

BMJ Open Scoping review protocol exploring the relationship between food insecurity, mental health and diet intake among adolescents across the globe

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To cite: Nkwanyana A, Florence M, Swart EC. Scoping review protocol exploring the relationship between food insecurity, mental health and diet intake among adolescents across the globe. *BMJ Open* 2023;**13**:e069436. doi:10.1136/bmjopen-2022-069436

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2022-069436>).

Received 20 October 2022
Accepted 13 April 2023



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ABSTRACT

Introduction Studies, exploring the effect of food insecurity on physical and mental health, have shown that food insecurity is associated with lower self-reports of physical and mental health. With the COVID-19 pandemic, food insecurity has increased leading to higher risks of poor mental health. Despite evidence of the negative implications of food insecurity on mental health, there is a paucity of research on these variables for adolescents specifically. The current evidence shows there is a gap in adolescent centred research linking mental health and food insecurity globally. Adolescence is a crucial period of development where habits, nutritional inadequacies linked to food insecurity and mental health problems formed due to these inadequacies can be conveyed into adulthood. The aim of this study is to systematically scope the literature exploring the relationship between mental health, food (in) security and/or diet intake of adolescents.

Methods This review will be guided by Arksey and O'Malley's extended framework. The search strategy was developed by two of the authors and will be used to search literature from January 2012 to December 2022 in PubMed, Academic search complete, PsychARTICLES, Google, ScienceDirect, Scopus and Web of science core collection. Searching published and unpublished literature will be done in the chosen databases. References used in included literature will be reviewed for additional studies/sources. Articles will be assessed for eligibility by two reviewers, and any discrepancies reviewed by a third reviewer. The inclusion and exclusion criteria will be used for screening. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram will be used to document the selection process. A narrative summary and descriptive analysis will be used to summarise and report the extracted data.

Ethics and dissemination Approval for this study has been granted by the University of the Western Cape Biomedical Research Ethics Committee (BM21/8/3). Strict measures will be followed to ensure methodological rigour.

INTRODUCTION

Globally, many food-related and health-related agencies highlighted the impact of COVID-19 on increasing hunger rates.^{1,2} News reports^{3,4} point to the impact of the pandemic on mental health and/or food security. Fairly

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The review will systematically scope, following a guided process, literature exploring the relationship between mental health, food (in)security and/or diet intake of adolescents.
- ⇒ The search for literature includes a broad search in various databases to ensure all formats of literature (published and unpublished) are covered.
- ⇒ The review will not assess the quality of the studies reviewed, thus the reliability of the data extracted cannot be commented on.
- ⇒ The review will be rigorously conducted which is likely to be time-consuming.

recent studies on the adult population, exploring the role of food insecurity on health and mental health states in particular, have shown that food insecurity can be associated with lower self-reports of physical and mental health.^{5,6} In addition, higher risks of poor mental health due to increased states of food insecurity during the COVID-19 pandemic are reported.⁵⁻⁸ Studies have been identified revealing an inverse relationship between diet quality and common mental disorders such as anxiety and depression in adults⁹ and certain types of diets (e.g., Western diets) associated with increased anxiety in men and women.¹⁰ Dush¹¹ indicated that despite the evidence of the effect of food insecurity on adolescents (not forgetting mental health), they are less present in research, compared with adults, on food insecurity.

Reviews exploring the relationships between food insecurity and mental health have been conducted.¹²⁻¹⁷ However, these reviews reveal a limited body of evidence focused on the adolescent population, in the areas of mental health, food (in)security and/or diet intake/quality—particularly investigating any associations between these three factors. Adolescence is a crucial period of development. It is where habits, nutritional inadequacies linked

to food insecurity,¹⁸ and mental health problems, formed as a by-product of nutritional inadequacies, can be carried into adulthood.¹⁹ The aim of this study is thus to systematically scope the literature exploring investigations of the relationship between mental health, food (in)security and/or diet intake of adolescents. This review will enable a synthesis of the three subject areas: food insecurity/security, mental health and diet intake/quality. It will determine the extent of published research on the relationship between food (in)security, mental health and/or diet intake/quality globally, to garner a broad outline of the trends and/or extent of the exploration. Furthermore, the outline will likely inform policy development/amendment, and development of new (integrated) intervention methods to curb nutrition deficiencies and mental health problem progression into adulthood. In addition, the study will identify gaps to be addressed in future research and produce a resource to justify the need for further studies. With the newness of the field, the gap in adolescent centred research²⁰; the link between mental health; food (in)security; and diet intake globally, the need for a study of this nature is evident.

METHODS AND ANALYSIS

The review will be conducted following the extended Arksey and O'Malley framework²¹: (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data, (5) collating, summarising and reporting the results and (6) consultation of experts.

Step 1: identifying the research question

The study used the Population–Concept–Context (PCC) framework recommended by the Joanna Briggs Institute (JBI) for scoping reviews²² to formulate the research question. The search strategy will enable an identification of relevant studies, allowing an answering of the research question and meeting of the study objectives.

