PEER REVIEW HISTORY

BMJ Paediatrics Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Exploring Children's Knowledge of COVID-19 and Stress Levels associated with the Pandemic in Nigeria: A Mixed Method Study
AUTHORS	Asemota, Osamagbe Aiyudubie Napier-Raman, Sharanya Raman, Shanti Takeuchi, Hajime Asemota, Enosakhare Aiyudubie Nonye, Ezeh

VERSION 2 – REVIEW

REVIEWER	Reviewer name: Dr. Donna Koller Institution and Country: Ryerson University Early Childhood Studies, Canada Competing interests: None
REVIEW RETURNED	19-Mar-2022

GENERAL COMMENTS	Thank you for providing me an opportunity to review your manuscript. This study contributes to our understanding of the impact of the pandemic on children in Nigeria. The information provided and the inclusion of tools and measures can assist future researchers who wish to replicate these methods in future research. Here is some feedback related to each section: Abstract: be careful to delineate issues related to anxiety and stress - using the term psychological responses is too vague and can mean many things under the abstract in the results section: 'fear of the pandemic' seems a little vague,and these categories should match the way they are delineated in the results section of the paper so they coincide and do not confuse the readers under the abstract in the conclusions: not sure if there is a better way to say school going children, this is an odd description and it was only later that we learn that some children in the sample were not school going children - this may require some additional explanation what is already known?: include 'infection' control measures what this study hopes to add?: include 'associated' preventive measures I would also say that this study adds information about the positive impact of the pandemic which has not been derived from other studies - and that this mixed methods study offers a range of outcomes Introduction: the intro is well written, but I would add more about the Nigerian context - some issues are picked up later - but more is necessary to situate the reader within this context - and perhaps discuss some of the inequities - are there any other studies within Nigeria, or is this the only one? Methods: need to describe exactly what is meant by 'cross sectional' - this can mean many things in a study - also first off - it should be noted that this is a mixed study! some grammatical issues here too - purposive and snowball sampling techniques WERE used to recruit... describe the stratified sample - some categories are evident in the tables but need to be made clear in the text

-explain Oyedeji social classification briefly
-explain and clarify - parents were offered feedback and referral were necessary?
-some repetition about parents forwarding online links to other parents
-when citing data - need to use corresponding verb WERE instead of WAS collected page 7, line 20 (this has occurred in numerous places throughout the manuscript)
-clarify: page 7, line 29 - Questions were formulated based on scientifically...
Analysis:
because this is a mixed method study - additional details are necessary here - in particular when you mention triangulation of data - there needs to be more description here in how the data came together from both the qualitative and quantitative sources
Results:
under qualitative results - I would reconsider some of the headings stressors: School lockdowns instead of schooling?
when you cite a direct quote from a participant, it is customary to include age, gender of child - this makes a difference, because there are so many age groups, and some younger ages witnessed greater levels of stress
theme of 'pandemic and contextual fears' - fears of contracting virus? Impending doom?
Pandemic restrictions should be changed to something that more adequately reflects the issue of loss of social contacts, social losses? The data you present does not match the heading
Home/domestic stress is a little repetitive - what about just 'stress in the home'?

