

# Family-related adverse childhood experiences as risk factors for psychiatric disorders in Nigeria

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## Background

Adverse childhood experiences have been associated with a variety of mental health problems in adult life.

## Aims

To examine whether this reported link between childhood experiences and mental health disorders in adult life applies in a Sub-Saharan African setting where cultural and family attributes may be different.

## Method

A multistage random sampling was used in the Nigerian Survey of Mental Health and Well-Being (NSMHW) to select respondents for face-to-face interviews. Assessments of family-related adverse childhood experiences and lifetime mental health disorders were conducted with the Composite International Diagnostic Interview (CIDI 3.0).

## Results

Almost half of the respondents had experienced an adverse childhood experience within the context of the

family before they were 16 years of age. Associations between adverse childhood experiences and adult mental health disorders were few and were attenuated when clustering of adverse childhood experience and disorder comorbidities were accounted for. There was an elevated likelihood of adult substance use disorders among individuals who had experienced family violence and neglect or abuse. Parental psychopathology was associated with a significantly increased risk for developing mood disorders.

## Conclusions

Adverse childhood experiences reflecting violence in the family, parental criminality and parental mental illness and substance misuse were more likely to have significant mental health consequences in adulthood.

## Declaration of interest

None.

Adverse childhood experiences have been linked with increased rates of mental health problems, substance misuse, suicidal behaviour and other health risk behaviours in adult life.<sup>1–5</sup> Recent large-scale epidemiological studies have explored the effects of multiple adverse childhood experiences on mental health and the examination of a wider range of mental health outcomes. These studies have demonstrated that exposure to one adverse childhood experience increases the individual's chance of experiencing another.<sup>6–9</sup> There is also now evidence that a graded relationship exists between the number of adverse childhood experiences and the likelihood of lifetime psychiatric disorders with the risk of negative adult consequences increasing with more adverse experiences.<sup>8,10,11</sup> The adverse childhood experiences that have been found to more strongly predict the later development of mental health disorders include parental psychopathology,<sup>9</sup> emotional abuse<sup>8,12</sup> and interpersonal traumas especially sexual abuse.<sup>10</sup> Research evidence suggests that adverse childhood experiences are more likely to predict the onset of the psychiatric disorders rather than the course;<sup>9,13</sup> and that there is little specificity in adverse childhood experience–outcome associations.<sup>10,14</sup>

Contextual factors are likely to be important not just to the occurrence of adverse childhood experiences but also to the impact they have on those who experience them. For example, the loss of a parent may have different meanings in a setting with a strictly nuclear family structure than that with an extended family structure. It can not therefore be assumed that research findings regarding the long-term effect of adverse childhood experiences on people residing in North America and Western Europe will apply in similar ways to people living in Sub-Saharan Africa. On the other hand, the harsh economic and social conditions in which children are raised in a low-income country such as Nigeria may leave their long-term mark on those children.

The conditions that mean more than 150 out of every 1000 children die before they reach the age of 5 years<sup>15</sup> and lead to child labour and high school drop out can plausibly be assumed to also produce long-term mental and behavioural sequelae in adulthood.

Cultural distinctions are known to occur in the perception and interpretation of traumatic experiences and the expression of the response to the event.<sup>16</sup> There is therefore a need to examine the mental health impact of adverse childhood experiences across diverse cultures. This paper uses data from a large community survey of mental health disorders in Nigeria to determine the profile and prevalence of adverse childhood experiences that occur within the family in a Sub-Saharan African community, and to evaluate their association with mental health disorders in adulthood.

## Method

### Sample

The Nigerian Survey of Mental Health and Well-Being (NSMHW), fielded between February 2002 and May 2003, was designed to study the prevalence, impact and antecedents of mental health disorders in a representative sample of adult Nigerians, aged 18 years and over. The study was conducted in 21 out of Nigeria's 36 states (collectively representing 57% of the national population). Interviews were carried out in Yoruba, Hausa, Igbo and Efik languages.

A full description of the methods, including quality control measures, have been provided in earlier publications<sup>17,18</sup> and only a brief summary is presented here. Four-stage probability sampling was employed with the final stage being the selection of one person per household for interview. The selected individual had to be 18 years or over and fluent in one of the languages of the study.

