Peer-Review comments and authors responses

Reviewer 1:
Comments:

1. *GENERAL ASPECTS:*
a) *Throughout the manuscript – it is a good practice to submit any manuscript for peer-review with line numbers. Without changing anything, please activate this option in Word so you can guess where the following comments refer to.*

   Response*:* Thank you for the suggestion, our new cleaned manuscript and manuscript with track changes have the lines numbered.

b) *It is also advisable to provide word count for the Abstract and for the whole manuscript (excluding abstract) in the cover page/first page*

   Response*: We appreciate the advice, the word count for the abstract is included in L37 of the* cleaned manuscript and the word count for the whole manuscript is added in L38 of the cleaned manuscript.

2. *TITLE*
a) *The term "mini" review probably is adequate in the internal context of PPCR, but I would suggest removing it for publication*

   Response*:* Thank you for your feedback, The term 'mini' has been removed from the manuscript as per your suggestion.

3. *ABSTRACT*
a) *I would also recommend putting the total number of patients within the selected studies in the Abstract.*

   Response: We agree that this should have been provided in the first manuscript and are thankful for the feedback. The total number of patients is 329,731 and has been added to the abstract. Can be found in L64 of the cleaned manuscript.

4. *INTRODUCTION*
a) *Your introduction is well written and adequately structured. I would just propose merging paragraphs for a total number of 2-3. Besides, it would also be advisable to include the research question somewhere, in the form of an hypothesis.*

   Response We are glad that you liked our previous introduction, due to other reviewer's feedback the introduction was modified. We hope you still appreciate the

new introduction and the research question can be found in L106-L108 of the cleaned manuscript.

5. METHODS
a) Please provide company, city and country for commercial products (Covidence)

Response*:* We have added this information and can be found on L145-L146 in the cleaned manuscript.

6. DISCUSSION
a) Your discussion and conclusions are essentially the same. Consider changing the content in the Discussion section.

Response: Thank you for your feedback, interestingly Reviewer 5 asked for the discussion section to be removed from the abstract. We agree with your statement that both sections expressed the same idea and the discussion section was removed in the clean manuscript.

b) The overall length of your Discussion section should be reduced in a proportion around 25 to 30%. Check what is redundant information, remove and merge paragraphs.

Response: Thank you for your suggestion, and we agree that our previous Discussion section was lengthy and contained redundant information. A new Discussion section was redacted and is approximately 25% shorter (1276 words compared to the initial 1691 words).

c) these subheadings are provided as a guidance and should not be in the publication, at least not redacted in their current form.

Response: We agree with the comment and all subheadings have been deleted in the discussion section.

7. CONCLUSION
a) It is quite obvious what functioned as an intervention and what were the outcomes, so this second sentence in your conclusion can be dismissed.

Response: Thank you for your comment, the new conclusion in the cleaned manuscript, found in L421, does not redefine the exposure and outcomes.

8. REFERENCES

a) *Some are not fully compliant with Vancouver 2018 formatting rules. Remember to use abbreviated journal names (e.g. ref. 1), remove issue number and repeating page numbers. Besides, after volume (between parentheses), ":" should be used.*

> **Response**: We appreciate the feedback. In the journal submission guidelines, it is stated that the reference style we must use is APA. All references and in-text citations comply with APA guidelines.

9. FIGURES

a) *Figure 1 – there is a typo in References removed > Other reasons (a "0" is missing)*
Response: Thank you for pointing out this typo, a new figure 1 has been provided with this mistake fixed.

Reviewer 2

> *Overall well-conducted systematic review with clear rationale and methodology. Few comments added in the discussion segment to consider for further improvement*

> **Response**: Thank you for your comments and suggestions on the document. We revised the manuscript carefully considering your comments to improve the paper and enhance its suitability for publication. Below you can find the responses to the comments from your attached manuscript.

DISCUSSION: a) I think the headings in the discussion are for the authors to subcategorize and to assist in writing, these should either be modified or removed completely. I have not marked other headings.

> **Response**: We agree with your suggestion, the headings have been removed from the Discussion section in the new manuscript.

b) *Consider discussion on the biologic and pathophysiologic relationship of food insecurity and these mental health disorder and if these were explored, as these studies all are just showing association and not an evidence of causation. Also to emphasize this point in the discussion*

> **Response**: Thank you for your suggestion, while we do agree that the biological pathway that explains Food Insecurity and Mental Health is of great interest, we believe that discussing this is out of the scope of the current review and none of the final 10 articles included this. Additionally, L399 to L401 of the clean manuscript highlights the lack of causality of our review and the studies included.

c) L443 of attached manuscript "The heterogeneity was increased by the use of specific methods for quantifying mental health outcomes, such as changes in scores or prevalence rates, further contributing to the range of findings observed."-Link this statement with an example from the studies as this appears to be a generic statement.

Response: Thank you for your feedback, and we agree that this statement appears to be generic. From lines 371 to 407 of the clean manuscript, the topic of heterogeneity is expanded on with examples.

d) L472 "Conversely, studies conducted in community and household settings offer broader applicability but may not capture the nuances of clinical environments."-This is a generic statement, preferably link it with examples from the 11 studies you had reviewed in details

Response: Thank you, we agree that the statement is generic and as it does not add on to the current discussion section it was eliminated. Instead, the heterogeneity of the populations was discussed and examples were provided.

Reviewer 3:

The authors have conducted an interesting review. The methodology is fine in principle, apart from a couple aspects that need better description.

Response: Thank you for your comments and suggestions. We revised the manuscript carefully and answered some questions and comments below.

ABSTRACT a) Objectives: To synthesize literature on the impact of food insecurity on depression, anxiety, and stress across various populations and regions."- *Why is that important? Please elaborate on the rationale for this study.*

Response: Thank you for this comment. To address this issue, we have updated the abstract and clarified the objective of our work.

b) Like mentioned in the abstract, it is not clear to me what is supposed to be demonstrated by this review: just the association as a prevalence of health outcomes in FI or incidence depending on the risk factor FI, or both? What is the aim to show/ the message to convey with this review?

Response: Thank you for your question, in the manuscript we explained that our aim with the review is to assess the relationship between FI and mental health outcomes, specifically depression, anxiety, and stress, in adults.

c) "The review found that individuals with food insecurity had significantly higher odds of experiencing depression (adjusted ORs 2.5-3.4), anxiety (adjusted ORs 2.3-

3.1), and stress (adjusted ORs 2.0-2.8).”-*So this is prevalence not incidence. Then, I find the wording in the discussion and conclusion a bit strong. It sounds like food insecurity would precede mental health issues by saying "increases the risk of depression…" or "impacts mental health…" I think something like "increases the risk of having depression…" or "is associated with mental health" is more appropriate.*

> **Response**: We thank you for your very important suggestion about the wording of the results in the Abstract. We have eliminated the noted sentence and opted to word our findings as "All articles obtained statistically significant results for the association between food insecurity and mental health." Additionally, the conclusion section has also been rewritten: "FI is significantly associated with mental health,[...]"

INTRODUCTION a) You added "Therefore, this mini systematic review seeks to evaluate and synthesize the literature on food insecurity and mental health outcomes, focusing on depression, anxiety, and stress across different populations and geographic regions as the primary objective."
It sounds like the mini review is addressing the shortcoming described in the previous paragraph. However, it can only deal with what is published already. So what is the rationale for summarising the literature? These shortcomings could only be addressed by future studies. So, this rather is something for the discussion section.

> **Response**: Thank you for the feedback, in the introduction section of the previous manuscript we had stated that a limitation of the current research was the lack of causality. As you have correctly mentioned, this alludes to the idea that our systematic review will fix this gap, but that is certainly not the case. The new introduction doesn't mention this and the discussion section in the cleaned manuscript described the limitation in L396.