Protective factors could be revised to indicate supportive measures and positive outcomes? - so 'support from parents', 'quality time with family', instead of 'benefits of lockdown' - how about 'play and leisure'? Need to fine tune the headings so they accurately match the data presented.
Discussion - there are some notable repetitions here - streamline the issues so they are not repeated - for example, the issues particular to those children who were home schooled - mention it once and describe what you think may be going on -
I would begin this section by indicating that most children in the sample experienced high levels of stress - and this is disconcerting - the mixed methods allowed for a range of experiences to be captured - including those factors which supported children during this time
describe in clearer detail the impact of social inequities and how they may have played out and were exacerbated as a result of the pandemic - what are they exactly in the Nigerian context - you touch upon this on page 12 line 49. This can provide greater knowledge to those outside of Africa.
children in various parts of the world had high levels of knowledge regarding the virus - UK, Canada, US, Japan etc. this is a strength of the study too - and further supports the notion that children's voices should be heard - because they are aware of what is going on - so a stronger call for attention to children's rights rather than just one sentence in the conclusion
-some repetition regarding the lower social class experiencing high levels of stress - page 13, line 30
-would include a strengths section - this mixed method study allowed for a range of findings and experiences to be shared - including positive ones which most studies have not identified
- also some strengths: good sample size, and additional insights regarding children of low SES, and inequities which were exacerbated
Conclusions: tighten some of the first few sentences and make them more cogent, and reiterate the contributions of a mixed methods study. Make a stronger plea for greater attention to children's rights and policies in Nigeria which can more adequately support children

	who are home schooled, younger children, and those who live in poverty.

REVIEWER	Reviewer name: Dr. Peter Flom Institution and Country: West End Ave New York, United States Competing interests: None
REVIEW RETURNED	03-Mar-2022

GENERAL COMMENTS	I confine my remarks to statistical aspects of this paper. Unfortunately, I think the statistical approach was incorrect. Rather than categorize the knowledge scale and the use Fisher's exact test, you should leave the knowledge score as an integer and then do regression. You could include more than one variable at a time, and probably should. You should build your regression model based on substantive knowledge, but if this is not possible, you could use LASSO. More specific comments: Abstract, line 43: Insert "significantly" before "correlated". (And similar in other places; you cannot accept the null). p. 5 line 30-32 This isn't really adequate. Please give some details of what options you chose to get the sample size. This should account for the stratified sample. Also, you didn't just do descriptive statistics, you did, e.g. Fisher's test. p. 7 line 44 What was tested? Peter Flom

VERSION 1 – AUTHOR RESPONSE

EXPLORING CHILDRENS KNOWLEDGE OF COVID-19 AND STRESS LEVELS ASSOCIATED WITH THE PANDEMIC IN NIGERIAN CHILDREN. RESPONSE TO THE EDITOR'S COMMENTS APRIL 1OTH 2022 CHIEF EDITORS COMMENTS RESPONSES

Delete the statistical analysis section including Table 4. It does not help your paper and is incorrect (see comments of stats reviewer) This has been deleted and replaced with a new table showing multiple regression done using the stress scores as a dependent variable according to instructions of reviewer 1. Abstract Results replace "average age was 12.47 years" with "mean age was 12.5 years". Delete " with age and type of schooling being the only factors correlated to stress levels." Replaced and deleted age and schooling. However, the regression results show stress scores reducing with increasing age so this has been reflected in its stead. Abstract Conclusions replace "Nigerian school going children" with "Nigerian school children in the study". Delete the last sentence. This has been changed to Nigerian children because although a section of respondents were children who attended school in various forms during the pandemic and before the pandemic, there may actually be children in this population who do not attend school at all. While this is a slim possibility due to the sampling methods used, it cannot be entirely ruled out. We have added this concluding sentence in the Abstract Conclusions: Governments and child health service providers need to tailor health and support services in response to children's needs and concerns. What this study adds 1st sentence replace "Children in Nigeria " with "Nigerian schoolchildren in the study" Done

