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Review Article

Mental Health Challenges among Children and Adolescents Associated with HIV Status Disclosure: A Systematic Review and Meta-Analysis Protocol

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Joseph Kirabira[1,2], Christopher Brian Zanoni[3], Christine Atala Etoko[2], Fauz Katongole[1], Naume Akello Etoko[4], Godfrey Zari Rukundo[2], Alison Annet Kinengyere[4], Kamada Lwere[5], Helen Byakwaga[6], Edith Wakida[2], Scholastic Ashaba[2], Celestino Obua[2]

1. Faculty of Health Sciences, Busitema University, Uganda; 2. Mbarara University of Science and Technology, Uganda; 3. Emory University School of Medicine, Atlanta, United States; 4. Makerere University, Uganda; 5. Soroti University, Soroti, Uganda; 6. Infectious Diseases Institute, Kampala, Uganda

Background: Prenatally acquired HIV is highly prevalent among children and adolescents globally. HIV status disclosure to children is recommended to start from 8 years and older and has shown several benefits. However, HIV status disclosure is also associated with high risks of mental health challenges. This review and meta-analysis aim at describing the prevalence of mental health challenges and associated factors among children and adolescents living with HIV.

Methods: The study will involve conducting a systematic review and meta-analysis of the existing literature on the burden of mental health challenges, including stigma, depression, anxiety, and suicidality, after HIV status disclosure among children and adolescents aged 8-17 years. Searches for both observational and interventional studies will be performed in PubMed, Medline, Embase, CINAHL, and APA Psych Info from 2000 to the date of the review. Statistical heterogeneity will be assessed using the I^2 test and visual inspection of the forest plot. Data will be extracted using an investigator-designed data extraction form by two independent people, and any disagreements will be resolved by involving a third person. Using the RevMan software, a random effects model will be applied to calculate a standardized mean estimate of the prevalence of mental health challenges. A narrative will be presented for the factors associated with the mental health challenges. Risk of bias will be assessed using the appropriate study design tool, and results will be reported following the PRISMA 2015 guidelines.

Conclusion: The review will provide valuable results that will shed light on the burden of mental health challenges associated with HIV status disclosure and the influencing factors among children and adolescents. This will inform clinical practice about the importance of assessing and managing the

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challenges accordingly, as well as designing health policies regarding the same.

Correspondence: papers@team.qeios.com — Qeios will forward to the authors

List of abbreviations

- **ART:** Antiretroviral therapy
- **CALHIV:** Children and Adolescents Living with HIV
- **HIV:** Human Immunodeficiency Virus
- **HRQoL:** Health-Related Quality of Life
- **LMIC:** Low- and Middle-Income Countries
- **MHC:** Mental health challenges
- **MUST:** Mbarara University of Science and Technology
- **WHO:** World Health Organisation

Background

There are many children living with perinatally acquired HIV worldwide, and the majority reside in low- and middle-income countries [1][2]. Vertical transmission is mainly perinatal/mother-to-child transmission, whereby a pregnant person transmits HIV to their child either during pregnancy, childbirth, or breastfeeding [3][4]. During the early years of life, many children living with HIV receive HIV care without knowing their HIV status because of various reasons such as stigmatization, fear of disclosing the mother's status, or considering that the child is still too young to understand, among others [5][6]. However, the World Health Organisation recommends that children need to know their HIV status by adolescence, and this should be done incrementally depending on the child's cognitive abilities, starting from 8 years of age [7]. HIV status disclosure is a complex, multifaceted process of informing another person about one's serostatus, and this may be voluntary or involuntary [8] and has different types such as full disclosure, partial disclosure, non-disclosure, and deception [9] and can be associated with various mental health challenges which may vary in different settings [10]. Adolescence, for instance, is characterised by several rapid physical, neurodevelopmental, psychological, and social changes which have health and behavioural consequences [11]. It is a critical stage in which the individual tries to adapt to and understand the multiple changes occurring in their environment and life, as well as forming their identity and strong relationships with both peers and adults [11][12][13]. Hence, HIV status disclosure at such a critical stage may tend to worsen the complexity of comprehending these life changes due to the multiple psychosocial issues that result. Additionally, these children and adolescents' self-esteem and confidence tend to be affected by the feelings of stigmatisation and discrimination resulting from their HIV status [14][15]. Consequently, these children and young adolescents are at a high risk of developing multiple mental health problems, including anxiety, depression, and suicidality [14][15][16] following disclosure, which most times goes unattended to. These mental health challenges can hence affect their overall health, antiretroviral treatment outcomes, and affect the individual's quality of life [17][18]. Therefore, this systematic review aims at reviewing and synthesising