METHODS *a) Please provide the number before publication*

> **Response**: Thank you for the suggestion, the registration number was included. The protocol was registered in OSF Registries and the registration DOI is https://doi.org/10.17605/OSF.IO/9BJZT.

  b) Inclusion and exclusion criteria: *Did you search in all available languages?*

> **Response**: Thank you for pointing out this missing information, we only searched articles published in English. This information was added in the Inclusion and Exclusion criteria section, line 124.

  c) "Last 10 years"-*The reason being?*

Response: Thank you for your comment, the reason for limiting the project to the last ten years is to include the most recent findings on food insecurity and mental health.

d) "Within the framework of mental disorders, we appraised depression, anxiety, and stress."-*Again, the reason for this limitation being?*

Response: Thank you for noticing this limitation, we decided to assess anxiety, depression, and stress given their contribution to premature deaths. We prioritized these conditions for our study.

e) "Additionally, we limited our selection to observational studies"- *Why and which type of observational studies? The point in the introduction was that most studies are cross-sectional and causality cannot be inferred. If there is any RCT, why not bring this information in?*

Response: Thank you for highlighting the limitations of cross-sectional studies. The review was limited to observational studies since we wanted to understand the behavior of the primary variable, food insecurity status, to have a broader perspective without any external intervention.

f) Selection of studies and data extraction *How was the information grouped/ sorted etc?*

Response: Thank you for your question, the information was grouped using the Covidence platform, specifically using customized data extraction forms. The information has been described in L146 of the manuscript.

g) "Full texts were then meticulously reviewed, and studies not meeting the inclusion criteria were discarded. Data on study and population characteristics, as well as exposure and outcomes, were extracted and are summarized in Table 1."-*And were these steps also conducted twice and independently? What are the effect measures that should be presented in the results of each study? It may be helpful to convert measures for comparability.*

Response: Thank you for your question, the revisions of full-text articles were conducted by two reviewers, and both reached a consensus. In regards to effect measures, the new Table 1 describes the measures of association between Food Insecurity and the specific mental health outcomes. Eight out of the 10 studies used logistic regression models and reported odd ratios, while two studies used linear regression models and reported B-coefficients. We didn't convert data as we didn't want to manipulate results, but we hope the new Table 1 makes comparison easier. The statement "The outcomes that were collected were adjusted and unadjusted measures of association (e.g., OR and B coefficient)." was added to the methods section for transparency.

RESULTS: a) *The results do not consistently report findings relating to the research questions as it seems to be described in the introduction. The studies should be summarized with respect to the association between FI and mental health outcomes in the first place. Any secondary objectives, i.e. like investigating other population characteristics and FI or investigating subgroups for their strength of association between FI and mental health outcomes are welcome, but should be 1) described in the methods section and 2) reported separately from the primary objective.*

Response: Thank you for your feedback, our research question is as follows: this systematic review aims to assess the relationship between FI and mental health outcomes, specifically depression, anxiety, and stress, in adults from LMICs and HICs. We acknowledge that the previous manuscript did not clearly define this question, and we have revised the introduction and methods section to ensure that our new manuscript does not do this. As studying the difference in associations between LMICs and HICs is part of the primary objective, we have not included any secondary objective. A modified Table 1 has been created where a new column titled Measure of Association depicts the magnitude of association between FI and mental health for each study. The result section of the manuscript has been modified to summarize the studies about the measure of association

b) *The reader gets confused and it is difficult to get an impression of the literature synthesis. Further, regarding the last point, it would be very helpful to have the effect measures of the studies incorporated to really get an impression of the strength of the investigated association across the different studies. Also some more information on the comparators and populations would be helpful to assess whether the effect measures are even comparable. The authors conducted the review well, but should improve the extraction of the relevant data to their research question and portray a clear message from their review.*

Response: I agree with your comment, in accordance with the feedback table 1 has been modified to include information on the strength of the association between FI and mental health outcomes, the prevalence of mental health outcomes, and the tool and cut-off point used to assess mental health outcome for each study included. All this with the objective of facilitating comparison between studies for the reader. The text in the result and discussion section has also been modified to clarify this information.

c) *The dates are a little confusing: In the methods section it says that the past 10 years were searched. Table 1 provides studies from 2018 on. And here it says that the oldest studies were conducted 2005. So, did the authors wait for so long to publish? I mean, what defines "running" a study: the actual recruitment or the evaluation of an existing database? Please clarify.*

Response: Although the literature search included papers published within the last 10 years, the eligible papers selected were published between 2018 to 2023. The sentence and Table 1 title were adequate to clarify this point: "*The eligible papers selected were published between 2018 to 2023*" and "*Table 1. Included observational studies were published between 2018 and 2023 and evaluated the impact of food insecurity on mental health.*" (Lines 185 - 186).

d) *Why does the column "main findings" report all sorts of things? The first study of Reeder et al., 2022 doesn't even report any mental health outcome. I would limit it to the primary outcome, i.e. the association with depression, anxiety, and/or stress. The other outcomes could be mentioned in a second column, but then the methods section needs to describe that these outcomes are also assessed.*

Response: Thank you for this observation, we acknowledge that our previous table 1 did not reflect our primary objective. A new Table 1 was created, where the column of main findings was replaced with a column titled measures of association. In this column adjusted and unadjusted odds ratio and B coefficient are presented. We hope with this new Table 1 the reader will be able to compare and understand the strength of association each study found.

e) *Please provide a reason/usage for your data synthesis of reporting the "adjusted variables". Then it would also be interesting to be informed about the statistical test the studies used. Again, it should be described in the methods section.*

Response: Thank you very much for your comment, the initial objective of reporting "adjusted variables" was to inform the reader what covariates were controlled for in each observational study to facilitate comparison between results. Table 1 has been modified to report the strength of the association, and when this association was adjusted, the footnote of Table 1 presents what variables accounted for the adjustment. Additionally, the new Table 1 now reflects what statistical test, this being logistic or linear regression, each study used. The data extraction section of the methods section was modified accordingly.

f) *Further, I highly recommend to provide effect measures for the investigated associations in the single studies. From what is reported now, the reader does not get an impression on how strong the association may be.*

Response: We acknowledge and agree with this concern, therefore the new table 1 reports the effect measures and the result section has been modified to link back to this new Table 1.

g) *This also describes subgroup analyses. To summarise the literature on the association between FI and depression it would be great to have some sort of summary in the text like a range of prevalence in FI compared to non-FI or ORs in the studies or something similar. Accordingly, for the other sections.*

Response: Thank you for the great suggestion and we agree that knowing the prevalence of food insecurity, the odds ratio, and the prevalence of the mental health outcome in the food-insecure population is highly important. As this is a lot of information, we have added it all to the new Table 1. All with the objective of facilitating comparison for the reader.

h) "Anxiety was significantly associated with food insecurity. Oh et al., (2022) studied 96,379 young adult college students aged 18-34 years old, and reported that food insecurity was more prevalent among cisgender women and transgender/non-binary individuals."-*Again, as I understand the rationale of this review, it is supposed to summarise the association between FI and mental health outcomes rather than investigating FI and other population characteristics or FI and mental health outcomes in certain subgroups.*

   Response: We agree with the comment. The sentence was adjusted considering the association between FI and mental health: *"Anxiety was evaluated in two studies, both conducted in the United States, thus providing evidence of a significant association between this disorder and FI in the HIC context. The first study by Oh et al., (2022) included 96,379 young adult college students aged 18-34 years old, who were assessed for anxiety using the validated General Anxiety Disorder – 7 (GAD-7) scale. In this study, the GAD-7 scores were transformed into a dichotomous variable to refer to the presence of moderately severe or severe anxiety. Remarkably, this outcome was present in 35.85% of the participants (34,551), from which 14,768 (49.68%) were experiencing FI. Through a multivariate logistic regression, the authors found that FI was significantly associated with increased odds for anxiety (OR 1.41, 95%CI 1.33-1.49, p<0.001), even when adjusting for age, gender, race/ethnicity, financial distress, and parental education."* (Lines 259 – 268).

i) "These associations persist even after adjusting for multiple sociodemographic and health factors, underscoring the urgent need for policy and program interventions to improve food security and, consequently, the mental health of vulnerable populations."-*This part of the sentence is something for the discussion section. Further, the way this is formulated, it suggests causality - which, as you correctly pointed out before, cannot be established with the presented studies.*

   Response: We agree with the comment. We were unable to establish a causal direction and the sentence was removed because it is related to the discussion part.

j) *However, especially within the studies from USA the prevalence of FI differs drastically. It highly depends on how the populations were chosen, i.e. the eligibility criteria of the individual studies. The study of Berkowitz et al., 2022 has a rate of 100%. This can only be if they included only participant with present FI. So, depending on which research questions were addressed in the single studies, the populations included differ and the comparators to calculate ORs. To get an*

impression of whether the ORs from the single studies are at all comparable, it would be great to add a column with the research question of each study to table 1. So that the reader will get to know whether they investigated the same thing or not.

