

## Peer Review File

Article information: <https://dx.doi.org/10.21037/jphe-22-91>

### Reviewer A

I recommend major changes for this manuscript based on my thoughts below...

1. This (ACEs) is a timely and important issue where a wealth of evidence exists. However, I had a difficult time identifying the originality of the study... was it the use of the BRFSS data to analyze this type of data? Is this the first time it's been done, or the second? If so, this needs to be emphasized more heavily. I don't see the uniqueness of this paper, especially since the paper lacks any segmented data based on social demographics or other variables noted. A trend analysis of prior years on the data may also add to the originality/uniqueness of the study, if available. There needs to be a stronger position regarding the paucity in the literature and why this paper and the respective analysis will advance scientific knowledge about ACEs and mental health.

**Response:** It is the first time to use 2020 BRFSS to study the association between ACEs and mental condition. It is also the first time to study the association between ACEs and self-reported general mental health wellbeing. A trend analysis of prior years is a very good point. However, that analysis will be big enough to generate a separate paper. Manuscript is edited per reviewer's request.

Line 70 to 74: However, the current understanding on the association between ACEs and mental health conditions is limited due to either small sample size or outdated research reports. More importantly, the correlation between ACEs and self-reported general mental health condition, i.e., mental health wellbeing is lacking.

2. The paper is missing estimates that are typically reported for linear regression results (e.g., R-square). There is also missing a discussion or statement regarding the methods used to assess residuals and appropriate statistical assumptions. According to line 93, demographic variables were adjusted for... where are these estimates?

**Response:** Manuscript is edited per reviewer's request.

In our linear regression analysis, R-squared less than 25%. However, R-squared will not be discussed in our study due to unexplainable human behavior variability. Any study that attempts to predict human behavior will tend to have R-squared values less than 50%.

Line 114 to 116: Assumption of linear regression model, such as linearity, absence of multicollinearity, and normality were studied for the linear regression model.

3. I would also refrain from using "effect" in the title and headings of the manuscript as neither regression nor correlation analyses can be interpreted as cause-and-effect relationships, they are simply associations.

**Response:** Manuscript is edited per reviewer's request.

Line 1 to 2 and others: The Association Between Adverse Childhood Experiences and Mental Health Wellbeing During the Adulthood:

4. Several parts of the manuscript were difficult to read. The flow of the information was interrupted by grammatical issues and the inclusion of unnecessary terms (e.g., line 81 “of them” can be excluded). Another example, line 177: “However, the magnificent of the effect is deferent based on individual ACE.” I don’t believe “magnificent” is the right word here... Please review entire manuscript for consistency (e.g., % vs percent) and to ensure readability is improved.

**Response:** Manuscript is edited per reviewer’s request.

Line 131-132: Nearly 17 percent of adults have experienced four or more ACEs and more than 10% self-reported at least 5 ACEs during their childhood.

Line 256-258: Although the total ACE account during the childhood showed good linear relationship with mental health wellbeing during the adulthood, the individual ACEs may play different role in this association.

The entire manuscript also was reviewed again by two authors.

5. Examples will be helpful to elaborate statements in the introduction such as lines 31-32: “ACEs, such as household dysfunction and experiencing violence or abuse do not only just have a broad immediate and short-term impact on child development, but also have significant long-term effects later in life [5, 6, 7].”

**Response:** Manuscript is edited per reviewer’s request.

Line 55-58: Dr. Daniel P. Chapman reported in 2007 that woman who reported childhood abuse, but not abuse during adulthood, had significantly elevated scores for depression, anxiety, somatization, and interpersonal sensitivity compared to women who reported no abuse during their childhood [7].

6. Authors are correct when describing selection bias and appropriate representation with the homeless population... however, this is very specific, can you elaborate why the specificity or speak to this limitation, representation, more generally.

**Response:** Manuscript is edited per reviewer’s request.

Line 209-211: However, the BRFSS is the nation's premiere system of health-related telephone surveys, which may not well represent the homeless population since they may not have home telephone to participate the survey.