The overall response rate was 79.3%. The survey was administered in two parts. The part I interview was administered to all respondents (sample size 6752) and consisted of core diagnoses. Part II was administered to respondents who met lifetime criteria for disorders from the part I interview and a probability subsample of other respondents. Part II consisted of assessment of risk factors, consequences and correlates of disorders. The total part II sample was 2143. This report is based on data from this part II subsample; which was composed of about 51% women with more than 50% aged less than 35 years. Table 1 presents the age and gender distribution. Ethical approval was obtained from the University of Ibadan/University College Hospital, Ibadan, joint ethical review board.

## Measures

### Psychiatric disorders

Diagnostic assessments were made with the use of the World Health Organization's Composite International Diagnostic Interview, version 3 (CIDI 3.0).<sup>19</sup> The CIDI is a fully structured diagnostic interview that is lay administered and can generate psychiatric diagnosis according to both the ICD-10<sup>20</sup> and DSM-IV<sup>21</sup> criteria. Earlier versions of the CIDI have been used extensively in the Yoruba language.<sup>22</sup> The language versions of the CIDI 3.0 used in the NSMHW were derived using standard protocols of iterative back translation conducted by panels of bilingual experts. The CIDI 3.0 primarily ascertains lifetime disorders. Specific disorders assessed include anxiety disorders (panic disorder, generalised anxiety disorder, agoraphobia without panic disorder, specific phobia, post-traumatic stress disorder and obsessive-compulsive disorder), mood disorders (major depressive disorder, dysthymia, bipolar disorder) and substance use disorders (alcohol and drug misuse and dependence).

### Adverse childhood experiences

This study focuses on childhood family adversities; these are adverse childhood experiences that occurred within the context of the family before the respondent was 16 years old. Except for questions on childhood sexual abuse, all other measures of adverse childhood experiences asked explicitly about the family. A total of 12 adverse experiences were included in the survey but in order to allow for meaningful analysis as some of the rates were low, the adverse events reported here are grouped into six categories. Neglect or abuse and family violence were rated on an ordinal scale ranging from never, rarely, sometimes to often, with the latter two responses classified as positive. All other adverse childhood experiences were ascertained with yes/no responses.

- (a) Death of parent: death of the respondent's father or mother before they were 16 years old.
- (b) Parent divorce or other parental loss: this included separation from the family for any reason for a period lasting 6 months or more. Such reasons included living with other relatives, residing in a foster home, boarding school, hospital, juvenile detention centre or elsewhere.
- (c) Parent mental health or substance use disorders: the presence of mood disorder, generalised anxiety disorder, panic disorder or substance use disorder in either the father or mother.
- (d) Parental criminal behaviour or family violence: involvement of either parent in criminal activities, their arrest or imprisonment. Family violence asked about the experience of often being shoved, pushed, grabbed or slapped while they were growing up or often witnessing physical fights at home.

**Table 1** Demographic distribution of the part II sample of the Nigerian Survey of Mental Health and Well-Being

	Unweighted, %	Weighted, %	Census, %
Age, years			
18–24	27.8	27.0	27.0
25–29	15.6	15.2	15.2
30–34	10.2	13.1	13.1
35–39	8.9	10.4	10.4
40–44	8.5	8.0	8.0
45–49	6.7	6.0	6.0
50–54	4.8	5.8	5.8
55–59	3.0	4.8	4.8
60–64	5.2	3.7	3.7
65–69	2.6	2.7	2.7
70–74	3.0	1.8	1.8
≥75	3.7	1.7	1.7
Gender			
Male	56.2	49.0	49.0
Female	43.8	51.0	51.0

- (e) Neglect or abuse: this included physical abuse, sexual abuse and neglect. Neglect was scored by creating a scale for scoring responses to five questions related to how much effort respondents' parents put into watching over them to ensure they had a good upbringing (e.g. 'How often were you left alone or unsupervised when you were too young to be alone'; 'How often did your parents or caregivers make you go hungry or not prepare regular meals'; 'How often did you go without things you need like clothes, shoes or school supplies because your parents or caregivers spent the money on themselves'). Physical abuse was rated as present if respondent reported that someone in the household often slapped, hit, pushed, grabbed, shoved or threw something at them when growing up. Sexual abuse was present if the respondent had either been raped or sexually assaulted or molested. Sexual abuse was the only adversity where information that would allow a determination of whether abuse was perpetrated by a family member was not collected. Only respondents who reported multiple (three or more) instances of rape or sexual molestation were included in the analysis presented here. Previous studies suggest that sexual abuse occurring within the family usually involves multiple rather than single episodes.<sup>23–25</sup>
- (f) Other adversity: this included chronic medical illness and also economic adversity. Examples of chronic medical conditions included cancer, epilepsy, diabetes and AIDS. Family economic adversity was defined as either the family not having a male head and the female head not working for most of the respondent's childhood or having no female head and male head not working.