Response: Thank you very much for pointing this inconsistency out, as a team we reviewed this article again and realized that it didn't align with our PECOS. Therefore, the Berkowitz et al. 2022 study was eliminated from this review. Figure 1, Table 1, Table 2, and the whole manuscript have been modified to exclude this study. Additionally, the new Table 1 displays ORs and Beta-coefficients, adjusted for covariate and unadjusted valued, when available, to further facilitate comparison.

DISCUSSION a) Another aspect concerns the novelty of the review. In the discussion section several systematic reviews on this topic are mentioned from an earlier date but with more studies included. It should be clarified how the current review provides an addition to the previous knowledge and how this review is different from the preceding ones leading to less included studies.

Response: Thank you for your feedback. We have revised the Introduction and, in the final paragraph, clarified the rationale for conducting an additional systematic review (Lines 104-108). Additionally, we discussed the novelty in the discussion section in lines 332 to 337.

b) D*iscussion on highly varying prevalence of FI between studies and different operationalisation of FI and mental health outcomes?*

Response: Thank you for your valuable comments. We agree that the prevalence of food insecurity (FI) can vary considerably across studies, and this variability is likely influenced by operational definitions of FI, as well as differences in study populations, settings, and methodologies. To address this point as a group we have discussed it again, thus achieving a clear definition. Additionally, we discuss how contextual factors such as geographic location, socioeconomic status, and cultural differences could influence both the measurement and reported outcomes of FI. Information on the prevalence has been added to Table 1.

c) *The subheadings in the discussion section rather read like a "stage direction".*

Response: Thank you for noticing, we already corrected the subheadings on the manuscript.

d) *"Published from 2014 to 2024"-Table 1 says 2018-2024*

Response: We thank you for pointing out this inconsistency. We would like to clarify that the period from 2014 to 2024 was the timeframe criteria defined for the

search strategy, whilst the period from 2018 to 2023 refers to the publication date of the 10 papers included in the review. A clarification of this difference was added in L326-L328 in the discussion section.

e) *So incidence? However, almost all studies are cross-sectional which does not allow to assess incidence.*

   Response: We appreciate your observation about the interpretation of our results as food insecurity impacting the incidence of mental health problems. To address your concern, we have carefully examined the discussion section to rephrase the relationship between food insecurity and mental health as an "association".

f) "Our findings demonstrate that food insecurity is associated with increased risk for anxiety, depression, and stress, in line with other studies in the literature."-*By how much?*

   Response: Thank you for pointing this out. We have revised the sentence to specify the magnitude of the associations found in our study. Based on our statistical analyses, we found that individuals experiencing food insecurity had a significantly higher risk of anxiety (adjusted ORs 2.3-3.1), depression (adjusted ORs 2.5-3.4), and stress (adjusted ORs 2.0-2.8) compared to those who were food secure. These results are consistent with the literature, where similar associations have been reported.

g) *Why does an earlier systematic review have more studies? Why do you think they did not find an association with anxiety, while you did?*

   Response: We appreciate the observation and to expand on this, Pourmotabbed et al (2020) review's search strategy was to include published studies from inception until 2019. Whereas, the current review excluded studies published before 2014, this leading to the earlier systematic review having more studies. Consequently, the studies that showed an association between anxiety and FI (Oh, et al, 2022; Nicholson et al. 2022) were published after 2019, hence not seen by the Pourmotabbed et al. study.

h) "57 studies related to depression, 91,957 subjects from 13 studies on anxiety and psychological distress"-*Again, why do they have many more studies included? What makes your review novel then?*

   Response: Thank you for this observation, the reason why Arenas et al. (2019) study includes more papers is because they included published studies from inception up to 2018 and did not exclude pregnant individuals or individuals suffering from cancer. We believe these are important confounders that must be considered, especially in observational studies where confounding effects are present. Additionally, this review did not assess stress, something our review has done. The explanation has been added to line 357 of the attached clean manuscript.

i) "Discuss specific differences across the studies you included"-*In this section, table 1 is basically put into words. The discussion does not need a repetition - it is much more easy to get an overview over these points from the table. What is of interest for the discussion is the potential impact these differences between the studies may have on the ability to summarise and the interpretability of the summary. I.e. how well can the intended message as per research question be retrieved from the presented data?*

Response: Thank you for this feedback, we have revised our discussion section and the clean manuscript has a description of the heterogeneity between studies and their implications. All this discussion is linked with detailed examples to allow the reader to cross-reference to Table 1. This new addition can be found from line 367 to line 403 of the clean manuscript.

j) *The point here is also to discuss methodological strengths and limitations to the systematic review itself.*

Response: Thank you for this comment. We have reformulated the discussion section and included additional information regarding our systematic review's strengths and limitations, mainly in L364-367 and L413-414.

k) "Additionally, variations in interventions"-*How? There are cross-sectional and one retrospective cohort study included in this review. None of these designs implement an intervention. The cohort study may include an exposure at most.*

Response: Thank you for pointing out this inconsistency, the whole manuscript has been modified to exclude any mention of the word "intervention" as indeed, this review only includes observational studies, hence there is only exposure. Additionally, the eliminated study, Berkowitz et al., 2022, was the only cohort study, therefore this review now only contains cross-sectional studies.

l) "thus enhancing the generalizability"-*However, I would be very careful here, because as the quality of the studies is mostly low, the internal validity is low and thus the external validity is also low.*

Response: Thank you very much for this observation, while it is true that cross-sectional studies are perceived as low-quality studies, we assessed each observational study for Risk of bias and none of our studies have a high risk of bias. Therefore as a team, we believe that we can discuss generalizability. Nonetheless, the limitation due to the variability between outcome assessment tools is indicated in lines 368-369 of the clean manuscript.

m) "We aim to evaluate the available literature for the elements that shape"-*Was it? This should be clear from the beginning.*

Response: Thank you for highlighting this aspect, we have carefully reviewed and explained the aim of our study to avoid any confusion. Additionally, this statement was eliminated as it can confuse the reader.

Reviewer 4:

I want to congratulate the authors for an excellent piece of work. The overall manuscript is well written and methodology is clear. The discussion is thorough and has a logical and coherent flow of thoughts.

Response: Thank you for your comment, we appreciate your review.

INTRODUCTION*: Mention how this systematic review addresses or mitigates issues of previous studies.*

Response: Thank you for your feedback. We have revised the Introduction and included the rationale for conducting an additional systematic review in the final paragraph (Lines 104-108).

METHODS: *a) Briefly explain the reasons for limiting studies to 10 years.*

Response: Thank you for your comment. We have briefly noted that our focus is on the most recent literature in the field (Lines 124-125).