## **Reviewer B**

The authors explore associations between exposure to early adversity and mental health outcomes. I think this is a very interesting work with significant clinical implications. However, there are a number of issues, outlined, which need to be addressed, and are mentioned below. I hope these comments are useful.

1. Abstract: The 1st item of ACE questionnaire used in Felitti et al study (1998) is: Did a parent or

other adult in the household often: Swear at you, insult you, put you down, or humiliate you? In the abstract it is stated that “31.9% of the subjects self-reported a parent swearing at them during their childhood”- The authors could maybe add the rest of the item 1 as well here, as it is not just about swearing. Unless this is not the ACE questionnaire that was used in this study. This – the questionnaire used in the survey- needs to be specified and added as supplementary material.

**Response:** Manuscript is edited per reviewer’s request.

Original survey questionnaires were added (line 89 to 100) to give readers the basic information about what questions were exactly asked. However, due to the length of the original survey questionnaires, the short versions of the questionnaires were used in Tables as well as Results and Discuss sections.

Line 89 to 101: There was a total of eleven ACE related questions in the survey. “Did you live with anyone who was depressed, mentally ill, or suicidal? Did you live with anyone who was a problem drinker or alcoholic? Did you live with anyone who used illegal street drugs or who abused prescription medications? Did you live with anyone who served time or was sentenced to serve time in a prison, jail, or other correctional facility? Were your parents separated or divorced? How often did your parents or adults in your home ever slap, hit, kick, punch or beat each other up? Not including spanking, (before age 18), how often did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way? How often did a parent or adult in your home ever swear at you, insult you, or put you down? How often did anyone at least 5 years older than you or an adult, ever touch you sexually? How often did anyone at least 5 years older than you or an adult, try to make you touch them sexually? How often did anyone at least 5 years older than you or an adult, force you to have sex?” The answer of “no” or “never” was treated as negative answer and the answer of “once” or “more than once” was treated as positive one.

2. Abstract: The authors say: some of the ACEs, such as has anyone ever forced you to have sex play a more significant effect on mental health wellbeing. The authors could add the ACE questionnaire item content in inverted commas. The same for the rest of the paper as well.

**Response:** Manuscript is edited per reviewer’s request.

Line 21: “has anyone ever forced you to have sex”

Line 24: “anyone makes you touch them sexually”

Line 25: “anyone ever touch you sexually”

Line 31-33: “anyone ever forces you to have sex” (3.463 days with 95% CI 3.198 – 3.729), “anyone makes you touch them sexually” (2.933 days with 95% CI 2.732 – 3.135), “anyone ever touches you sexually” (2.688 days with 95% CI 2.512 – 2.864),

Line 134-142: From Table 3 “Average Days Mentally Not Good in the Past 30 Days”, it was found among subjects with different individual ACEs that all ACEs individually associated with prolonged poor mental health wellbeing during adulthood. Among all the ACEs, bitter parent relationship such as divorced/separated parents or physically violent parent relationships (Beating Each Other) during childhood has the least negative effect on participants’ general mental health during adulthood.

“Parents Divorced/Separated” and “Parents Beat Each Other” increased poor mental health well-being by 69.1% and 94.7% respectively. The study revealed that childhood sexual abuse had a very strong association with adulthood's mental health conditions. For example, “Forced to Have Sex” increased poor mental health well-being by 167.6%.

3. Abstract: The authors say “when the victims grow up”. The authors could consider changing the wording here.

**Response:** Manuscript is edited per reviewer’s request..

Line 38: during their adulthood

4. Abstract: The authors say “The scale of the effect is deferent”. Did the authors mean to write “different”? Re-wording could be considered.

**Response:** Manuscript is edited per reviewer’s request. Thanks

Line 38-39: The magnitude of the association is different based on individual ACE,

5. Abstract: One or two sentences could be added in the abstract mentioning the literature gap the authors are seeking to address.

**Response:** Manuscript is edited per reviewer’s request.

Line 10-12: To understand the frequency of retrospectively self-reported adverse childhood experiences (ACEs) and evaluate whether early adverse childhood experiences are independently associated with mental health wellbeing during adulthood.