## Statistical analysis

To take account of the stratified multistage sampling procedure and the associated clustering, weights were derived and applied to the rates presented in this report. The weights were adjusted for the differential probabilities of selection and to match the sample to the total Nigerian population with regard to socio-demographic and geographical data. They also adjusted for the oversampling of part I respondents with core disorders.

The associations between childhood adversities and lifetime DSM-IV disorders were estimated in discrete-time survival models with person-year as the unit of analysis pooled across different DSM-IV disorders controlling for age-at-interview and gender. Six separate bivariate models were estimated, one for each

adversity. The multivariate additive model included a separate dummy variable predictor for each of the six adversity groups in a single prediction equation. Odds ratios (OR) and 95% confidence intervals (CI) are presented. The level of significance was set at 0.05, two-tailed.

## Results

### Prevalence of childhood adversities

The estimates of adverse childhood experiences are shown in Table 2. Over 40% of the 2143 respondents had experienced an adversity and 31.2% had experienced two or more adversities. The prevalence ranged from 1.2% for family violence and parental criminal behaviour to 20.9% for the category of parental divorce or other parental loss. Among individuals who reported any single category of adversity, the probability of being exposed to any additional category ranged from 43.5 to 63.2%. The chances of multiple adverse childhood experiences were higher among individuals reporting neglect or abuse and those whose parents had a mental health or substance use disorder.

### Associations between childhood adversities and mental health disorders

Table 3 shows the estimated effects of adverse childhood experiences on the lifetime risk of DSM-IV disorders. In the bivariate model there was an 11-fold increased risk for meeting the diagnostic criteria for a lifetime DSM-IV disorder in those whose parents had a mental health or substance use disorder; this risk remained substantial even in multivariate additive model analyses

(OR = 9.81, 95% CI 2.14–45.09). This increased risk was however no longer significant in the multivariate interactive survival model where the number of childhood adversities experienced by the respondent was taken into consideration.

Table 4 shows the estimated effects of the number and types of adverse childhood experiences on the lifetime risk for developing mood, anxiety and substance use disorders. Even though anxiety disorders were not significantly related to any of the specific categories of adverse childhood experiences, there was nevertheless a 12-fold risk of developing them among individuals who had experienced three or more childhood family adversities compared with those with no such experience. The risk for having substance use disorders was increased in those who grew up in families where they were exposed to violence and those who were neglected or abused, whereas parental psychopathology was associated with a significantly increased risk for developing mood disorders. Loss events did not predict the occurrence of any of the DSM-IV disorders examined in this study.

### Age at which adverse childhood experience begin to have effect in predicting onset of a DSM-IV disorder

Table 5 shows the results of a survival analysis to predict the age at onset of DSM-IV disorders. Even though not significant, the effect of a childhood experience of neglect/abuse on the onset of DSM-IV disorders was more prominent between the ages of 4 and 12 years and thereafter began to wane. The reverse was the case for the effects of parental loss and parental psychopathology; the effects were not significant between the ages of 4 and 12 years but became so when respondents reached 25 years of age.

**Table 2** Prevalence of adverse childhood experiences

Category	Weighted n	Prevalence of adversity % (s.e.)	Experiencing 2 or more adversities % (s.e.)	Number of adversities among those with 2 or more adversities, mean (s.e.)
Death of parent	410	19.1 (1.1)	45.0 (3.6)	2.2 (0.0)
Other parental loss	448	20.9 (1.0)	43.5 (2.8)	2.3 (0.1)
Parent mental health or substance use disorder	73	3.4 (0.4)	61.7 (7.3)	2.5 (0.1)
Family violence/criminal behaviour	27	1.2 (0.3)	53.8 (12.6)	2.5 (0.2)
Neglect or abuse	256	11.9 (0.7)	63.2 (4.8)	2.3 (0.1)
Other adversity	150	7.0 (0.9)	54.1 (5.4)	2.3 (0.1)
Any adversity	990	46.2 (1.1)	31.2 (2.2)	2.2 (0.0)

s.e., standard error.