The following research questions will be used to guide the review:

1. What is the relationship between, mental health, food insecurity/security or diet intake/quality of adolescents across the globe?

Subquestions

2. In which geographical contexts have the associations between mental health, food (in)security and/or diet intake been commonly studied?
3. Are there other factors explored in the associations between food insecurity/security, mental health and/or diet intake of adolescents?
4. What are the gaps and opportunities for current and future research?

Step 2: identifying relevant studies (search strategy)

The following databases will be searched for articles that meet the eligibility criteria: PubMed, Academic search

complete, CINAHL via EBSCOHOST, ScienceDirect, Scopus, and Web of science core collection, and Google (for grey literature). The literature search will follow the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for Scoping Review guidelines. These databases focus on the social sciences for psychology-related literature as well as the health sciences for food-related and/or diet-related literature. The eligibility criterion listed below will be used to guide or determine the relevant studies to be included in the scoping review, relevant to the research questions.

Inclusion criteria

- ▶ Studies from various disciplines, and using various methodologies (i.e., can either be quantitative, qualitative or mixed-method studies) reporting on the association between the outcomes outlined above.
- ▶ Studies must specifically target adolescents or children (as some refer to children when speaking about adolescents²³).
- ▶ Adolescents to be between the ages of 10 and 24²⁴ (or as defined by the literature).
- ▶ Studies that include adolescents of various ages and backgrounds.
- ▶ Articles will be published and unpublished (grey) English language literature.
- ▶ Articles must be dated from January 2012 to December 2022, to capture all literature published during the review period.
- ▶ The studies will not be limited to any specific country, gender, culture, religion or economic group.

Exclusion criteria

- ▶ Studies using animals as participants.
- ▶ Studies that explore associations between physical health, food (in)security and/or diet intake/diet quality.

Patient and public involvement

None.

Keywords

Using the PCC elements, initial keywords used include: (1) food insecurity, (2) mental health, (3) diet intake, (4) diet quality and (5) adolescents.

The Boolean (AND, OR) method will be used to combine search terms. The original search strategy (see online supplemental appendix 1) was developed in PubMed and will be piloted and adapted to the other databases to ensure validity of the search strategy. The inclusion and exclusion criteria will be refined and agreed on by two reviewers. The reference lists of studies found will be checked for additional sources.

Step 3: study selection

Eligible articles will be uploaded onto Covidence software²⁵ via Mendeley, and duplicates identified and removed. The articles will be screened by two reviewers, following a two-level process. The first process/level

includes reviewing the title and abstract. Following this level, the full-text articles will, in level 2, be screened by the two reviewers to determine whether they meet the inclusion or eligibility criteria. The inclusion and exclusion criteria were developed by one reviewer and reviewed by the second for agreement or refinement. Any disagreements that cannot be resolved between the two reviewers will allow consultation for a third reviewer to assist in reaching consensus about the inclusion of studies in the review.

Step 4: charting the data

The data charting table (see online supplemental appendix 2) to be used for this study will be the one provided by the JBI²⁶ to extract and present relevant information from each selected study to answer the research question (i.e., study location, study design, measure of food insecurity, measure of mental health, measure of diet intake, reported associations, sample type). The form will be piloted by two reviewers on 5–10 articles that were included to ensure understanding of the data collection procedure and the relevance of the information and whether it is correctly captured. The form will be subjected to revision based on the two reviewers' agreement or disagreement on the need of items on the form. Again, disagreements will be discussed by the reviewers to reach consensus on issues or invitation of a third reviewer will be considered for consultation.

Step 5: collating, summarising and reporting results

It is proposed that for this study data will be described using a tabulated summary of the results and a narrative summary of the tabulated data which includes a description of the characteristics of the studies included, types of study design, year of publication, associations between food insecurity, mental health and/or diet intake. Furthermore, thematic analysis will also be used for any qualitative literature.

Critical appraisal or risk bias assessments is not an objective of this study, nor is it required in scoping reviews,²⁷ thus, no appraisal will be covered in this review. The results of the study shall be presented in an adapted PRISMA flow chart (online supplemental appendix 3).

Step 6: consultation of experts

Experts in the subject area (one of which forms part of the review team) are to be consulted to identify any literature not captured using the databases identified, and to review the findings to support the interpretations of the findings.

Ethics and dissemination

Ethical approval for the scoping review is not required as it does not involve human participants directly, however, ethics approval has been granted (BM21/8/3) for this study as it forms part of a larger PhD study seeking to examine the relationship between mental health, food insecurity and diet intake among South African adolescents. Strict protocols on conducting the review will be

followed to ensure its replicability, ensuring that the data reported in the review is of good quality and relevant to the review purpose. Furthermore, reviewed articles will be used for analysis purposes. The results of the review will form part of the PhD study submitted at the University of the Western Cape, and will be presented at conferences, and published in a peer-reviewed journal.

Contributors AN conceived the idea for the scoping review. AN led the design of the protocol and methodology. AN wrote the drafts of the manuscript and designed the search strategy. And MAF provided input to the manuscript drafts, RS provided input to the final draft. MAF provided input on the search strategy. AN revised and formatted the manuscript.

