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## ► To cite this version:

Nadine El Rashidi, Sarah Kehoe, Julie Jesson. Scoping review protocol to map nutrition and food-related interventions targeting young people living with HIV/AIDS. *BMJ Open*, 2025, 15 (9), pp.e104360. <10.1136/bmjopen-2025-104360>. <hal-05392610>

**HAL Id: hal-05392610**

**<https://ut3-toulouseinp.hal.science/hal-05392610v1>**

Submitted on 2 Dec 2025

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# BMJ Open Scoping review protocol to map nutrition and food-related interventions targeting young people living with HIV/AIDS

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**To cite:** El Rashidi N, Kehoe SH, Jesson J. Scoping review protocol to map nutrition and food-related interventions targeting young people living with HIV/AIDS. *BMJ Open* 2025;**15**:e104360. doi:10.1136/bmjopen-2025-104360

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<https://doi.org/10.1136/bmjopen-2025-104360>).

Received 28 April 2025

Accepted 22 August 2025



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## ABSTRACT

**Introduction** Adolescents living with HIV are at a high nutritional risk. Ensuring optimal nutrition and food security is fundamental for promoting the health of adolescents and youth living with HIV/AIDS (AYLHIV), preventing HIV disease progression and improving quality of life. The objective of this scoping review is to map and identify the current literature concerning nutrition and food-related interventions addressing AYLHIV.

**Methods and analysis** The study will follow the Joanna Briggs Institute methodology for scoping reviews. We will search for relevant studies in the following databases: MEDLINE, EMBASE, Web of Science and Google Scholar. We will perform additional searches of the grey literature using snowball search and citation tracking and manual searches of institutional websites. Titles and abstracts will then be screened by two independent reviewers for assessment against the inclusion criteria. Disagreements will be resolved through discussion. A data extraction form will be used to guide the data extraction.

**Ethics and dissemination** This review will involve the collection and analysis of secondary sources that have been published and/or are publicly available. Therefore, ethics approval is not required. The results will be published in an international peer-reviewed journal, presented at scientific conferences and disseminated through digital science communication platforms.

**Trial registration number** The protocol is registered in the Open Science Framework: <https://doi.org/10.17605/OSF.IO/HGBKV>.

## INTRODUCTION

The term 'young people' encompasses ages 10 to 24 years and includes adolescents aged 10 to 19 and youth aged 15–24 years.<sup>1</sup> This imperative period of gradual transition from childhood to adulthood is characterised by immense physical, cognitive and social development and shapes future economic productivity and overall healthy living.<sup>2</sup> There are 1.3 billion adolescents aged 10–19 years old and 1.2 billion youth aged 15–24 years old in the world today, more than ever before, making up 16% of the world's population.<sup>3,4</sup> Most of this population grows up in

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ We will map evidence found in published and grey literature which will provide a more comprehensive approach to identifying interventions that improve the nutritional health of adolescents and youth living with HIV.
- ⇒ There will be no restrictions on the country or language of the study to allow for a more comprehensive mapping of the literature.
- ⇒ A quality assessment of the article reviews included in the scoping review will not be performed, as this would be beyond the aim of a scoping review.

multiburden countries including diseases of poverty (infectious diseases, malnutrition), injury and violence and non-communicable diseases.<sup>5</sup> This population has been overlooked in global initiatives and interventions, but with the launch of a Lancet commission on the challenges and the opportunities for investment in adolescent health and well-being, there has been an increasing focus on adolescent health.<sup>5</sup>

Adolescents are disproportionately affected by HIV. In 2023 alone, 360 000 young people between the ages of 15 and 24 were newly infected with HIV, globally.<sup>6</sup> Despite the progress made, with a 46% decline in new HIV infections among youth from 2000 to 2019 and 34% decrease in new infections in adolescents from 2010 to 2019, the world is still behind on achieving the targets set for young people.<sup>7</sup> Adolescents living with HIV are at a high nutritional risk for a number of reasons. During adolescence, the body requires elevated nutritional needs as a result of a growth spurt and rapid development.<sup>8</sup> Second, HIV and malnutrition interact in a vicious cycle. HIV affects the nutritional status of adolescents by compromising the immune system, thereby increasing vulnerability to opportunistic infections. HIV infection often leads to nutritional deficiencies



through decreased food intake, malabsorption and increased utilisation and excretion of nutrients, which in turn can accelerate the progression of HIV infection to AIDS. Nutritional status also modulates the immunological response to HIV infection, affecting the overall clinical outcome, since malnutrition is the primary cause of immunodeficiency.<sup>9</sup> Additionally, starting paediatric treatment early in life across the different stages of growth and development often involves multiple drug regimens, hence increasing risk of metabolic alterations. The long-term effects of anti-retroviral therapy are associated with metabolic alterations such as lipodystrophy, dyslipidaemia, glucose intolerance and lactic acidosis.<sup>10 11</sup>