**Table 3** Estimated effects of adverse childhood experiences on lifetime risk of DSM-IV disorders in bivariate, multivariate additive and interactive survival models

Effect	Bivariate model <sup>a</sup> OR (95% CI)	Multivariate additive model, <sup>a</sup> OR (95% CI)	Interactive survival model <sup>b</sup> OR (95% CI)
Death of parent	2.0 (0.4–9.7)	1.8 (0.4–8.6)	2.4 (0.4–13.1)
Other parental loss	0.7 (0.2–2.7)	0.5 (0.1–2.3)	1.0 (0.2–6.40)
Parental mental health or substance use disorder	10.9 (1.9–63.0)*	9.8 (2.1–45.1)*	5.4 (0.8–35.5)
Family violence	0.7 (0.3–1.7)	0.6 (0.2–1.8)	0.4 (0.1–1.7)
Neglect/abuse	3.0 (0.8–11.7)	2.5 (0.8–7.4)	1.5 (0.5–5.0)
Other adversity	0.3 (0.1–0.6)	0.3 (0.1–0.6)	0.5 (0.2–1.4)

OR, odds ratio.  
 \*P < 0.05, two-sided test.  
 a. Six separate bivariate models were estimated; one for each adverse childhood experience. The multivariate additive model included a separate dummy variable predictor for each of the six adversities in a single prediction equation.  
 b. Based on discrete-time survival models with person-year as the unit of analysis pooled across the different DSM-IV disorders, controlling for age-at-interview, gender and person-year. Included all the predictors in the additive model plus a series of three dummy predictor variables for the number of adverse childhood experiences experienced by the respondent (exactly two, three or more than three).

**Table 4** Estimated effects of types and numbers of adverse childhood experiences (ACE) on the lifetime risk of three classes of DSM-IV disorders<sup>a</sup>

	Mood disorders OR (95% CI)	Anxiety disorders OR (95% CI)	Substance use disorders OR (95% CI)
Parent death	2.2 (0.5–10.5)	0.5 (0.3–1.2)	0.9 (0.4–1.9)
Other parent loss	0.9 (0.2–4.9)	1.1 (0.3–3.6)	1.0 (0.5–1.9)
Parent mental or substance use disorder	6.3 (1.2–32.9)*	1.7 (0.6–4.9)	1.8 (0.4–7.7)
Family violence/criminal behaviour	0.7 (0.1–3.5)	0.7 (0.2–2.0)	5.6 (2.5–12.9)*
Neglect/abuse	1.4 (0.4–4.6)	1.6 (0.9–3.1)	3.4 (2.2–5.4)*
Other adversity	0.4 (0.1–1.2)	1.1 (0.4–2.8)	1.2 (0.6–2.5)
Experience 2 or more ACE v. 0	3.6 (0.3–49.3)	0.9 (0.2–4.6)	1.5 (0.3–7.6)
Experience 3 or more ACE v. 0	1.6 (0.0–90.8)	11.4 (1.8–73.6)*	0.53 (0.1–4.2)

OR, odds ratio.  
a. Based on discrete-time survival models with person-year as the unit of analysis pooled separately across DSM-IV disorders in each of the three classes, controlling for age-at-interview, gender and person-year.  
\* $P < 0.05$ , two-sided test.

## Discussion

### Main findings

To our knowledge, this is the first study of family-related adverse childhood experiences in relation to multiple psychiatric outcomes in adulthood from Sub-Saharan Africa. The results we present indicate that a substantial number of people enter adulthood with significant adverse experiences in their past. Almost half of the respondents in this survey reported exposure to at least one adverse childhood experience occurring within the family context and about a third had been exposed to multiple adverse childhood experiences. These rates are much lower than those from the US National Comorbidity Survey, in which at least one adverse childhood experience was reported by 74.3% of the respondents and multiple experiences reported by more than half of the sample.<sup>9</sup> This difference in rates can partly be accounted for by differences in the adversities considered. The present study focused on experiences occurring within the family context, whereas the US National Comorbidity Survey reported a broader range of adversities. Our results are comparable to a prevalence of 52.1% reported by Felitti *et al*<sup>3</sup> in the Adverse Childhood Experiences Study, where broadly similar categories of experiences were examined. Differences in estimates of adverse childhood experiences between studies may of course reflect not just the range of adversities explored but also the likelihood of the occurrence of specific adverse experiences. It is conceivable that social factors, including those relating to the structure of family