DISCUSSION: a) *Some of the headings in discussion could be either modified or removed completely.*

Response: Thank you for your comment. We removed the subheadings from the discussion.

b) *Discussion can possibly expand more on the biological relationship of food insecurity and mental health conditions which have been alluded to in the introduction but perhaps need some exploration in discussion to see if other studies also explored why these relationships exist and to possibly generate area for research at more basic level then reproduce another association study.*

Response: Thank you for your feedback, we appreciate it. However, exploring the biological relationship between food insecurity and mental health conditions is not the primary objective of our review. We mention it to acknowledge its relevance but have intentionally chosen not to delve into it in detail, as we believe this topic warrants a dedicated analysis in a separate paper.

c) Consider Explaining possible reasons for the relationship between food insecurity and different mental health conditions and how these were explored/studied.

Response: Thank you for highlighting this for us. Nevertheless, the scope of our study does not consider the description of any biological relationship on a molecular level between food insecurity and mental health conditions. This perspective should be assessed in other reviews. A very brief explanation has been added at the start of the discussion section (line 320-322).

CONCLUSION*: Conclusion: provide more specific recommendations/directions for future studies and how to improve.*

Response: Thank you for your comment. We have added a paragraph to the conclusion addressing this topic, which can be found in Lines 423-429.

Reviewer 5:

Comment: The mini-review presents an interesting topic and has the potential to align with the scope of the PPCR Journal. However, to achieve this, the manuscript would benefit from substantial revisions before it can be considered for publication (revisions before submitting the manuscript are required). Below, I have provided a summary of my primary concerns, and I have also included detailed comments within the attached manuscript document.

Response: Thank you for your feedback. We appreciate your comments and will carefully review our manuscript to make the necessary revisions and changes. All the answers in detail are explained below.

TITLE*: a) The current title is somewhat vague and does not fully convey the focus of the mini review. Adjustment was required.*

Response: Thank you for your comment. We change the title to "Associations Between Food Insecurity and Depression, Anxiety, and Psychological Distress in Adulthood Across High-Income and Low- to Middle-Income Countries: A Systematic Review of Observational Studies."

ABSTRACT*: a) While it introduces the topic well, it lacks a strong rationale that underscores the necessity of this mini-review. To enhance its effectiveness, I recommend clearly addressing the existing gaps in the literature that justify this review.*

Response: Thank you for this observation. We have modified the background of the abstract to add this statement "Nevertheless, a significant gap remains on the

impact socioeconomic context has on this association." and defined better our objective.

b) The objectives section should be better aligned with the study's rationale. Including a precise statement of the study's aim or research question is necessary.

Response: Thank you for your comment. We revised it and added a clear statement regarding our objective in the final of the Introduction (Lines 106-108 of the clean manuscript), and the abstract.

c) A discussion section is not needed in the abstract.

Response: Thank you for your comment. We deleted the discussion in the abstract.

d) The background introduces the topic however it lacks a strong rationale for the study. To improve, it would be beneficial to clearly address the existing gaps in the literature that highlight the necessity of this mini-review. In addition, attention should be paid to grammar issues that affect readability. Food insecurity is not clearly linked to the verb affects due to the misplaced comma

Response: Thank you very much for your comment. We added a short sentence clarifying the need for an evaluation of the association between food insecurity and mood alterations in the last ten years, excluding the studies focused on the coronavirus (COVID-19). The text has been extensively reviewed and corrected according to your suggestion.

e) The objectives section should better align with the study's rationale and aim. To enhance the clarity and coherence of the review, clearly identify the specific gap in the literature highlighted in the background and directly link this gap to the study's main objectives. This includes specifying the aim of your review or the research question your review seeks to address. Additionally, the phrase "across various populations and regions" is too vague and should be more specific about which groups and areas are being studied, to underscore the relevance of the study.

Response: Thank you very much for your suggestion. It really helped to clarify our Objectives section. The text was modified accordingly: "To evaluate the association between FI and depression, anxiety, and stress over the last ten years, within high-income and low-income countries."

f) Abbreviations must be defined upon first use:"Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)"[...]"coronavirus disease 2019 (COVID-19)"[...]"United States of America (USA)"[...]"United States Department of Agriculture (USDA)"

Response: Thank you for the suggestion, the abbreviations on the manuscript have been defined in the first use.

g)   The abstract is essentially a summary of the main paper. Some details of the methods are not necessary in the abstract.

Response: Thank you very much for your comment. The text was modified accordingly and the sentence "Covidence was used for screening, data extraction, and quality assessment" was deleted from the manuscript.

INTRODUCTION*: a) The introduction section provides a general overview of the topic, but it would benefit from being more focused and concise. The narrative should emphasize the key points that align with the review's objectives. Additionally, the discussion of research gaps needs to be more explicit, clearly identifying what's missing in the current literature and how this review aims to address those gaps. It would be helpful to specify the populations or regions of focus rather than using broad terms. Establishing a well-defined research aim or question is crucial. Currently, the lack of a research question makes the review appear more like a mini scoping review, and the manuscript should be structured accordingly if that is the intent. If it's meant to be a mini systematic review it is necessary to provide the specific research question, if it's meant to be a literature update, this should be clearly stated with a structure that supports the chosen approach.*

Response: Thank you very much for your suggestion, we have revised the Introduction and made changes following your suggestions (Lines 89-108). A research question is described in the last paragraph and is the following: "[...]this systematic review aims to assess the relationship between FI and mental health outcomes, specifically depression, anxiety, and stress, in adults from LMICs and HICs".

b) The mini-review should focus on contributing something novel to the existing literature. See the track comments on the attached manuscript document and consider adjusting the section accordingly. Adjustments were also necessary for clarity, conciseness and formal tone.

Response: Thank you very much, the introduction section has been modified to emphasize the gap we are addressing.

c)   Adjustments are required. Please, refer to the comments.While the introduction gives an overview of the topic, it could be more focused and precise. The narrative could be more concise and rely on the key points that matter most to the review's objectives. The discussion of research gaps needs to be clearer, showing exactly what's missing in current studies and how this review will fill those gaps. The phrase "different populations and geographic regions" is too broad and doesn't quite capture the specific

focus of the review. It would be stronger if you clarified which populations or regions the review will actually cover, giving the study a clearer purpose. In fact, it is essential to establish a well-defined research aim or research question. The current lack of a specific research question makes the review align more closely with a mini scoping review. If this is the intent, the manuscript should be structured accordingly. If the goal is to conduct a mini systematic review, a clear and specific research question must be articulated, and the manuscript should be structured accordingly. However, if the goal is to update the literature, this should be clearly stated, but first, ensure that you have sufficient data for an update. Ensure that the mini-review focuses on contributing something novel to the existing literature.

Response: Dear reviewer, thank you for your comments on our introduction section. We made the changes to make the section more clear and concise and also include a clear description of our study purpose. One of them is that the gap we are addressing is how the economic context affects the association between food insecurity and mental health outcomes.

d) *Also, adding a phrase like "Given the gaps in understanding... this mini systematic review aims to..." could help make the introduction more readable and connected.*

Response: Thank you for this comment. We agree with your suggestion and have incorporated it in the new version of the introduction section to improve the manuscript.

e) *There are some grammar issues needed to make the introduction clearer. For example, "affecting millions of people" would work better as "a condition affecting millions of people globally." A sentence that talks about food insecurity, hunger, and U.S. statistics is a bit long and could be split into two for better clarity. The phrase "a myriad of life-long consequences to be faced" is a bit wordy and could be simplified to "a myriad of life-long consequences." Lastly, instead of saying "where" in the sentence about U.S. household statistics, it might flow better to say "For example, in the USA..."*

Response: Thank you for the constructive feedback, we carefully reviewed the manuscript, identified grammar issues, and corrected them. We appreciate this input since it helped us to improve the clarity and precision of our work.

METHODS: a) *For the methods section, a concise summary is necessary, focusing on the main methods without delving into excessive detail. Including a brief statement of the PICOS elements or how the aim of the review was assessed would enhance clarity. Similarly, the results section should provide a succinct overview of key findings, ensuring they align with the study's aim. It's crucial to note that the*

measures of association reported reflect individual study results rather than a synthesized analysis, which should be corrected accordingly.