A large meta-analysis showed that among severely malnourished children, those who are HIV-positive have a threefold higher risk of mortality compared with their HIV-negative counterparts.<sup>12</sup> HIV infection can also indirectly affect the child's nutritional status, when it has an impact on the child's social environment. In some contexts, when HIV affects the most productive family members, it reduces household income, economic capacity and agricultural production, leading to food insecurity.<sup>13</sup> Malnutrition and its intersection with food insecurity, poverty and coinfections, particularly in resource-limited settings, pose a serious threat to efforts to combat HIV/AIDS. Ensuring optimal nutrition and food security is fundamental for promoting the health of adolescents and youth living with HIV/AIDS (AYLHIV), preventing HIV disease progression and improving quality of life. Hence, nutrition care is an integral part of HIV care and is pivotal in achieving the targets of the Sustainable Development Goals set by the United Nations.

Many interventions, including adolescents, have focused on micronutrient and dietary supplementation.<sup>14</sup> While such health measures are greatly needed to improve the overall HIV-related outcomes in AYLHIV, interventions that address structural drivers of HIV like food insecurity, hunger and poverty are also critical. Social protection systems with a strong focus on adequate food security and nutrition can help people meet their essential needs, decreasing long-term vulnerability and fostering well-being.<sup>15</sup> While previous reviews have examined nutrition interventions for adolescents,<sup>16</sup> to our knowledge, none have specifically targeted AYLHIV who are particularly vulnerable to a poor nutritional status. This underscores the need for a comprehensive research on interventions targeting this population. Hence, the objective of this scoping review is to map and identify current literature concerning nutrition and food-related interventions targeting AYLHIV. The research questions of this scoping review are based on the Population, Concept and Context (PCC) framework for scoping reviews as defined by the Joanna Briggs Institute (JBI):

What nutritional interventions are available to address nutritional health or other health outcomes related to HIV in AYLHIV across the globe?

What are the key characteristics of these interventions, including their content, intensity, duration, context,

acceptability and feasibility for young people? How were they implemented and which outcomes were assessed?

## METHODS AND ANALYSIS

### Study design

The proposed study will be conducted in accordance with the JBI methodology for scoping reviews<sup>17</sup> and will be reported in line with the Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping reviews checklist.<sup>18</sup> The protocol is registered in the Open Science Framework: <https://doi.org/10.17605/OSF.IO/HGBKV>. We will follow the Arksey and O'Malley framework for thematic and narrative reporting.<sup>19</sup>

### Definitions

- ▶ *Malnutrition*: This study uses malnutrition in all its forms: undernutrition, micronutrient-related malnutrition, overweight and obesity and diet-related non-communicable diseases according to the WHO definition of malnutrition.
- ▶ *Food insecurity* is defined as having insufficient access to safe, nutritionally adequate foods or needing to acquire foods in socially unacceptable ways.<sup>20</sup>
- ▶ *Young people*: While there are no universally accepted definitions of adolescence and youth, the WHO understands adolescents to include persons aged 10–19 years and youth between 15 and 24 years. Together, adolescents and youth are referred to as young people, encompassing the ages of 10–24 years.<sup>1</sup>

### Inclusion criteria

We will include the following studies:

- ▶ Studies involving young people aged 10–24 years living with HIV/AIDS.
- ▶ Interventions addressing malnutrition or food insecurity, feeding interventions, nutrition education, physical education, interventions to promote healthy diets, interventions promoting physical activity, community and/or home gardens, food and nutrition policies, community environment interventions, water sanitation and hygiene interventions and structural interventions such as taxation of sweetened sugary drinks. Examples of nutritional interventions could be nutritional screening and assessment, nutritional care plans or compensatory strategies of purchasing, preparing or consuming meals.
- ▶ Published articles and unpublished and grey literature as well as ongoing studies where preliminary findings are available.
- ▶ We will not place restrictions on the country or language of the study. Given that the team is proficient in French, English and Spanish and has access to DeepL Pro which is an effective translation software, we find that it is not necessary to apply language restrictions. This will allow for broader inclusion and a more comprehensive mapping of the literature.
- ▶ Studies targeting the following outcomes:

Dietary or nutritionally related outcomes including dietary intake, eating behaviours, food habits and nutrition knowledge.

