventory for Primary Care. Behav Res Ther 1997;35:785–91.
32. SAS. Statistical Analysis Software Institute Inc. SAS/STAT 9.3 User's Guide. Cary, NC: SAS Institute Inc.; 2011.
33. DiLillo D, DeGue S, Kras A, Di Loreto-Colgan A, Nash CL. Participant responses to retrospective surveys of child maltreatment: does method of assessment matter? Violence Vict 2006; 21:419–24.
34. Hulme PA. Psychometric evaluation and comparison of three retrospective, multi-item measures of childhood sexual abuse. Child Abuse Negl 2007; 31:853–69.
35. Hulme PA. Retrospective measurement of childhood sexual abuse: a review of instruments. Child Maltreat 2004;9:201–17.
36. Widom C, Shepard R. Accuracy of adult recollections of childhood victimization: part 1. Childhood physical abuse. Psychol Assess 1996;8:412–21.

Annals of Global Health, VOL. 83, NO. 5–6, 2017
September–December 2017: 726–734

37. Widom C, Morris S. Accuracy of adult recollections of childhood victimization: part 2. Childhood sexual abuse. Psychol Assess 1997;9: 34–46.
38. Brown J, Cohen P, Johnson JG, Salzinger S. A longitudinal analysis of risk factors for child maltreatment: findings of a 17-year prospective study of officially recorded and self-reported child abuse and neglect. Child Abuse Negl 1998;22:1065–78.
39. Friedrich WN, Talley NJ, Panser L, Fett S, Zinsmeister AR. Concordance of reports of childhood abuse by adults. Child Maltreat 1997;2:164–71.
40. Halfon N, Gregory D, Stevens K, Larson L, Olson M. Duration of a well-child visit: association with content, family-centeredness, and satisfaction. Pediatrics 2011;128:657–64.
41. Blumenthal D. Stimulating the adoption of health information technology. N Engl J Med 2009;360:1477–9.
42. George S, Garth B, Baker R. Factors shaping effective utilization of health information technology in urban safety-net clinics. Health Informatics J 2012; 19:183–97.