in African and non-African settings, will have a bearing on the occurrence of adverse childhood experiences and that cultural expectations may determine which events individuals exposed to them would consider as being adverse. The traditional extended family system may help in protecting children from certain adverse experiences. For example, the occurrence of physical abuse and violence are probably less when people live together in large families, also divorce rates are low in traditional African settings. Although there is speculation that the rates of adverse experiences and traumatic events could be higher in children from low- and middle-income countries,<sup>26</sup> there is as yet no empirical data to support this claim. In accordance with the few previous studies that have examined a wide range of adverse events, exposure to one such experience was found to increase the likelihood of experiencing another.<sup>3,7,8,27</sup>

In this study, when the effects of adverse childhood experiences on developing any DSM-IV psychiatric disorder was considered, most associations were null in the bivariate and multivariate models and all were null in survival models where the presence of comorbidities and clustering of adversities were accounted for. There are a number of possible explanations for this observation. First, it is likely that the power to detect significant bivariate associations remained low in our data even after grouping together the adverse childhood experiences. In particular, the numbers of respondents who met diagnostic criteria in the various DSM-IV disorder categories were small.<sup>17</sup> Second, attenuation of association on multivariate modelling may reflect a common observation that the association of adverse

**Table 5** Age at which the adverse childhood experience (ACE) begins to have an effect in predicting DSM-IV disorder onset<sup>a</sup>

	4–12 years age group OR (95% CI)	13–24 years age group OR (95% CI)	25+ years age group OR (95% CI)
Parent death	1.6 (0.3–8.7)	1.8 (0.3–11.4)	4.9 (1.0–24.1)*
Other parent loss	1.4 (0.2–8.2)	0.70 (0.1–5.4)	0.6 (0.1–2.2)
Parent mental health or substance use disorder	4.0 (0.7–23.4)	3.8 (0.6–26.5)	13.9 (2.0–96.0)*
Family violence/criminal behaviour	0.1 (0.0–0.5)	0.6 (0.1–3.7)	0.2 (0.0–1.8)
Neglect/abuse	2.1 (0.5–7.5)	1.6 (0.5–5.0)	0.6 (0.3–1.2)
Other adversity	0.5 (0.2–1.6)	0.4 (0.1–1.5)	0.4 (0.1–2.1)
Experience 2 or more ACE v. 0	1.9 (0.1–33.4)	3.7 (0.2–61.8)	10.0 (0.8–126.7)
Experience 3 or more ACE v. 0	3.4 (0.1–247.1)	3.5 (0.0–555.3)	<0.001 (<0.001–0.011)

OR, odds ratio.  
a. Based on discrete-time survival models with person-year as the unit of analysis pooled across the different DSM-IV disorders, controlling for age-at-interview, gender and person-year.  
\* $P < 0.05$ , two-sided test.

childhood experiences to adult psychiatric disorders is likely due to the additive effect of experiencing multiple adverse experiences. Thus, in the US National Comorbidity Survey, whereas 67% of the odds ratios following bivariate analysis were statistically significant, only 32 and 15% were significant on multivariate and survival analysis in which adjustment was made for comorbidities and overlap among adversities respectively.<sup>9</sup> Mullen *et al*<sup>28</sup> noted a considerable overlap in the occurrence of sexual abuse and family dysfunction and the difficulty in ascertaining whether child sexual abuse can actually act as an independent predictor of adult psychopathology. Third, considering that only a limited number of adverse experiences were assessed in this study, the possibility that other experiences not accounted for here might also be in operation cannot be ruled out. There might be other adversities specific to this culture and related to child-rearing practices or circumstances peculiar to children growing up in impoverished households which were not included in the study instrument.

Parental psychopathology stood out as significantly increasing the likelihood of developing a DSM-IV disorder in bivariate analysis and this association held even in the multivariate additive model, but there was attenuation when clustering of this adversity with other adversities was taken into account. The association between parental psychopathology and mental health disorders has been demonstrated in some earlier studies. For example, Pirkola *et al*<sup>11</sup> reported that paternal psychopathology was associated with male depressive disorders and maternal mental health disorders with female depressive disorders, whereas maternal alcohol problems were associated with alcohol use disorders in both genders. Also, in the US National Comorbidity Survey, Kessler *et al*<sup>9</sup> reported that parental psychopathology, especially maternal psychopathology, was a risk factor for a broad range of adult mental health disorders. In that study too, as in the current one, there was a substantial attenuation of this association when other adverse childhood experiences were controlled for.