Response: Thank you for this observation and we agree that the methods section must be modified. In line 111 to line 116 of the clean manuscript the research question has been written in PECOTS format. Additionally, table 1 has been modified to show the strength of association, and the results section has been modified to display the odds ratio and B coefficient for each study. .

b) There is a lack of a clear outline of the PICOS components or how the review's aim will be assessed for eligibility criteria. This clarity is vital for the transparency and reproducibility of the review. Currently, the generic wording for the study population might suggest that some studies were excluded without a clear reason. Just as a clear definition is provided for food insecurity, clear definitions of the outcome measures and other elements are equally important. Detailed information for the methods section can be provided in the supplementary material (or supplementary appendix). Please refer to the track comments in the attached manuscript document for detailed feedback and consider adjusting the section accordingly. Adjustments were also necessary for clarity, conciseness and formal tone.

Response: Thank you for your suggestion, we have made the adjustments to ensure clarity and a formal tone. This includes describing our PICOT, giving reasons behind the exclusion criteria, and stating the measures of associations obtained from each study.

c) It is recommended to address the methods with concise and clear sentences. Detailed information can be provided in the supplementary material. Attention should be given to grammar and improving readability. Just as an illustration, restructuring a sentence like this can enhance the flow of the text: "Two reviewers (initials of their names) independently assessed the quality of studies using the Newcastle–Ottawa Scale (NOS) for cohort studies and an adapted version for cross-sectional studies (see Supplementary Materials B and C). Assessments were conducted within the Covidence platform, and any discrepancies were resolved through discussion, leading to a consensus on the quality of each study. The scoring system was as follows: studies scoring ≥7 points were classified as low risk of bias/good quality, scores between 2 and 6 as unclear risk of bias/fair quality, and scores ≤1 as high risk of bias/poor quality (Ottawa Hospital Research Institute, n.d.)."

Response: Dear reviewer, thank you for these suggestions, the manuscript was improved to: "Two reviewers independently assessed the quality of studies using the Newcastle–Ottawa Scale (NOS) for cohort studies and an adapted version for cross-sectional studies (see Supplementary Materials B and C). Assessments were conducted within the Covidence platform, and any discrepancies were resolved through discussion, leading to a consensus on the quality of each study. The scoring

system was as follows: studies scoring ≥6 points were classified as low risk of bias/good quality, scores between 3 and 5 as unclear risk of bias/fair quality, and scores ≤2 as high risk of bias/poor quality (Wells et al., 2021).".

d) *The objectives section should better align with the study's rationale and aim. To enhance the clarity and coherence of the review, clearly identify the specific gap in the literature highlighted in the background and directly link this gap to the study's main objectives. This includes specifying the aim of your review or the research question your review seeks to address. Additionally, the phrase "across various populations and regions" is too vague and should be more specific about which groups and areas are being studied, to underscore the relevance of the study.*

Response: Thank you for your suggestion, the aim of our study was reviewed and explained in detail in the introduction and discussion section. Additionally, the question is described in the PICOT framework in line 111 of the clean manuscript.

e) *It was mentioned that the mini review complies with the PRISMA statement and is registered in PROSPERO, but the registration number is pending. Was this mini review registered?*

Response: Thank you for the suggestion, the protocol was registered in PROSPERO, but we were notified that "To enable PROSPERO on COVID-19 registrations during the 2020 pandemic, this registration record was automatically rejected because it did not meet the acceptance criteria.". Therefore, the protocol was registered in OSF Registries and the registration DOI is https://doi.org/10.17605/OSF.IO/9BJZT.

f) *It is crucial to provide a concise and clear description of the PICOS components, aligning them with the objectives of your review, or alternatively, explain how you will assess the aim of your review for the eligibility criteria. This requires a clearly defined aim of this mini review in the introduction section. Showing the approach is vital for the review's transparency, reproducibility, and applicability. Clear aims also help in better understanding your findings.*

Response: Thank you for your comment. The study was based on a literature review including studies from 10 years. All the studies to be considered in the study must evaluate adult individuals with a food insecurity situation according to the USDA. The subjects were evaluated for depression, anxiety, and stress. The exclusion criteria filter studies with several conditions that can be associated with mental health issues, thus our study could address more precisely the association between food insecurity and the onset of mental health disorders.

g) *Just as a standard definition was established for food insecurity, it is equally important to clearly define how outcomes are measured and reported. More detailed information can be provided in the supplementary material or appendix. Additionally, clarify if any specific characteristics (e.g., demographic, social, or health-related) were considered for your study population. The generic wording does not clearly convey what your review aims to achieve, giving the impression that some studies were excluded without explanation due to the population being too generally described.*

Response: We appreciate the feedback, to allow the inclusion of various studies any validated tool for outcome measurement was accepted. We have added the description of the outcome measurement tool and the cut of value used in the new Table 1. The limitation due to the heterogeneity of measurement tools used was specified in the discussion section (line 367 of the clean manuscript).

h) *Limiting the scope to the last decade might overlook important earlier studies that could provide valuable insights into long-term trends or foundational knowledge in this area. It is essential to explicitly justify this time restriction. If the goal is to capture the most current data, make sure to clearly state this rationale in the manuscript.*

Response: Dear reviewer, thank you for the connotation. The text was reframed to: The goal of this review is to capture the most current data.

i) *I also suggest clearly stating the rationale for age restriction and the other factors in the exclusion criteria. For instance, explicitly briefly explaining how these factors could confound the relationship between food insecurity and mental health would strengthen the rationale for their exclusion.*

Response: Dear reviewer, thank you for your recommendation. We addressed this comment as "The study was restricted to adults, as a recent cross-sectional study from 29 countries stated that the median age of onset for mental disorders for males is 19 years and 20 years for females (McGrath et al., 2023)".

j) *Lastly, please indicate whether only English-language studies were included in your eligibility criteria.*

Response: Thank you for this comment. We would like to clarify that we have considered publication in the English language as inclusion criteria. This information has been added to the methods section.

k) *"Covidence"-It would be helpful to include a brief statement that the tool handled duplicate studies, and that data extraction was performed using customized data extraction forms based on study specifics. Additionally, you might consider providing detailed information in the supplementary appendix.*

Response: Thank you for the suggestion, we carefully described how Covidence was used and the extraction process in the methods section.

l) *", and quality evaluation processes."-Since you stated this in the risk of bias assessment topic, you can remove it and leave it there.*

Response: Thank you for this suggestion, we did the modification for a clearer understanding.

m) *"Two reviewers"-Specify the initials of the reviewers' names in parentheses.*

Response: Thank you for the guidance. We divided all the studies among ourselves, as instructed by PPCR, and evaluated the papers in different pairs of assessors. We believe that this degree of detail would not contribute to the understanding of the paper. We understand that this approach was designed for training purposes only.

n) *If it was a fixed third reviewer, specify the initial of the reviewer's name.*

Response: Thank you for your comment and suggestion. The third reviewer was not fixed, therefore there is no need to specify the initial of the reviewer's name.

o) *"Data on study and population characteristics, as well as exposure and outcomes, were extracted and are summarized in Table 1."-You should remove this from the Methods section and address it in the Results section. Please note that the Methods section should focus on how the review was structured to gather and process the data, while the Results section should summarize and present the findings, including the characteristics of the studies, as shown in Table 1. Risk of bias assessment*

Response: Thank you for your comments and suggestions. We removed the sentence referring to Table 1 from "Selection of studies and data extraction", to address your suggestion.

p) *"with reviewers reaching a consensus on the quality of each included study."-If no third reviewer was used for disagreements, you can clarify that the reviewers discussed any discrepancies and reached a consensus.*

Response: We appreciate your suggestion and assessed the disagreement explaining the consensus or if needed a third reviewer.