the existing literature regarding the prevalence of mental health challenges among children and adolescents related to HIV status disclosure globally.

Research questions

1. What is the prevalence of mental health challenges after HIV status disclosure among children and adolescents living with HIV (CALHIV) globally?
2. What factors are associated with mental health challenges after HIV status disclosure among children and adolescents living with HIV (CALHIV) globally?

Materials and Methods

A systematic review will be conducted on the burden of mental disorders after status disclosure among children and adolescents. The study protocol development and reporting of systematic review items will be in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocol (PRISMA-P) 2015 checklist [19].

Study selection

The studies to be considered for the review will be selected based on the inclusion and exclusion criteria described below:

Inclusion criteria

All quantitative studies conducted among children and adolescents aged 8-17 years living with HIV worldwide that assessed mental health outcomes or challenges after HIV status disclosure. These will include studies published since 2000 (start of the ART era) in the search databases up to the time of the systematic review. These studies may be observational or interventional in design. The studies must have assessed disclosure and also used the appropriate tool or scale to measure the outcome variables and must be written in English.

Exclusion criteria

Studies lacking full texts and review articles will be excluded from the review.

Study population and setting

The study population for the studies to be included must be children and adolescents living with HIV aged from 8 to 17 years. This is because 8 years is the minimum recommended age for HIV status disclosure. The study may have been conducted anywhere in the world.

Exposure: The main exposure for studies to be included in this review must be HIV status disclosure. Whereas full disclosure will be of main interest, partial disclosure will also be considered. The main comparator will be no disclosure or deception.

Outcome: The primary outcome for this review will be the prevalence of mental health challenges, including stigma and mental disorders: depression, anxiety, and suicidality. Any study that appropriately assessed any of the above challenges will be included, and the associated factors will also be captured from each included study.

The measure of effect for the outcome will be weighted mean prevalence, which will be expressed as a proportion. Secondary outcomes will include quality of life, HIV treatment adherence, and functioning.

Search strategy

Search question: What is the prevalence of mental health challenges and associated factors after HIV status disclosure among children and adolescents living with HIV (CALHIV) globally?

For relevant articles, we shall search PubMed, Medline, Embase, and APA PsychInfo databases via the OVID database. We shall also search the CINAHL Plus database.

Searches will be performed using Medical Sub-Headings (MeSH) terms and keywords to increase specificity and sensitivity. Free texts will also be used as indicated below. The initial search for articles will be by title, abstract, and keywords JK, FK, and AK. The search terms will be combined using the "OR" Boolean operator, while terms of different concepts will be combined using the "AND" Boolean operator. The full-text article will then be further assessed for eligibility by JK and CAE. Any disagreements between the two persons regarding an article will be resolved by involving a third person – SA or GZR. The searches will be conducted in accordance with the PECOS framework as indicated in table 1 below.

		MeSH/search terms
Population	Children and Adolescents	Child OR Adolescent
Exposure	HIV status disclosure	HIV OR HIV-1 OR HIV-2 AND disclosure
Comparison	No disclosure	
Outcome	Mental health challenges	Mental disorder OR mood disorder OR anxiety disorder OR depression OR suicide OR stigma
Setting	Worldwide	

Table 1. The PECOS framework showing search terms for the research question.