Although biological propensities cannot be ruled out in the association of parental psychiatric disorders with mental health disorders in adulthood of their offspring, the fact that the effects were ameliorated when other adverse childhood experiences were controlled for suggests that the presence of psychiatric disorders in parents probably increases the individual's likelihood to experience other adverse childhood experiences; which in turn makes the onset of mental health disorders in adulthood more likely. Up to 62% of respondents reporting parental mental health or substance use disorders reported at least one other adverse experience. Substance use disorders were more likely to occur among individuals who had experienced family violence and neglect or abuse in their childhood. These are the adversities that most likely result in low parental involvement in the upbringing of their children. Some other authors have proposed that children from such home environments probably have increased access to alcohol and increased opportunity to drink, thus placing them at an increased risk of earlier age at onset of drinking and increased likelihood of subsequently developing an alcohol use disorder in adulthood.<sup>29,30</sup> Interestingly, loss of parents from death, separation or divorce was not linked to adult psychiatric disorders in this sample. This is at variance with earlier reports that loss events, especially parental separation/divorce, is a strong predictor of adult mental health disorders.<sup>31,32</sup> Children in this culture are probably protected from the adverse consequences of parental death or separation by the availability of surrogates within the extended family network who take over the care-giving roles and responsibilities of the parents when such losses occur. It is striking that although parental death did not show a significant relationship to adult mental health disorders in the entire group, there was a significant association for disorders with onset at

age 25 years and over. Although this is in agreement with previous suggestions that the impact of major childhood adversities persist well into adult life, possibly by producing a scarring effect that persists beyond the immediate period of the adversity,<sup>8</sup> it probably also supports our impression that children with such losses are protected from the possible consequences early in life but the protection becomes attenuated in adulthood thus exposing the vulnerability of the victim.

### Limitations

Our results are to be considered in the context of the study's limitations. Our assessment of the sexual abuse component of the abuse/neglect category did not include questions that enable us to state explicitly whether the report of sexual abuse was perpetrated by a family member and also excluded those who reported one or two episodes of sexual abuse. Previous studies suggest that extrafamilial sexual abuse can be distinguished from intrafamilial sexual abuse by the observation that the former is more likely to occur as a single episode whereas the latter is more often multiple in its occurrence.<sup>24,25</sup> However, it is unclear whether this assumption applies in the environment in which our study was conducted. History of adverse childhood experience was obtained by retrospective recall. This is unavoidable and similar to the approach of other studies. Recalling events that might date back several decades is open to limitations of human memory and can be prone to errors. There is however evidence that retrospective recall of major childhood experience has validity.<sup>33</sup> The possibility nevertheless remains that current mental status may colour the reporting of past experience. However, the fact that no specific or unique association was found with mood disorders, which may be expected to more likely lead to a biased recall of negative experiences, would suggest that the associations reported here are probably not likely to have been differentially affected by the current mental status of the respondents.

Another important consideration is the fact that some index of psychopathology may have been missed. It is possible that the study instrument (CIDI 3.0) only captures some but not all the important variance that is germane to our interest because the concepts and phrases used to describe mental syndromes may differ in our cultural setting from those developed for use in Western cultures. Earlier reports from the World Mental Health surveys have reported lower rates of mental health disorders in low- and middle-income countries compared with high-income countries.<sup>34</sup> Factors accounting for the disparities in the rates of DSM-IV disorders in cross-national studies should be a focus for future surveys. There is evidence that the same instrument may perform differently in different age groups even in the same culture,<sup>35</sup> and that estimates obtained using semi-structured clinician-administered interviews may be substantially different from those obtained using lay-administered fully structured interviews.<sup>36</sup> Cultural distinctions are also known to occur in the perception and interpretation of adverse experiences and in the expression of response to the events.