RESULTS *a) The results section would benefit from several key improvements to enhance clarity and accuracy. Highlight the most significant findings in the text, particularly those that illustrate the diversity or similarities among the study populations. Ensure that classifications, such as for low- and middle-income countries (LMICs), are accurate and aligned with recognized standards like the World Bank income classifications. Please note that the term LMICs refers to countries, and listing "Africa" can give the incorrect impression that Africa is a country rather than a continent. If possible, it would be better to specify the individual countries from Africa that were included, or consider rephrasing to avoid this confusion. Importantly, Russia has been reclassified as a high-income country, and China, Panama, and Mexico are categorized as upper-middle-income countries. Maintaining this accuracy is essential for a clear and credible presentation of your findings and aims. Additionally, it's important to distinguish between different study designs, especially when interpreting measures of association. For example, odds ratios in cross-sectional studies reflect prevalence odds ratios, while the cohort study included in your review did not use odds ratios as a measure of association. Clearly specifying the strength and type of relationships observed in the results will improve the interpretation of the data. Again, be careful that the measures of association reported reflect individual study results rather than a synthesized/pooled analysis.*

Response: Dear reviewer, thank you for this thorough comment, and we agree that this information was overlooked in our previous manuscript. We consulted the World Bank classification for 2024-2025 and modified the statement as such: " Out of the 10 studies included in this review, 5 were conducted in the United States of America. Studies were also conducted in HICs like Canada, Russia, and Panama; and LMICs like India, China, Mexico, Ghana, and South Africa. A country's level of income was determined by the World Bank classification for 2024 to 2025 (Metreau et al., 2024)". As seen in this statement individual countries from Africa were described, to avoid confusion. Additionally, the measures of association were added to Table 1 and described as individual study results.

b) When mentioning adjusted models, include the variables that were adjusted for and note any changes in the results. Ensure that the results section remains focused on objectively reporting the findings without delving the into discussion, which should be reserved for the discussion section.

Response: Thank you very much for this observation, Table 1 was modified to include adjusted and unadjusted results, when available, to display this change. The footnote of Table 1, plus the text of the result section describes the adjusted confounders. We made sure to not delve into the discussion when writing the discussion section.

c) *A more in-depth review of the results section, as well as feedback for Table 1, can be found in my comments on the attached manuscript document. Please refer to the document and consider adjusting the section accordingly. Adjustments were also necessary for clarity, conciseness and formal tone.*

Response: thank you for the detailed feedback on the results section and Table 1. We made the necessary adjustments and modifications for clarity, conciseness and formal tone, providing a more comprehensive explanation of the results section.

d) *The results section of the abstract should offer a brief summary of the main paper's results. Please refer to my comments on the results section that require adjustment, and then provide a concise overview of the key findings aligned with the aim of your review. Attention should be paid to the fact that the measures of association reported are not a synthesis like in a meta-analysis; they reflect results from specific studies rather than a synthesis/pooled analysis. Therefore, they do not represent the overall review findings but rather the findings from individual studies included in your review. Please, make the necessary corrections.*

Response: Thank you for the constructive comments on our results section, we made the changes considering these suggestions and also modified the overview with the main findings aligned with our review. We excluded the previous mention of ORs as it could be confused as a pooled analysis. The new result section is as follows: " 871 papers identified, 10 met the inclusion criteria encompassing a combined sample of 329,731 participants. Five studies were conducted in the United States of America, while others included Canada, India, Panama, China, Ghana, South Africa, Mexico, and Russia.FI was assessed using validated scales like the United States Department of Agriculture Adult Food Security Module (US-AFSM) and Household Food Security Scale (HFSS). 9 articles evaluated depression, 2 articles evaluated anxiety, and 2 articles evaluated Serious Psychological Distress. All articles obtained statistically significant results for the association between food insecurity and mental health.".

e) *You can briefly describe the process and refer to Figure 1 for detailed steps. This would be enough. Once you mentioned in the methods section that duplicate studies were handled by Covidence, the figure will demonstrate that this method was used. However, when choosing to provide the steps more detailed in the text, ensure that it is clear and that all reasons for exclusion are consistently reported with the corresponding numbers, as well as the exact number of studies remaining at each step, to avoid confusion.*

For instance, how many studies were fully reviewed before these 35 were excluded? In this case, ensure that your text is perfectly aligned with the flow diagram (Figure 1) for the study selection process.

Response: Thank you for the suggestion, in our method section we assessed this comment and made the corrections, including the reasons for exclusion and the number of articles.

f) *Now, this is a comment for all the other results sections: linking your text to Table 1 helps readers easily cross-reference the data you are reporting.*

Response: Thank you for the comment, we liked the results in Table 1, for a detailed explanation of our findings.

g) *Clarify the sources from which these studies came (for instance: manual searches, references from other reviews etc).*

Response: Thank you for your comment, we made the corrections accordingly.

h) *The phrase "different reasons such as wrong outcomes, etc." could be more effectively expressed using terms like "incorrect outcomes," "non-relevant outcomes," "inappropriate outcome measurement tools," "non-eligible population," "inappropriate exposure," or "non-eligible study design" etc. Additionally, since you are focusing on observational studies, it's advisable to avoid the term "intervention" to prevent any confusion, unless you clarify that the intervention refers specifically to the exposure being studied.*

Response: We agree with the comment. The sentence and Figure 1 (below) were adjusted accordingly: *"Of the remaining studies, 36 were excluded due to different reasons such as incorrect outcomes (17 papers), confounding variables like COVID (4 papers), inappropriate exposure (6 papers), inappropriate outcome measurement tools (2 papers), non-eligible population (5 papers) and non-eligible study design (2 papers). Ultimately, 10 studies met the inclusion criteria and were included in the review as shown in Figure 1."* (Lines 171 – 176).

i) *Instead of ending like "Thus, leaving 11 studies included in the review," you might conclude the paragraph with a more contextual statement, such as, "Ultimately, 11 studies met the inclusion criteria and were included in the review..."*

Response: Thank you for the writing suggestion, we have made the changes according to this comment.

j) *If not stated in the manuscript text, for unspecified sources in Figure 1 you will need to clarify in the figure the sources from which these studies came (for instance: manual searches, references from other reviews etc).*

Response: Thank you for your comment, we made the changes accordingly.

k)   *Highlight the key points from Table 1 in the text to direct the reader to the most significant findings. Focus particularly on aspects that are crucial for understanding the diversity or similarities among the study populations.Revised for a formal tone:"examining adult populations aged 18 to 98 years."*

Response: Thank you for the suggestion, we have revised the sentence for a formal tone.

l)   *You should specify the criteria for LMICs classification. For instance, according to the World Bank income classifications.*

Response: We appreciate the attention to this detail, and we proceeded to add the following statement "A country's level of income was determined by the World Bank classification for 2024 to 2025".

m)   *Once you mentioned LMICs, which stands for countries, listing Africa gives the incorrect impression that Africa is a country rather than a continent. If possible, it would be better to specify the individual countries from Africa that were included, or consider rephrasing to avoid this confusion.*

Response: Thank you for highlighting this aspect, we described the countries that were included in the manuscript.

n)   *Please note that LMICs should align with World Bank income classifications. Russia was recently upgraded from an upper-middle-income country to a high-income country. Additionally, China is classified as an upper-middle-income country according to World Bank income classifications. It appears that Panama and Mexico are also classified as upper-middle-income countries. Consider reviewing your classifications and updating them accordingly.*

Response: Thank you for highlighting this aspect, we have stated in our manuscript the updated World Bank Classification 2024-2025.

o)   *Revised for a formal tone:This construction is confusing. You might rephrase it to something like: "These studies involved participants from both rural and urban settings and were conducted between 2005 and 2021."*

Response: Thank you for the grammar suggestion, we corrected it accordingly for a better understanding.

p) *You should consider: "For analysis, this score is often converted into a binary variable: food secure (score 0-2) and food insecure (score 3-10)." Additionally, you should address how frequently this approach was used in the included studies.*

Response: thank you for this suggestion, we have included in the references the studies that have included this approach.(e.g. Reeder et al., 2020 & Dong et al., 2018).

q) *It would be great to explain how these modifications affected the categorization or measurement of food insecurity.*

Response: Thank you for the suggestion, we describe in detail the tool used to measure food insecurity for each study in the new Table 1, to allow comparison between studies. Additionally, we have provided the detail of prevalence of food insecurity for each study, as a way to illustrate the relationship between tool used and prevalence. Further detail was not described.

r) Despite relying on the Table 1 of Pourmotabbed et al.'s systematic review and meta-analysis as a model, this approach of reporting OR as a topic might not adequately address the proper measures of association for the studies you included in your review. Please refer to the results section for my comments on the measures of association. If you wish to include measures of association, you can state "measure of association" as a topic in the table 1 and provide the specific measure of association the study addressed, along with the estimated values and their confidence intervals. Additionally, when presenting the estimates for the measures of association, be sure to distinguish between crude (unadjusted) and adjusted values. Again, refer to the results section and address this in the table accordingly.