Funding This work was supported by a scholarship from the DSI/NRF Centre of Excellence in Food security (UID91490).

Disclaimer The views expressed in the submitted article are the main authors and not an official position of the funder.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

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REFERENCES

- World Health Organization. Un report: global hunger numbers rose to as many as 828 million in 2021. n.d. Available: 2022.<https://www.who.int/news/item/06-07-2022-un-report--global-hunger-numbers-rose-to-as-many-as-828-million-in-2021>
- HLPE. Committee on world food security high level panel of experts on food security and nutrition. 2020.
- Mphahlele K. Covid-19 has been hard on kids' mental health, help I. 2022. Available: <https://www.dailymaverick.co.za/article/2022-05-08-covid-19-has-been-hard-on-kids-mental-health-more-support-is-needed-urgently/>
- Pikoli Z. Almost half of pregnant women and 1 in 5 children went to bed hungry in lockdown. *Dly Maverick* 2022.
- Fang D, Thomsen MR, Nayga RM. The association between food insecurity and mental health during the COVID-19 pandemic. *BMC Public Health* 2021;21:607.
- Rahman T, Hashnain MDG, Islam A, et al. Food insecurity and mental health of women during COVID-19: evidence from a developing country. *PLoS ONE* 2021;16:e0255392.
- Sundermeier SM, Wolfson JA, Bertoldo J, et al. Food insecurity is adversely associated with psychological distress, anxiety and depression during the COVID-19 pandemic. *Prev Med Rep* 2021;24:101547.
- Nagata JM, Ganson KT, Whittle HJ, et al. Food insufficiency and mental health in the U.S. during the covid-19 pandemic. *Am J Prev Med* 2021;60:453–61.



- 9 Jacka FN, Kremer PJ, Berk M, *et al.* A prospective study of diet quality and mental health in adolescents. *PLoS One* 2011;6:e24805.
- 10 Gill R, Tyndall SF, Vora D, *et al.* Diet quality and mental health amongst acute inpatient psychiatric patients. *Cureus* 2021;13:e12434.
- 11 Dush JL. Adolescent food insecurity: a review of contextual and behavioral factors. *Public Health Nurs* 2020;37:327–38.
- 12 Ae-Ngibise KA, Asare-Doku W, Peprah J, *et al.* The mental health outcomes of food insecurity and insufficiency in West Africa: a systematic narrative review. *Behav Sci (Basel)* 2021;11:146.
- 13 Cain KS, Meyer SC, Cummer E, *et al.* Association of food insecurity with mental health outcomes in parents and children. *Acad Pediatr* 2022;22:1105–14.
- 14 Myers CA. Food insecurity and psychological distress: a review of the recent literature. *Curr Nutr Rep* 2020;9:107–18.
- 15 Sparling TM, Deeney M, Cheng B, *et al.* Systematic evidence and gap map of research linking food security and nutrition to mental health. *Nat Commun* 2022;13:4608.
- 16 Trudell JP, Burnet ML, Ziegler BR, *et al.* The impact of food insecurity on mental health in Africa: a systematic review. *Soc Sci Med* 2021;278:S0277-9536(21)00285-9.
- 17 Zahid H, Noreen S, Rizwan B. Food insecurity and its effect on mental health: a systematic review. *Proceedings* 2021;35:18–24.
- 18 Nakitto M, Asano K, Choi I, *et al.* Dietary intakes of adolescents from food insecure households: analysis of data from the 6 th (2013-2015). *Nutr Res Pract* 2017;11.
- 19 García-Carrión R, Villarejo-Carballido B, Villardón-Gallego L. Children and adolescents mental health: a systematic review of interaction-based interventions in schools and communities. *Front Psychol* 2019;10:918.
- 20 Shung-King M, Lake L, Sanders D, *et al.* *South African ChildGauge 2019: child and adolescent health leave no one behind*. Cape Town: Children's Institute, University of Cape Town, 2019.
- 21 Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci* 2010;5:69.
- 22 Peters M, Godfrey C, Khalil H, *et al.* Chapter 11: Scoping reviews. In: Aromataris E, Munn Z, eds. *Joanna Briggs institute reviewer's manual*. The Joanna Briggs Institute, 2017.
- 23 Adolescence: developmental stage and mental health morbidity. *Int J Soc Psychiatry* 2011;57:13–9.
- 24 Sawyer SM, Azzopardi PS, Wickremarathne D, *et al.* The age of adolescence. *Lancet Child Adolesc Health* 2018;2:223–8.
- 25 Kellermeyer L, Harnke B, Knight S. Covidence and rayyan. *Jmla* 2018;106:580–3.
- 26 Joanna Briggs Institute. *JBI manual for evidence synthesis*. 2020.
- 27 Pollock D, Davies EL, Peters MDJ, *et al.* Undertaking a scoping review: a practical guide for nursing and midwifery students, clinicians, researchers, and academics. *J Adv Nurs* 2021;77:2102–13.