Sample search strategy using the PubMed database:
Search term – ***children and adolescents***
((("child"[Title/Abstract] OR "adolescent"[Title/Abstract]) AND "hasabstract"[All Fields]) OR (("child*"[Title/Abstract] OR "adolescen*"[Title/Abstract] OR "teen*"[Title/Abstract] OR "p?ediatric"[Title/Abstract] AND "hasabstract"[All Fields])) AND (fha[Filter])

Gray literature will be searched mainly via Google Scholar to retrieve any unpublished articles. Also, other relevant organizational databases such as the World Health Organisation will be searched for any additional literature. For all the eligible articles, forward and backward searches will be conducted for any additional relevant articles for this review. Experts in the field of HIV/AIDS and

mental health research will also be contacted to provide any possible additional literature relevant to this review.

Review of retrieved studies will be done by two independent members of the team, and any disagreements will be resolved by involving the principal investigator. The search will be conducted as indicated in Figure 1 below.

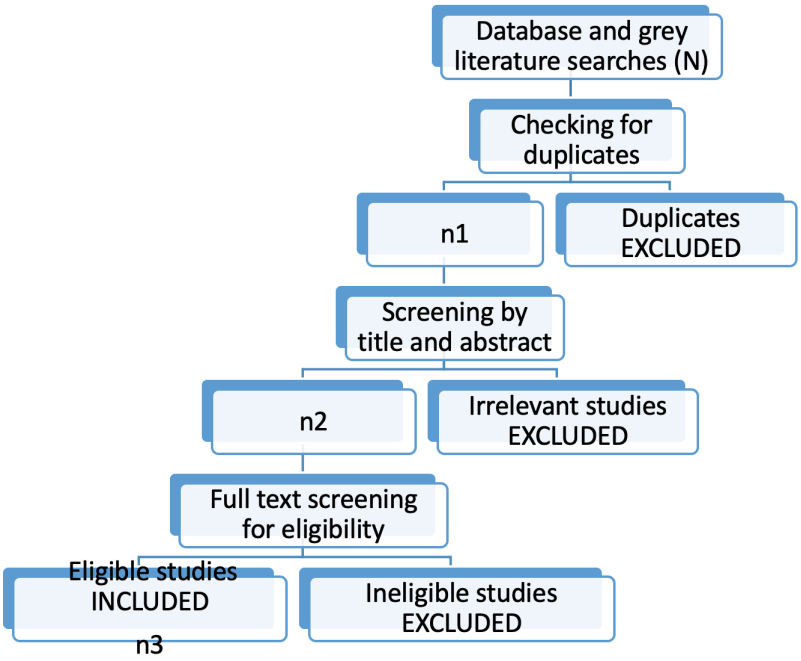

Figure 1. Flow diagram showing how the search for eligible studies will be conducted.

Risk of bias and quality assessment

For all studies that meet the eligibility criteria, the methodological quality of cross-sectional, cohort, and case-control studies will be assessed using the appropriate NIH quality assessment tool [20]. This will include assessing the appropriateness of tools used to measure study variables for each study.

Risk of bias for clinical trials will be assessed using the Cochrane Collaboration tool for assessing risk of bias [21]. Publication bias and selective reporting of studies will be assessed through visual inspection of a funnel plot or using the Egger's regression test (if eligible studies are at least ten).

Data extraction

Two members of the team will extract data from retrieved studies based on piloted investigator-designed data extraction forms using Covidence software. This data will include study design, study type (community or institutional/hospital based), PECOS framework items including both primary and secondary outcomes, year of publication, country where the study was conducted, age of participants (mean or median), and sample size. Also, factors associated with MHC will be extracted from each study. For any missing

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information, corresponding authors of the respective articles will be contacted accordingly.

Data analysis/synthesis and reporting

Extracted quantitative data will be analysed using RevMan software. Studies will be assessed for heterogeneity by visual inspection of the forest plot or by calculating the *I*-squared (I^2) statistic.

