Peer Review Report

Review Report on COVID-19 pandemic and food insecurity fuel the mental health crisis in Africa

Original Article, Int J Public Health

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EVALUATION

Q 1 **Please summarize the main findings of the study.**

The study reveals a notable prevalence of Generalized Anxiety Disorder (GAD) and Food Insecurity (FI) across the surveyed countries in Africa, with varying levels of COVID-19 exposure. Key findings include:
- GAD prevalence was highest in Mozambique at 40.2%, followed by Uganda (19.1%), Tanzania (18.0%), and Sierra Leone (17.0%).
- COVID-19 exposure was notably higher in Mozambique (30.4%) and Uganda (26.2%) compared to Tanzania (8.2%) and Sierra Leone (4.2%).
- FI was extremely prevalent, especially in Sierra Leone (88.3%), and to a lesser extent in Mozambique (57.7%), Uganda (40.8%), and Tanzania (28.4%).
- Both COVID-19 exposure and FI were significant risk factors for GAD. COVID-19 exposure increased the odds of GAD by 1.7 times, while moderate/severe FI almost tripled the odds.
- In adjusted models, the impact of FI on GAD was over twice as large as that of COVID-19 exposure.
- Higher Socio-Economic Status (SES) acted as a protective factor, reducing the odds of GAD.
- The mediation model illustrated that FI partly mediated the effect of COVID-19 exposure on GAD

Q 2 **Please highlight the limitations and strengths.**

Strengths:

- The large sample size across four different countries provides a robust dataset for analysis, which may enhance the generalizability of the findings within the African context.
- The inclusion of four different countries with varying demographics, geographic locations, and COVID-19 responses adds to the richness and comparative value of the data.
-Longitudinal Data Collection

Limitations:
1. **Self-Reported Data**:
- Reliance on self-reported data, especially for COVID-19 exposure due to a lack of testing, may introduce recall bias or reporting bias, potentially affecting the accuracy of the findings.

- The use of in-house databases for participant selection could introduce selection bias if those databases are not representative of the broader population.

- The document could have provided more details on the statistical analyses performed to answer the research questions, including how missing data were handled, if applicable.

- Although there's longitudinal data collection, there is no longitudinal data analysis. The cross-sectional nature of the analysis may limit the ability to infer causality between the variables examined.

- The findings may have limited generalizability outside the African context or to other African countries not included in the study.

Q 3 **Please provide your detailed review report to the authors. The editors prefer to receive your review structured in major and minor comments. Please consider in your review the methods (statistical methods valid and correctly applied (e.g. sample size, choice of test), is the study replicable based on the method description?), results, data interpretation and references. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.**

The study reveals a notable prevalence of Generalized Anxiety Disorder (GAD) and Food Insecurity (FI) across the surveyed countries in Africa, with varying levels of COVID-19 exposure. The introduction sets the stage well for the presented study, but the following concerns need to be addressed.
-The abstract lacks a brief summary of statistical analyses used in this study.
-The introduction should not include tables.
-The discussion on variability in GAD prevalence rates within Africa is informative but might benefit from a deeper exploration or hypothesis on why such variability exists, beyond different assessment methodologies and diagnostic criteria.
-The introduction could be enhanced by specifying the significance of studying the interplay between COVID-19, food insecurity, and GAD in Sub-Saharan Africa, beyond the general mention of a mental health crisis.
Methods
- The document does not provide explicit information on how the sample size was determined. Usually, a power analysis or justification based on previous literature or the scope of the study is included to explain the chosen sample size.
- The data collection procedure is well-described, covering the timeline, the organization involved, the use of in-house databases for contact information, and the technique of random selection with attention to demographic representation. However, more information on how the in-house databases were created and how they ensured the diversity of participants could enhance the transparency of the method.
- The measures used for Generalized Anxiety Disorder (GAD), COVID-19 exposure, and Food Insecurity (FI) are well-established and validated tools, which lends credibility to the study. The translation of the original English version of the questionnaire into various languages is a good practice to ensure cultural and linguistic appropriateness. However, the self-assessment aspect, especially regarding COVID-19 exposure due to a lack of testing, may introduce some bias or inaccuracy. This needs to be discussed.
- The application of post-stratification weights and the use of Principal Component Analysis for generating a Socio-Economic Status (SES) index are sound statistical methods to enhance the accuracy and interpretability of the findings. However, the document does not provide details about the statistical analyses performed to answer the research questions, like how the relationships between COVID-19 exposure, FI, and GAD were analyzed statistically. Including information on the statistical tests used, the software employed, and the level of significance considered would make the methods section more robust.
* Mediation analyses
-What is the rationale behind conducting a mediation analysis, including the theoretical or empirical basis for suspecting a mediation effect?
- There is need for detailed specification of the mediation model, including the identification of the independent variable (IV), mediator variable (M), and dependent variable (DV).
- There is need for diagrammatic representation of the mediation model, showing the paths from the IV to the DV, IV to the M, and M to the DV.
- Utilizing structural equation modeling (SEM) for mediation analysis is a sophisticated and appropriate method to test the hypothesized mediation effect of FI on the relationship between COVID-19 exposure and GAD. SEM is capable of handling complex relationships and is a suitable choice for mediation analysis. However, there is need to describe how direct and indirect effects were estimated.
-Was time included in the mediation models? Here a mediation figure with the time points, exposures, mediators, and outcomes clearly labeled could help make what was done and time points used clearer for the reader.
- There is a need for discussion of the assumptions underlying mediation analysis, such as linearity, no measurement error, and no omitted confounding variables.
*Longitudinal data

- Data collected in 12 rounds over the year 2021 provides a longitudinal perspective, which is valuable for observing trends and associations over time. However, the statistical methods used are not appropriate for longitudinal studies. Therefore, the results presented are not valid
-In longitudinal studies, where data are collected at multiple time points, several analytical methods can be employed to assess changes over time and to examine the relationships between variables. The choice of method often depends on the research questions and the structure of the data. Here are some commonly used longitudinal analysis methods which I expected to see in this paper:
1. Repeated Measures Analysis of Variance (ANOVA): Used to analyze the differences between group means over several time points.
2. Mixed Effects Models (also known as Hierarchical Linear Models or Multilevel Models):Useful when there are both fixed and random effects and it can handle missing data and unbalanced designs.
3. Generalized Estimating Equations (GEE) - Suitable for analyzing repeated measurements or clustered data, especially when data is missing at random.

PLEASE COMMENT

Q 4 **Is the title appropriate, concise, attractive?**

No

Q 5 **Are the keywords appropriate?**

Yes

Q 6 **Is the English language of sufficient quality?**

Yes

Q 7 **Is the quality of the figures and tables satisfactory?**

Yes.

Q 8 **Does the reference list cover the relevant literature adequately and in an unbiased manner?)**

Yes

QUALITY ASSESSMENT

Q 9 **Originality**

Q 10 **Rigor**

Q 11 **Significance to the field**

Q 12 **Interest to a general audience**

Q 13 **Quality of the writing**

Q 14 **Overall scientific quality of the study**

REVISION LEVEL

Q 15 **Please make a recommendation based on your comments:**

Major revisions.