6. Abstract: The authors say: The scale of the effect. The authors could consider changing this to “magnitude of the effect”.

**Response:** Manuscript is edited per reviewer’s request. Thanks

Line 38-39: The magnitude of the association is different based on individual ACE,

7. Abstract: Overall results could be presented more succinctly in the abstract.

**Response:** Manuscript is edited per reviewer’s request.

8. Tables: The tables are not following APA Style guidelines. The authors could review the format of tables according to APA formatting style.

**Response:** Manuscript is edited per reviewer’s request. Thanks

Line 326: Table 1

Line 343: Table 2

Line 357: Table 3

Line 359 Table 4

9. Line 29: impact

**Response:** Manuscript is edited per reviewer's request. Thanks

Line 52: ACEs can have lasting negative effects and tremendous lifelong impact on both

10. Line 29: across the lifespan

**Response:** Manuscript is edited per reviewer's request.

Line 52-53: ACEs can have lasting negative effects and tremendous lifelong impact on both mental health and physical health across a lifespan [2, 4].

11. The Introduction provides a very short summary of the current evidence base. The authors could consider updating the Introduction with more references to the extant literature.

**Response:** Manuscript is edited per reviewer's request.

12. The introduction does not include the rationale for the current study and does not state the gap the authors are seeking to address. This should be added.

**Response:** Manuscript is edited per reviewer's request. Thanks

Line 10-12: To understand the frequency of retrospectively self-reported adverse childhood experiences (ACEs) and evaluate whether early adverse childhood experiences are independently associated with mental health wellbeing during adulthood.

13. Introduction: What are your hypotheses?

**Response:** Manuscript is edited per reviewer's request. Thanks

Line 11-12: whether early adverse childhood experiences are independently associated with mental health wellbeing during adulthood.

14. Methods: Methods seem to be under-reported. Sample and measures: Participant inclusion and exclusion criteria are missing. Information about the questionnaire used is missing. This should be added in the method section under sample and measures. The authors could provide information about the rationale for the use of different measures.

**Response:** Manuscript is edited per reviewer's request. Thanks

Line 82-86: In 2020, a total 207,200 people from 28 states participated in the optional self-reported adverse childhood experiences survey. However, 90,822 of them were excluded from our study because they either missed at least one the ACE question or provided invalid answers for our analysis (Don't know/Not Sure or Refused to answer).

15. Methods: statistical analysis. How was missing data handled? This should be added.

**Response:** Manuscript is edited per reviewer's request. Thanks

Line 86-88: The missing data was treated as invalid, as same as refusing to answer the question or answering Don't know/Not Sure. Information from a total of 116,378 respondents was collected and used in this study.

16. Methods: How were the ACEs measured? Which questionnaire was used? This should be added.

**Response:** Manuscript is edited per reviewer's request. Thanks

Line 89-103: There was a total of eleven ACE related questions in the survey. "Did you live with anyone who was depressed, mentally ill, or suicidal? Did you live with anyone who was a problem drinker or alcoholic? Did you live with anyone who used illegal street drugs or who abused prescription medications? Did you live with anyone who served time or was sentenced to serve time in a prison, jail, or other correctional facility? Were your parents separated or divorced? How often did your parents or adults in your home ever slap, hit, kick, punch or beat each other up? Not including spanking, (before age 18), how often did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way? How often did a parent or adult in your home ever swear at you, insult you, or put you down? How often did anyone at least 5 years older than you or an adult, ever touch you sexually? How often did anyone at least 5 years older than you or an adult, try to make you touch them sexually? How often did anyone at least 5 years older than you or an adult, force you to have sex?" The answer of "no" or "never" was treated as negative answer and the answer of "once" or "more than once" was treated as positive one. The total accounts of positive answers would be counted as the total ACEs the participants reported during their childhood.

17. Methods: Which was the mental health wellbeing measure?

**Response:** mental health wellbeing is self-reported general mental health condition.

18. Results. Line 66. The authors state that they gathered 129,359 valid respondents. What would be a "non-valid respondent"? This requires explanation.