### Implications and future research

Our results highlight the fact that children growing up in a society that is still largely traditional and in which the extended family system remains the rule are also prone to experiencing adversities that are common in societies with a more nuclear family system. Along with problems associated with poverty there is also evidence of various forms of neglect and abuse. These adversities are not likely to be without consequences. Even though our study has found only a limited number of positive associations between

adverse childhood experiences and adult mental health disorders, we believe that children who survive the difficulties of growing up in a society where more than 150 out of every 1000 children fail to reach the age of five may nevertheless be left with the scars of abuse, poverty and neglect that put them at elevated risk of mental health disorders in adulthood. Future studies should broaden the range of adversities explored, examine a more broadly defined spectrum of psychiatric problems and combine the use of emic ascertainment procedures with the decidedly etic approaches that current interview schedules and classificatory systems permit.

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First received 9 Jan 2009, final revision 28 Oct 2009, accepted 11 Nov 2009

## Funding

Funding for the NSMHW was provided by World Health Organization (WHO), Geneva, and the WHO country office in Nigeria. The WHO World Mental Health (WMH) Survey Initiative were supported by the United States National Institute of Mental Health (R01MH070884), the John D. and Catherine T. MacArthur Foundation, the Pfizer Foundation, the US Public Health Service (R13-MH066849, R01-MH069864, and R01 DA016558), the Fogarty International Center (FIRCA R01-TW006481), the Pan American Health Organization, Eli Lilly and Company, Ortho-McNeil Pharmaceutical Inc, GlaxoSmithKline, and Bristol-Myers Squibb.

## Acknowledgements

Collaborating investigators included: R. Uwakwe, O. Udofia, A. Wakil, N. Enyidah, M. Ekpo and O. Adeyemi. The NSMHW is carried out in conjunction with the WHO World Mental Health Survey Initiative. We thank the WMH coordinating staff both for their assistance with instrumentation and for their consultation on field procedures and data analysis. A complete list of WMH publications can be found at [www.hcp.med.harvard.edu/wmh/](http://www.hcp.med.harvard.edu/wmh/).