For I^2 statistic values less than 75%, the studies will be considered homogeneous, and a meta-analysis using the fixed effect model will be conducted, with pooled mean estimates for prevalence calculated [22]. If the I^2 statistic value is greater than 75%, then the studies will be considered as having significant heterogeneity; hence, the random effect model will be used, and a standardized mean estimate will be calculated. Additionally, the results will also be presented as a narrative in case of significant heterogeneity.

Subgroup and sensitivity analysis: Subgroup analysis will be conducted for country categories (low and middle income versus high income), age categories, sex, and disclosure type/status. Sensitivity analysis will be conducted during data analysis as necessary.

The results will be summarised in tables and graphs, such as forest plots, with corresponding narratives for the factors associated with the mental health challenges. The strength or certainty of the body of evidence will be assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) framework [23].

For each study, risk of bias results will be reported.

Ethical considerations

All included studies must have a statement indicating that they underwent ethical review and obtained the required ethical approval. The protocol will be registered with PROSPERO and also published in a peer-reviewed journal.

Dissemination plan

Manuscripts will be written and submitted for peer review and publication in relevant medical journals. Conference posters will be designed and presented at the MUST Annual Research Dissemination Conference. The results will also be presented at other relevant medical conferences, both locally and internationally. Policy briefs will be extracted and made available to the respective health policymakers for consideration for integration into existing policies.

Discussion

This systematic review aims to review and synthesise the existing literature regarding the prevalence of mental health challenges among children and adolescents related to HIV status disclosure globally. Several studies indicate that mental health challenges following HIV status disclosure vary widely among children and adolescents in different parts of the world [16][24]. This review will help to analyse existing evidence from different parts of the world and provide summary results for the prevalence of different mental disorders. The meta-analysis option will provide a summary result of the prevalence of the respective mental disorders associated with HIV status disclosure. By subgroup analysis,

such as low and middle income versus high income countries, sex, age categories, and disclosure type/status, the review and meta-analysis will demonstrate the distribution of these disorders. For example, anxiety, depression, and suicide attempts are more common among females compared to males; however, this is not known in relation to HIV status disclosure [25][26].

The systematic review will help to describe factors associated with different psychiatric disorders, which may also vary widely. Most existing literature shows that mental disorders such as depression and suicidality are more prevalent among people living in high-income countries compared to low- and middle-income countries. [27] Conversely, anxiety disorders tend to be higher in high-income countries compared to low- and middle-income countries [28][29].

However, the variations of these disorders among children and adolescents living with HIV are unclear, especially in the context of HIV status disclosure, since no review has synthesized the existing literature to summarise the individual study findings.

Therefore, the findings will be key in providing summary findings about the prevalence of mental health challenges globally, as well as their distribution across subgroups, and also in synthesizing the distribution of common influencing factors for these disorders. The outcomes will be key in informing health research in this field, especially that directed towards designing context-specific interventions against these challenges. They will also inform HIV/AIDS-related policies related to mental health and HIV status disclosure in different settings. As a result, this will be a positive step in the achievement of the sustainable development goal of ensuring good health and well-being for all persons [30].

Statements and Declarations

Ethics

As this is a systematic review protocol, direct ethical approval from an institutional review board was not required because no primary data collection involving human or animal subjects will be undertaken by the authors. Ethical approval and informed consent procedures for the primary studies included in the review will be assessed as part of the quality-appraisal process.

Funding

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PROSPERO Registration

This systematic review protocol has been registered with the International Prospective Register of Systematic Reviews (PROSPERO), registration number CRD42023392065.

Author Contributions

- JK conceptualized the idea, provided the initial draft, and coordinated input from all co-authors, and

- CBZ, GZR, and SA conceptualized the idea, read and contributed to all drafts of this manuscript, provided technical guidance, and approved the final draft.
- AA read and contributed to all drafts of this manuscript, provided technical guidance, and approved the final draft.
- EW and CO provided technical guidance and support throughout the writing process and read and approved the final draft of the manuscript.
- CAE, FZ, KL, and HB read and contributed to all drafts of this manuscript, proofread, and approved the final draft.

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Declarations

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