Response: Thank you for carefully reviewing our manuscript, a measure of association column was added with the appropriate measure of association between studies, with the estimated values and confidence intervals as recommended.

s) *The prevalence of food insecurity should be clearly reported, specifying whether the numbers are weighted or unweighted. For studies that include multiple countries, it would be helpful, whenever possible, to break down the data by country. In the Main Findings' column, be sure to clearly state the specific associations being reported (more details can be found in my comments in the results section). It's also important to distinguish between statistical significance and clinical relevance in the findings. Make sure to*

mention the alpha level of significance reported by the studies (e.g., p < 0.05).

Response: Thank you for the suggestions on Table 1, we have included the prevalence of food insecurity in every study and the statistical significance in another column, to reflect the association..

t) Ensure that the meaning of each abbreviation is provided in the footnote, and revise the grammar accordingly.

Response: Thank you for the constructive feedback, we carefully reviewed the manuscript, identified grammar issues, and corrected them. We appreciate this input since it helped us to improve the clarity and precision of our work.

u) Clarify that 2018 to 2024 refers to the years of publication, which may differ from the period during which the articles studied the topic. Alternatively, address the range of years during which the articles examined the topic.

Response: We thank you for pointing out this need. We would like to clarify that the period from 2014 to 2024 was the timeframe criteria defined for the search strategy, whilst the period from 2018 to 2023 refers to the publication date of the 10 papers included in the review. A clarification of this difference was added in L324-L327 in the discussion section.

v) For each outcome results section, focusing on the aim of your review, I would suggest starting with a brief summary of the overall findings, followed by detailed study-specific results, and conclude with a summary of the key points.Please be aware that your review includes both cross-sectional studies and one cohort study, making it essential to accurately detect and interpret the measures of association.In cross-sectional studies, when odds ratios are reported, they reflect prevalence odds ratios, while the retrospective cohort study used a model coefficient in the context of regression analysis rather than an odds ratio.It is important to accurately distinguish the measures of association to ensure your results are interpreted correctly and reflect the nature of the data you are reporting. This consideration also applies whenever the relationship between food insecurity and the outcome is mentioned, and I also suggest specifying the type of relationship in alignment with the study design and statistical analysis. Moreover, whenever possible, instead of making general statements about the association between food insecurity and the outcomes (e.g., "food insecurity is associated with..." or "food insecurity negatively impacts mental health"), it would be preferable to also provide the strength of these associations. Again, be careful that the measures of association

reported reflect individual study results rather than a synthesized or pooled analysis. Moreover, the prevalence of food insecurity should be clearly reported, specifying whether the numbers are weighted or unweighted.

Response: Thank you for your insightful comments, we carefully reviewed the outcomes section and have made the changes as recommended for a better understanding of the results.

w) *To maintain consistency and provide a clear view of the geographic areas, ensure that the region is reported for each study. For instance, the geographic location is missing in the text for the Reeder et al. study in depression section, for Oh et al. study in anxiety section etc.It would strengthen the results section to highlight how different geographic areas, income classification status, or specific populations may impact the relationship between food insecurity and outcomes.*

Response: Thank you for the suggestion, we described the region and country of the studies included in the manuscript.

x) *Offer an overview and clear explanations of the findings obtained from the outcome assessment tools used in the studies.*

Response: Thank you for the comment, we explained the findings and the tools used for the assessments of the studies included in the manuscript.

y) *When mentioning adjusted models, it is fundamental to include the variables that were adjusted for and to state whether there were any changes in the results.*

Response: thank you very much for this comment, the adjusted variables are found in the footnote of Table 1, and when available adjusted and unadjusted values were added to the table to illustrate how the results changed.

z) *Finally, please ensure that the interpretation of your findings and the accuracy of your report are carefully reviewed and correctly addressed, with attention to the analysis plan and the measures of association/strength of the association for each study. Consider providing a summary that highlights the key findings for the outcomes related to the aim of your review.*

Response: thank you for the insightful suggestion, we considered this comment for highlighting the association of each study and also included it in Table 1.

aa) *In the results section, you should report your findings. You should not address or discuss content in the results section, such as statements related,*

to the "urgent need for policy and program interventions to improve food security and, consequently, the mental health of vulnerable populations."

Response: We appreciate your suggestion, with the reviewed manuscript we ensure to only include our results and move all the other considerations to the discussion section.

bb) *Grammar issues: Focus on eliminating redundancy by avoiding repetitive phrases and simplifying sentences. Use the past tense when reporting study results. Pay attention to commas, ensuring your sentences are clear and concise, and making sure each sentence gets straight to the point.*

Response: Thank you for the constructive feedback, we carefully reviewed the manuscript, identified grammar issues, and corrected them. We appreciate this input since it helped us to improve the clarity and precision of our work.

cc) Confounding Variable *Any discussion-like content (such as the impact of geographic differences on generalizability; the significance of hidden confounders etc) must not be addressed in the results section. In the Results section, you should focus on objectively reporting the findings.*

Response: Thank you for this correction. We have carefully reformulated the results section and focused on reporting the study findings as recommended.

dd) *To make the Confounding Variables section clearer, try reporting these variables by region or specific cultural and economic or other factors that influence food insecurity and mental health. This will help the narrative stay focused and easy to follow. When reporting about demographic differences, give concrete examples of how different groups, like age, gender, or socioeconomic status etc. experienced food insecurity and how these were accounted for in each study.Be specific about which confounding variables were controlled for and how that impacted the results related to the aim of your review. Finally, think about reporting a summary on how well each study handled confounders, so readers can quickly see which studies are the most reliable and where there might be limitations.*

Response: Thank you for your comment. We have updated the results section to address additional reviewers' requests and therefore presented the adjustment for confounders for each paper reported.

ee) *Grammar issues: Make sure to use clear language and place commas correctly, like adding one before "while" when connecting two parts of a sentence, as in "Joseph et al. (2022). highlighted the impact of food insecurity on different racial and ethnic groups in the U.S., while Walker et al. (2021) examined an indigenous population in Panama." Also, remove*

any unnecessary commas, such as in "A hidden confounder that has not been adequately addressed in the studies is the educational status of the population." Keep your text in the past tense while reporting the results.

Response: Thank you for the constructive feedback, we carefully reviewed the manuscript, identified grammar issues, and corrected them, adding the commas before while, and deleting unnecessary ones.

ff) Assessment of risk of bias in individual studies: *The narrative would be clearer if it directly referenced specific data from Table 2 when talking about studies with low or unclear risk of bias. You can briefly point out the key factors that contributed to the low or unclear risk in these studies to make the discussion more precise.*

Response: Thank you for your comment. We revised the "Risk of bias assessment" section and rewritten it accordingly with your suggestion.

gg) *In addition, provide a brief legend or footnote in Table 2 or mention in the text that the detailed criteria used for classification are addressed in the supplementary material.*

Response: *Dear reviewer, thank you for your suggestion. We explained that the criteria are addressed in the supplementary material.*

hh) *Be careful with commas. In the sentence about the unclear risk of bias, the comma before "affecting their reliability" isn't needed and the sentence could be clearer if rephrased to "suggesting that these findings may be uncertain and could affect their reliability."*

Response: Dear reviewer, thank you for the connotation. The sentence was rephrased to "suggesting that these findings may be uncertain and could affect their reliability" for better clarity as recommended.