Introduction : delete the 2nd sentence. Done Methods : Analysis Quantitative delete this section Results Deleted all as required but have added a few sentences on the regression model. Stress scores delete all apart from the first three sentences Discussion delete the 1st sentence. Journal style is to avoid desciding studies as the first Discussion 1st para delete ". Children's stress scores correlated with age, with younger children exhibiting higher stress levels than the oldest age group. We also found that schooling method significantly correlated with higher stress scores, with those being home schooled by their parents recording high stress scores" Deleted previous paragraph and replaced with new statement about regression results. Discussion page 20 lines 6-14 delete " Higher " Higher stress scores were seen with increasing knowledge of COVID-19 and practice of preventive measures. Children who practiced all four preventive measures had higher stress indicators. Although this observation had no statistically significant effect, concerns about the COVID-19 virus could heighten anxiety over preventive practices. Distress over mask-wearing and restrictions with social isolation were noted by the respondents." Deleted: Furthermore, new results do not show any relationships with these variables. In addition, no discussion on trends as the previous table has been removed. REVIEWER 1 Rather than categorize the knowledge scale and the use Fisher's exact test, you should leave the knowledge score as an integer and then do regression. You could include more than one variable at a time, and probably should. You should build your regression model based on substantive knowledge, but if this is not possible, you could use LASSO. 1. The knowledge score is uncategorized. 2. Perhaps the reference here is the stress score which was categorized and Fishers exact test used to determine significance. ACTIONS TAKEN = 1. Stress scores were ungrouped/uncategorized and a multiple regression model built with stress score as the dependent variable. 2. With reference to building the regression model on substantive knowledge we asked the editorial office if the reviewer means knowledge of covid as per previous response in 1 above because the knowledge of COVID-19 scores were ungrouped and range from 0-4 marks only. 3. We have done another regression with the dependent variable as knowledge of COVID-19. This table is not included in the main manuscript but will be at the bottom of this file for reference purposes considering that it is not very clear what is desired here at this time. We are happy to review this subsequently. Abstract, line 43: Insert "significantly" before "correlated". (And similar in other places; you cannot accept the null). This change has been effected. p. 5 line 30-32 This isn't really adequate. Please give some details of what options you chose to get the sample size. This should account for the stratified sample. Also, you didn't just do descriptive statistics, you did, e.g. Fisher's test. For sample size : There is no previous study of this nature to give a prevalence, we choose that to be 50% with precision of the study at 5% and level of confidence 95%. The stratified sampling was done in levels after the online part of the study achieved saturation with no more entries. STAGE 1 A sampling ratio was created using the left over number of entries to be obtained physically divided by the total population of students in the schools which had been cleared to reopen by the government. STAGE 2 Schools were grouped into public/government owned and privately owned schools. STAGE 3 Sample size to be obtained from each class of school was gotten by multiplication of the sampling ratio obtained in stage1 by the population in each type of school – private and public respectively. Private school and public school populations STAGE 4 A simple ratio of public : private schools was then used to determine the number of public schools to be visited per one private school. This resulted in a 3 private schools : 1 public school ratio. A random number generator was used to pick schools out of the list provided by the ministry of Education. Due to fluctuating attendance in schools, sampling ratios were not used to obtain sample size based on individual school population in each type of private or public school picked by random number generation. The