Anthropometric and clinical data including Body Mass Index, weight and height measures, body composition and micronutrient levels.

Physical activity or exercise-related outcomes including physical activity and exercise levels, intensity or frequency of exercise.

Food security-related outcomes including availability, access, utilisation and stability.

### Exclusion criteria

Non-intervention-based studies like observational studies such as cohort, case-control and cross-sectional designs were used to avoid risk of confounding and bias. This scoping review will exclusively focus on mapping interventional studies and not observational studies due to the robust nature of evidence from intervention studies. Mapping existing interventions can help identify what has or has not worked and provide insights to inform future programme development and policy decisions for AYLHIV. On the other hand, observational studies explore associations and risk factors rather than effectiveness of a particular intervention and have potentially a higher risk of confounding and selection bias, making them less suitable for the objectives of this review.

- ▶ We will exclude editorials, commentaries, opinions and review articles. However, we will use review articles to identify additional original articles.

### Search strategy

The search strategy will aim to locate both published and unpublished studies. In consultation with a university librarian, electronic databases will be assessed for their relevance and potential coverage of the topic. We will search MEDLINE, EMBASE, Web of Science and Google Scholar to identify articles on the topic. Studies in all languages published from January 2000 to January 2025 will be included. The reference list of all included sources of evidence will be screened for additional studies. We will follow the PCC framework to guide our search strategy: population (Adolescen\* OR youth\* OR teen\*), context (any country) and concept (nutritional health). We will perform additional searches of the grey literature using snowball search and citation tracking and manual searches of institutional websites (Conference on Retroviruses and Opportunistic Infections (CROI), International AIDS Society (IAS), adolescent and paediatric workshops AIDS, IAS). For a complete search strategy, please see online supplemental material annex 1.

### Study selection

Identified citations from the search will be collated and uploaded into Covidence, a software used to facilitate the screening process. All duplicate studies will then be detected and removed. Following a pilot test, titles and abstracts will then be screened by two independent

reviewers (NER and JJ) for assessment against the inclusion criteria. The full text of selected citations will be assessed in detail against the inclusion criteria by two or more independent reviewers (NER and JJ). Reasons for exclusion of sources of evidence at full text that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion, or with an additional reviewer. The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram.

### Data extraction

Two authors will independently extract and enter data from studies included in the review using a data extraction sheet that will be developed and tested on 10 randomly selected studies. Any disagreements between the reviewers will be resolved through a discussion or consensus with an additional reviewer. The data extraction sheet is provided in online supplemental material annex 2. We will extract information which includes study details including title, authors (first author and corresponding author), journal (or source for unpublished reports), year of publication, calendar year of intervention, country and source of funding, methods including objectives and/or research questions, type of study, settings, sample size, sample characteristics (eg, age, sex and socioeconomic status), intervention type, content, duration, key findings and outcomes assessed.

### Data analysis and presentation

The extracted data will be presented in diagrammatic or tabular format in a manner that aligns with the scoping review objective and questions. Data analysis will be conducted by two independent researchers and will be followed by discussions. A narrative summary will accompany the tabulated and/or charted results and will describe how the results relate to the review objective and questions.

### Patient and public involvement

None.

### ETHICS AND DISSEMINATION

This review will involve the collection and analysis of secondary sources that have been published and/or are publicly available. Therefore, ethics approval is not required. The results will be published in an international peer-reviewed journal, presented at scientific conferences and disseminated through digital science communication platforms.

**Contributors** NER and JJ designed the project and formulated the research questions. NER developed the search strategy and wrote and submitted the protocol. JJ contributed to the development of the search strategy. JJ and SHK



contributed to the drafting and editing of the protocol. NER is responsible for the overall content as the guarantor.

**Funding** NER receives funding from Sidaction for her PhD. This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

**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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