**Response:** New analyses were completed per Reviewer's request: total of 116,378 valid respondents was collected and used in this study. Thanks

Line 82-88: In 2020, a total 207,200 people from 28 states participated in the optional self-reported adverse childhood experiences survey. However, 90,822 of them were excluded from our study because they either missed at least one the ACE question or provided invalid answers for our analysis (Don't know/Not Sure or Refused to answer). The missing data was treated as invalid, as same as refusing to answer the question or answering Don't know/Not Sure. Information from a total of 116,378 respondents was collected and used in this study.

19. Results. Line 93. The authors mention here that they carried out linear regression. In the previous paragraph Lines 82 to 92 there is no reference to the type of analysis that was computed. This should be added.

**Response:** This is just simple frequency "Average Days" counting.

Line 134: From Table 3 “Average Days Mentally Not Good in the Past 30 Days”,

20. Results. Line 93. Have you taken into consideration possible cofounders? This needs further explanation.

**Response:** We used multivariable analysis (linear regression) to conduct the analysis. The effect of possible cofounders was ruled out. Thanks

21. Results. Line 98. Do the authors mean “different”?

**Response:** Yes, Manuscript is edited, thanks

Line 149-150: Certainly, the magnitude of the effect is different based on individual ACE.

22. Results. Line 107. How were “mentally good days” measured?

**Response:** This is self-reported general mental health condition. However, there is no specific measurement. This is a publicly available data base and we do not have any control regarding the survey design. Thanks

23. Results: A table with demographic information should be added to provide readers with information about the participants.

**Response:** This is a great question. However, these would be two 50s x 12 tables and we choice not to list in the manuscript. Thanks

24. Results. More focus should be given on effect size analysis. Effect sizes should be reported in all analyses.

**Response:** Effect sizes were reported at Table 3, 4, and Graph 1. Thanks

25. Discussion: The conclusions could be clearer.

**Response:** Manuscript is edited per reviewer’s request. Thanks

26. Discussion. Lines 114 to 121. This information has already been provided elsewhere in the article.

**Response:** Yes, the reviewer is right. Manuscript is edited per reviewer’s request. Those information was deleted. Thanks

27. Discussion: Points raised should ideally be complemented with further relevant research evidence.

**Response:** We believe that this has been addressed in Discussion section. Thanks

28. Discussion: What are the clinical implications of the results of this project? This could be

discussed.

**Response:** Manuscript is edited per reviewer's request. Thanks

Line 228-230: For those children with identified adverse experiences, early interventions, such as cognitive-behavioral therapy, psychological therapies, parent training, and broader support interventions, may be effective to improve long term outcomes [33].

29. Limitations. Line 163. This raises ethical issues. Were ethical issues regarding respondents' privacy and confidentiality addressed? If yes, how? If no, why not? The authors should please give more detail.

**Response:** This is a publicly available data base and we do not have any control regarding the survey design. However, there is no personal identification information was collected by CDC during the survey. Thanks

30. Limitations. Line 164. "Many researchers have used retrospective reports to assess the long-term consequences of early ACEs". Some references could be added here.

**Response:** Manuscript is edited per reviewer's request. Thanks

Line 213-214: Many researchers have used retrospective reports to assess the long-term consequences of early ACEs [8-12].

31. Limitations. Line 165. "Recall bias also cannot be ignored since current individual characteristics and experiences may bias the recall...". The authors could cite a reference here to back up with evidence this point and expand a bit further?

**Response:** Manuscript is edited per reviewer's request. Thanks

Line 214-215: However, recall bias also cannot be ignored since current individual characteristics and experiences may bias the recall of these reports [29, 30].

32. Limitations. Line 177. The authors could consider rewording.

**Response:** Manuscript is edited per reviewer's request. Thanks

Line 226-228: Although the total ACE account during the childhood showed good linear relationship with mental health wellbeing during the adulthood, the individual ACEs may play different role in this association.