sample to be obtained was spread evenly across all the schools per type of school. This resulted in an equal number of children to be recruited from each privately owned school visited and an equal number to be recruited from each public school. STAGE 5 The final number per school was divided amongst the grades of the school classes which varied between classes 1-5 (GRADE1-5) and classes 1-4 (GRADE1-4) depending on the school. In each grade, class streams commence at A and are listed alphabetically varying between A-D in some schools and A-E in others. The number for each class was chosen by dividing the sample per grade into equal numbers of the streams. In each class, the register was then used to pick every second child who was given a questionnaire and consent form to take home to their parents. p. 7 line 44 What was tested? LINE 43 – stress scores using the perceived stress scale LINE 45- Knowledge of COVID-19 virus REVIEWER 2 what is already known?: include 'infection' control measures what this study hopes to add?: include 'associated' preventive measures Done Under the abstract in the conclusions: not sure if there is a better way to say school going children, this is an odd description This is addressed in the response to the editors comments the intro is well written, but I would add more about the Nigerian context - some issues are picked up later - but more is necessary to situate the reader within this context - and perhaps discuss some of the inequities - are there any other studies within Nigeria, or is this the only one? This has been edited to reflect local conditions circa lockdown - In addition to pandemic restrictions, civil unrest led to the implementation of a state-wide curfew, which was lifted in mid-2021.14 These protests over COVID-19 food subsidy items and police brutality involved looting of businesses, governmental establishments and private homes resulting in tighter movement and security measures by the government. Other news articles available online do not clearly reflect the timing and interplay of these social conditions occurring at once. The protests took place nationwide and were particularly disruptive due to looting of private homes, destruction of public buildings and offices. This originated from governmental hoarding of subsidized food items to be distributed to ease hunger which were purchased by a private consortium of companies for the populace. It is difficult to state exactly how this occurred without sounding political hence we hope the brief addition will suffice. In local study area, the protests involved looting of private homes. The journal states it is against policy to identify studies as 'the first' need to describe exactly what is meant by 'cross sectional' - this can mean many things in a study - also first off - it should be noted that this is a mixed study! Cross sectional in this study refers to the study design of being a fixed shot in time with no follow up or cohort groups being recruited. A better way to denote this could be – observational cross sectional study with mixed methods. The mixed methods refer to the use of quantitative and qualitative data gathering and analysis. This has been reflected in the methodology. Change has been effected as suggested. explain Oyedeji social classification briefly -explain and clarify - parents were offered feedback and referral were- where necessary? -some repetition about parents forwarding online links to other parents Social class was grouped according to Oyedeji social classification which allocates a score to each parent based on their occupation and level of education. The score is tallied together to provide a grouping for the family from level 1-5 which is further re-classified into upper, middle and lower social classes. Parental feedback and referral to psychologist if needed for children with high and very high class of stress scores. – made clearer in the manuscript. We may need to retain the classification of the stress scores in the prose part of the results if we are to include this information on which children were referred for further care. This sentence now reads ' children with high stress scores' The repetition occurred due to description in methodology of how samples were obtained online and the addition of patient and public partnership which is required by the journal. Removing this from methods will result in a lacunae of understanding how the study was

carried out. The latter part which appeared in methodology has been edited out. Analysis: because this is a mixed method study - additional details are necessary here - in particular when you mention triangulation of data - there needs to be more description here in how the data came together from both the qualitative and quantitative sources The triangulation of data enabled validation of the outcomes seen from both types of data obtained. Quantitative analysis showed good knowledge of covid which was reflected in the awareness of children about the pandemic and its effects as well as control measures. Themes were elicited from the quantitative data using statements made by the children. These were reported under the broad headings in the qualitative results. Data was checked to see if themes correspond with quantitative results. Example : repeated complaints about schooling issues under quantitative data corresponded with only 11.9% of respondents attending physical school. Additionally, for each question in the stress scale, written entries where available were checked for synchronicity with the scores children allocated to each question. Results: under qualitative results - I would reconsider some of the headings stressors: School lockdowns instead of schooling? when you cite a direct quote from a participant, it Disruptions to schooling has replaced school lockdowns is customary to include age, gender of child - this makes a difference, because there are so many age groups, and some younger ages witnessed greater levels of stress The age and gender of the child a statement is attributed to has been included in direct quotes of each sub heading in the qualitative results. Other statements in quotes are expressions of several children which have been adequately conveyed by the statement of one child. theme of 'pandemic and contextual fears' - fears of contracting virus? Impending doom? Pandemic restrictions should be changed to something that more adequately reflects the issue of loss of social contacts, social losses? The data you present does not match the heading Home/domestic stress is a little repetitive - what about just 'stress in the home'? COVID-19 virus and contextual fears has replaced pandemic and contextual fears although the term "pandemic' is widely used by the children and understood to mean the virus and all other issues that followed the control measures. Pandemic restrictions: we mean here to include not only social restrictions and disruption to physical movement but mask wearing, handwashing and other measures instituted. Domestic refers to the running and keeping of the home in which regard children had to engage in house keeping chores, baby sitting and other forms of unpaid labour at home. The home could be made up of other family members like in cases where children are fostered unofficially with relatives and may not necessarily refer to living with their parents. As a title it may be reflective of the dynamics of these situations. We believe changing this to "Home and domestic stress" may give a clearer picture. Discussion - there are some notable repetitions here - streamline the issues so they are not repeated - for example, the issues particular to those children who were home schooled - mention it once and describe what you think may be going on – I would begin this section by indicating that most children in the sample experienced high levels of stress - and this is disconcerting - the mixed methods allowed for a range of experiences to be captured - including those factors which supported children during this time We have streamlined some of the text to be more direct and rephrased the beginning of the discussion segment. We have also added in the strengths and limitations section that this was a mixed methods study. describe in clearer detail the impact of social inequities and how they may have played out and were exacerbated as a result of the pandemic - what are they exactly in the Nigerian context - We have acknowledged in the limitations that this study could not explore health or educational inequity in Nigeria, since: "a larger number of you touch upon this on page 12 line 49. This can provide greater knowledge to those outside of Africa. children in various parts of the world had high levels of knowledge regarding the virus - UK, Canada, US, Japan etc. this is a strength of the study too - and