## References

- Mullen PE, Martin JL, Anderson JC, Romans SE, Herbison GP. The long-term impact of the physical, emotional, and sexual abuse of children: a community study. *Child Abuse Negl* 1996; **20**: 7–21.
- Turner RJ, Lloyd DA. Lifetime traumas and mental health: the significance of cumulative adversity. *J Health Soc Behav* 1995; **36**: 360–76.
- Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med* 1998; **14**: 245–58.
- Kingree JB, Thompson MP, Kaslow NJ. Risk factors for suicide attempts among low-income women with a history of alcohol problems. *Addict Behav* 1999; **24**: 583–7.
- Sacco KA, Head CA, Vessicchio JC, Easton CJ, Prigerson HG, George TP. Adverse childhood experiences, smoking and mental illness in adulthood: a preliminary study. *Ann Clin Psychiatry* 2007; **19**: 89–97.
- Portegijs PJ, Jeuken FM, van der Horst FG, Kraan HF, Knottnerus JA. A troubled youth: relations with somatization, depression and anxiety in adulthood. *Fam Pract* 1996; **13**: 1–11.
- Anda RF, Croft JB, Felitti VJ, Nordenberg D, Giles WH, Williamson DF, et al. Adverse childhood experiences and smoking during adolescence and adulthood. *JAMA* 1999; **282**: 1652–8.
- Chapman DP, Whitfield CL, Felitti VJ, Dube SR, Edwards VJ, Anda RF. Adverse childhood experiences and the risk of depressive disorders in adulthood. *J Affect Disord* 2004; **82**: 217–25.
- Kessler RC, Davis CG, Kendler KS. Childhood adversity and adult psychiatric disorder in the US National Comorbidity Survey. *Psychol Med* 1997; **27**: 1101–19.
- Schilling EA, Aseltine RH Jr, Gore S. Adverse childhood experiences and mental health in young adults: a longitudinal survey. *BMC Public Health* 2007; **7**: 30.
- Pirkola S, Isometsa E, Aro H, Kestila L, Hamalainen J, Veijola J, et al. Childhood adversities as risk factors for adult mental disorders: results from the Health 2000 study. *Soc Psychiatry Psychiatr Epidemiol* 2005; **40**: 769–77.
- Roy A. Childhood trauma and depression in alcoholics: relationship to hostility. *J Affect Disord* 1999; **56**: 215–8.
- Wainwright NW, Surtees PG. Childhood adversity, gender and depression over the life-course. *J Affect Disord* 2002; **72**: 33–44.
- Kilpatrick DG, Ruggiero KJ, Acierno R, Saunders BE, Resnick HS, Best CL. Violence and risk of PTSD, major depression, substance abuse/dependence, and comorbidity: results from the National Survey of Adolescents. *J Consult Clin Psychol* 2003; **71**: 692–700.
- World Health Organization. *World Health Report 2006. Working Together for Health*. WHO, 2006.
- Seedat S, Nyamai C, Njenga F, Vythilingum B, Stein DJ. Trauma exposure and post-traumatic stress symptoms in urban African schools. Survey in CapeTown and Nairobi. *Br J Psychiatry* 2004; **184**: 169–75.
- Gureje O, Lasebikan VO, Kola L, Makanjuola VA. Lifetime and 12-month prevalence of mental disorders in the Nigerian Survey of Mental Health and Well-Being. *Br J Psychiatry* 2006; **188**: 465–71.
- Gureje O, Lasebikan VO. Use of mental health services in a developing country. Results from the Nigerian survey of mental health and well-being. *Soc Psychiatry Psychiatr Epidemiol* 2006; **41**: 44–9.
- Kessler RC, Ustun TB. The World Mental Health (WMH) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *Int J Methods Psychiatr Res* 2004; **13**: 93–121.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (4th edn) (DSM-IV)*. APA, 1994.
- World Health Organization. *The ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines*. WHO, 1992.
- Gureje O, Obikoya B, Ikuesan BA. Prevalence of specific psychiatric disorders in an urban primary care setting. *East Afr Med J* 1992; **69**: 282–7.
- Molnar BE, Buka SL, Kessler RC. Child sexual abuse and subsequent psychopathology: results from the National Comorbidity Survey. *Am J Public Health* 2001; **91**: 753–60.
- Dube R, Hebert M. Sexual abuse of children under 12 years of age: a review of 511 cases. *Child Abuse Negl* 1988; **12**: 321–30.
- Garba R, Lampe L, Borsos A, Balla L, Poka R, Olan E. Female child sex abuse within the family in a Hungarian county. *Gynecol Obstet Invest* 2006; **61**: 188–93.
- Connor KM, Butterfield MI. Posttraumatic stress disorder. *Focus* 2003; **1**: 247–62.
- Dube SR, Anda RF, Felitti VJ, Edwards VJ, Croft JB. Adverse childhood experiences and personal alcohol abuse as an adult. *Addict Behav* 2002; **27**: 713–25.
- Mullen PE, Martin JL, Anderson JC, Romans SE, Herbison GP. Childhood sexual abuse and mental health in adult life. *Br J Psychiatry* 1993; **163**: 721–32.
- Kim HH, Viner-Brown SI, Garcia J. Children's mental health and family functioning in Rhode Island. *Pediatrics* 2007; **119** (suppl 1): S22–8.
- Rothman EF, Edwards EM, Heeren T, Hingson RW. Adverse childhood experiences predict earlier age of drinking onset: results from a representative US sample of current or former drinkers. *Pediatrics* 2008; **122**: e298–304.
- Oakley Browne MA, Joyce PR, Wells JE, Bushnell JA, Hornblow AR. Disruptions in childhood parental care as risk factors for major depression in adult women. *Aust N Z J Psychiatry*. 1995; **29**: 437–48.
- Noorikhajavi M, Afghah S, Dadkhah A, Holakoyie K, Motamedi SH. The effect of 'parental loss' under 18 on developing 'MDD' in adult age. *Int J Psychiatry Med* 2007; **37**: 347–55.
- Hardt J, Rutter M. Validity of adult retrospective reports of adverse childhood experiences: review of the evidence. *J Child Psychol Psychiatry* 2004; **45**: 260–73.
- Demyttenaere K, Bruffaerts R, Posada-Villa J, Gasquet I, Kovess V, Lepine JP, et al. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *JAMA* 2004; **291**: 2581–90.
- Gureje O, Kola L, Afolabi E. Epidemiology of major depressive disorder in elderly Nigerians in the Ibadan Study of Ageing: a community-based survey. *Lancet* 2007; **370**: 957–64.
- Phillips MR, Zhang J, Shi Q, Song Z, Ding Z, Pang S, et al. Prevalence, treatment, and associated disability of mental disorders in four provinces in China during 2001–05: an epidemiological survey. *Lancet* 2009; **373**: 2041–53.