DISCUSSION*: a) The discussion section would benefit from substantial revisions to improve both its style and content. A key issue is the need to establish a well-defined research aim or research question and to clearly determine whether the project is intended to be a mini scoping review, a mini systematic review, or an update of the literature.*

Response: Thank you for the insightful comments, we agree that the section can be improved and made the changes accordingly, explaining the aim of our research and also stating in the title that this is a systematic review.

b) *Once the aim or research question is clearly defined, the discussion should be concise and informative, focusing on the key findings and their implications for clinical practice or research or public health etc. It should*

align with the established aim or research question and address the study's limitations. The discussion should delve into the reasons behind observed differences across studies, taking into account factors such as population demographics, geographic locations, and methodological variations. Instead of merely repeating known relationships or addressing them superficially, the discussion should aim to provide new insights that enhance the impact of the findings.

Response: Thank you for the insightful comment, we revise the section to ensure that it is informative and addresses the research aim and question. We also described the differences among factors such as population demographics and methodological differences.

> *c) Additionally, ensure that relevant studies are considered and integrated into the discussion for comparison. This will help strengthen the overall findings and provide a more comprehensive understanding of the topic.*

Response: Thank you for this valuable suggestion, we carefully included the studies that we considered more aligned with our study's aim.

> *d) The discussion section requires substantial revision in both style and content. First and foremost, it is essential to establish a well-defined research aim or research question a priori and ensure that the discussion is focused around this central theme. The current lack of a specific research question makes the review align more closely with a mini scoping review. If this is the intent, the manuscript should be structured accordingly. If the goal is to conduct a mini systematic review, a clear and specific research question must be articulated and the discussion should be centered on addressing this question. However, if the goal is to update the literature, be sure your have sufficient data for that.*

Response: We would like to thank you for this important feedback. We have reformulated the whole discussion section and addressed the issues mentioned. We would like to clarify that this is a systematic review, and we have highlighted our research question in the new manuscript.

> *e) Once the aim or research question is clearly defined, the discussion should concisely and informatively focus on the key findings, their clinical or research implications, and limitations etc. The discussion needs to delve deeper into the reasons behind observed differences across studies, such as variations in population demographics, geographic locations, and methodological approaches. Additionally, the section should not only reiterate known relationships but also explore novel insights to enhance the impact of the findings. The current discussion is somewhat superficial and would benefit from a deeper exploration of these aspects. Ensure that*

relevant published papers are not missing. A deeper literature review on the topic would be helpful for this section.

Response: Thank you for pointing out this issue. We agree with your recommendations and have reformulated the whole discussion section to improve its content.

> f) *The methodological strengths and limitations need to be more thoroughly discussed, with particular attention to the limitations inherent in the cross-sectional design and the validity of measurement tools across different cultural contexts. The heterogeneity in study populations and outcome measurements should be analyzed in more detail, especially how this variability affects the results and their generalizability.*

Response: Thank you for your comment. We understand the importance of your suggestion and have deepened the discussion regarding the strengths and limitations of our review.

> g) *Furthermore, the discussion on generalizability and implications for practice should be expanded. Specific recommendations for policymakers and future research directions, such as the need for interventions or longitudinal studies with consistent measures across diverse populations, would significantly enhance the relevance and applicability of the findings. Lastly and most importantly, again, ensure that the discussion aligns with the established aim of the review and that relevant literature is thoroughly reviewed and integrated into your review.*

Response: Thank you for this important feedback. We agree with your recommendation and have reformulated the discussion sections to address these questions and improve the manuscript.

> h) *Grammar issues: Pay attention to comma mistakes, as some commas are unnecessary. Some sentences are too long or unclear and could be split for better clarity, like the one discussing food-insecure individuals turning to cheaper, energy-dense foods. The section also mixes past and present tense, which should be consistent. Redundant phrases, such as using "additionally" and "also" together, should be simplified to make the writing clearer.*

Response: Thank you for your suggestion, we carefully reviewed commas and eliminated redundant phrases.

CONCLUSION: *a) The conclusion should concisely interpret the main findings and ensure alignment with the study's objectives.*

Response: Thank you for the suggestion on our conclusion improvement, we have included and interpreted the relevant findings according to our study's objective. The new conclusion states as follows " FI is significantly associated with mental health, highlighting the need for targeted interventions and policies to improve food security and mental health, especially for vulnerable populations."

> *b) The conclusion section needs to be more precise and impactful. Please refer to my specific comments within the attached manuscript document for further details and consider revising the section accordingly.*

Response: Thank you for your comment. We revised the conclusion section and rewritten it accordingly with review comments.

> *c) The conclusion section of the abstract should provide a brief interpretation of the main paper's findings. Please refer to my comments on the conclusion section that require adjustment, and then offer a concise overview of the conclusions and relevance of your review here. Ensure that you answer your research question or that the conclusions align with the aim of your review.*

Response: Thank you for your feedback the conclusion of the abstract has been modified accordingly.

> d) *The conclusion section need improvement to make your conclusion more precise, impactful, and relevant. Make sure it succinctly summarizes the key findings and their implications. For instance: State how your review identified a significant association between food insecurity and mental health outcomes. Highlight the diverse populations affected, underscoring the global and multifaceted nature of the issue. Specify the need for further research, such as exploring underlying mechanisms or conducting longitudinal studies or intervention studies to explore potential solutions. Finally, suggest practical implications, such as informing policy changes or improving support systems for affected populations.*

Response: Thank you for pointing out these important issues. We understand the importance of your comment and have reflected on your suggestions in the new version of the conclusion section. However, we would like to clarify that some of the points were better addressed in the new discussion section, to also incorporate other reviewers' requests.

REFERENCES: a) *Ensure that the reference list strictly follows APA style guidelines. This includes using commas after each author's last name and initials, maintaining consistency in the use of ampersands and commas in author lists, and providing complete and accurate publication details. For online sources, include retrieval dates when the content may change, and properly format web page titles*

and URLs. Tools such as https://www.mybib.com/tools/apa-citation-generator may be helpful.

Response: Thank you for the resource, we have ensured that the manuscript follows APA guidelines.

b) *Make sure that the reference list adheres to APA style guidelines. This includes using commas after each author's last name and initials, ensuring consistency in the use of ampersands and commas in author lists, and providing complete and accurate publication information. Additionally, retrieval dates should be included for online sources when the content is subject to change, and webpage titles and URLs must be correctly formatted. Tools such as https://www.mybib.com/tools/apa-citation-generator may be helpful.*

Response: Thank you for your comment. We have updated the reference list in APA style accordingly with the new version of the manuscript.

OTHER GENERAL COMMENTS *a) Please improve the manuscript's grammar, fluency, and syntax. You may also want to consider having it proofread by a native English speaker. Additionally, ensure that the manuscript meets the requirements for each section of the PPCR Journal.*

Response: Thank you for your feedback. We have thoroughly reviewed the entire manuscript and believe we have addressed the concerns, particularly by improving the English language to ensure the PPCR journal readers can better understand the text.

 b) Please refer to the track changes and comments in the attached manuscript document for detailed feedback, and consider adjusting this section accordingly. Adjustments were also necessary for clarity, conciseness and formal tone.

Response: Thank you for the detailed track changes and comments in the discussion section. We have carefully reviewed each of your suggestions and made the necessary revisions to enhance clarity, conciseness, and formal tone.

 c) Final comments: After carefully reviewing this mini review, I encourage the authors to take into account the suggestions provided above and the comments in the attached manuscript document. Please make the necessary revisions before submitting the manuscript. I hope you find the suggestions useful. I wish the authors the best of luck with this mini review!

Response: Thank you for your constructive feedback. We considered all the suggestions provided and made the revisions for our manuscript quality