further supports the notion that children's voices should be heard - because they are aware of what is going on - so a stronger call for attention to children's rights rather than just one sentence in the conclusion. respondents came from the middle socioeconomic class; and therefore this study cannot reflect the totality of all Nigerian children's experiences. In addition, this may have affected observations with members of the middle class largely able to provide coping mechanisms for their children and buffer effects of the pandemic by working from home, providing food and other amenities. We have also stated that children in other low resource settings world have adequate knowledge of COVID-19 and public health measures. some repetition regarding the lower social class experiencing high levels of stress - page 13, line 30 -would include a strengths section - this mixed method study allowed for a range of findings and experiences to be shared - including positive ones which most studies have not identified Due to review suggested by reviewer 1 and removal of the original table 4, new comments on social class will follow results of new table 4. Conclusions: tighten some of the first few sentences and make them more cogent, and reiterate the contributions of a mixed methods study. Make a stronger plea for greater attention to children's rights and policies in Nigeria which can more adequately support children who are home schooled, younger children, and those who live in poverty. Re written as follows: This study, reports on Nigerian children's experiences during the COVID-19 pandemic. Children had good knowledge about COVID-19 as well as public health measures in keeping with other studies from low resource settings (refs). Stress levels were high with younger children significantly more concerned than older children. Children worried about schooling, access to food, COVID-19 virus and the effect of control measures. Family-related stressors and the value of parental love and support featured prominently as stressors and coping mechanisms respectively. The public health and policy response to the pandemic and recovery in Nigeria should respond children's voices and concerns. Responses should be based on equity and child-rights for the greater good of all Nigerian children particularly the marginalised, out-of-school, children in poverty and younger children. Thank you DR. OSAMAGBE ASEMOTA FOR ALL THE AUTHORS. REGARDING THE SECOND TABLE, I SUMMARISE AND CAN ADD THE TABLE IF YOU THINK I SHOULD. THE ANOVA SHOWS DF OF 5, THE SIGNIFICANT VARIABLE USING KNOWLEDGE OF COVID TURNS OUT TO BE PREVENTATIVE MEASURES. KNOWLEDGE HAD NO SIGNIFICANCE WITH AGE, GENDER, STRESS SCORE, SCHOOLING METHOD. I WISH TO SEND THIS OUT TO TEAM NOW SO I DON'T DELAY. Commented [SR(WSL1]: Do you mean Table 3: perhaps you could mention this in the text- it is importan

VERSION 3 – AUTHOR RESPONSE

Dear Chief Editor,

Thank you for the patience with our paper.

We were conflicted on which instructions to follow hence reached out for clarification though the editorial desk.

Having now fully understood the instructions, we submit a revision with removal of Table 4 nd adaptation of the discussion accordingly.

All other corrections have been effected.

Thank you

Asemota Osamgabe for the authors.