ORIGINAL RESEARCH

Prevalence of mental health conditions among people living with HIV during the COVID-19 pandemic: A rapid systematic review and meta-analysis

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Abstract

Background: The COVID-19 pandemic has generated many mental health problems worldwide. People living with HIV (henceforth known as PLHIV) bear a higher mental health burden in comparison with the general population. Therefore, their risk of mental health problems may be elevated during the pandemic.

Methods: We conducted a systematic review and meta-analysis to assess the prevalence of depression, anxiety, psychological stress, insomnia and loneliness among PLHIV during the COVID-19 pandemic. Observational studies in four databases published from 1 January 2020 to 30 April 2021 investigating the prevalence of mental health conditions during the COVID-19 pandemic were searched, and 197 articles were retrieved. After the processes of duplication removal, eligibility screening and full-text assessment, 10 articles were included in the systematic review and six articles for meta-analyses. A random-effects model was applied to derive the pooled prevalence of mental health conditions. The risk of bias was assessed using the STROBE checklist.

Results: Overall, the pooled prevalence rates of (moderate-to-severe) depression and anxiety among PLHIV were 16.9% [95% confidence interval (CI): 3.8%–30.0%] and 23.0% (95% CI: 12.0%–34.0%), respectively.

Conclusions: More research is needed to investigate the mechanism by which the pandemic affects the mental health of PLHIV. Support and programmes are needed to ameliorate the mental health problems in this marginalized population.

KEYWORDS

AIDS, anxiety, COVID-19, depression, HIV, insomnia, loneliness, meta-analysis, psychological distress, psychological stress, systematic review

INTRODUCTION

An estimated 37.7 million people globally were living with the HIV (PLHIV) in 2020 [1]. In spite of medical advances in the diagnosis, treatment and management of HIV, PLHIV continue to face various challenges. The intersectionality of the HIV condition with structural and environmental factors such as underdevelopment (i.e. reduced development and population inequity) and poverty, legal and policy environments, and societal stigma has negative consequences on PLHIV's physical and mental health, especially among identified key populations groups, i.e. men who have sex with men, people in prisons, people who inject drugs, sex workers and transgender people [2].

Mental health refers to our cognitive, emotional, psychological, behavioural and social well-being [3]. Mental health conditions involve changes in how people think, feel and behave (or a combination of these changes). These conditions can have a devastating effect on the rate of other health conditions, which may gradually diminish the quality of one's life if proper care and concern are not given such that the person is left untreated [4]. Mental health conditions usually develop from other chronic diseases among those who fail to cope with their predicaments and grieve losses in a healthy way [5]. Depression and anxiety are the most common psychological sequelae of HIV diagnoses, as found in a meta-analysis reporting that HIV infection is associated with a greater risk for depressive disorders [adjusted odds ratio = 1.99, 95% confidence interval (CI): 1.32–3.0] [6]; positive diagnosis of an HIV infection has a small to medium effect on anxiety with a mean $R = 0.39$ (95% CI: 0.26–0.52) [7].

The prevalence of mental health conditions among PLHIV is high. Prior to the novel coronavirus (COVID-19) pandemic, the pooled prevalence of depressive symptoms among PLHIV was 32% in sub-Saharan Africa [8], 38% in East Africa and 50.8% in China [9], whereas the global pooled prevalence of post-traumatic stress disorder among adult PLHIV was 28% [10]. In the US, the prevalence of generalized anxiety symptoms among PLHIV was estimated to be at 19%, higher than in the US general population [11]. The presence of mental health conditions among PLHIV is associated with poor quality of life [12], additional comorbidities [13], societal stigma [14] and unemployment [15]. Mental illness among PLHIV is also associated with polysubstance use, being admitted for inpatient care and having recurrent visits to the emergency department [11,16].

The relationship between mental health and HIV infection can also be bidirectional; however, this association can be direct and indirect, where HIV infection can either be a consequence of risky behaviours associated with a preceding poor mental health (e.g. as a result of substance misuse or alcoholism which causes poor judgment or leads to impulsive behaviour) [17–21], or result from a prior established mental illness in which people with mental health problems, who may generally have poor cognitive function and an altered perceived importance and attitude towards sexuality are more prone to committing higher-risk sexual behaviour (i.e. inconsistent condom use, having multiple sexual partners, trading sex) and therefore increase the chances of acquiring HIV [22–24].

As a result of the COVID-19 pandemic, PLHIV have experienced an unprecedented disruption in their daily lives. This includes increased barriers to accessing healthcare in a timely and confidential manner, such as delay or disruptions in routine testing for HIV, being unable or unwilling to continue antiretroviral therapy (ART), and allocations for HIV care being channelled appropriately due to COVID-19 control [25]. Apart from healthcare issues, more than half of PLHIV in a multinational study reported a worse social life outside of the family [26]. These disruptions have been associated with an increased incidence of mental health conditions, including anxiety, distress, loneliness and insomnia [27–30]. Poor mental health may subsequently influence medication adherence, as was found in a study where depressed PLHIV were at higher odds of being non-adherent to taking their medications compared with those who were mildly or not depressed [31,32]. It is important for PLHIV to achieve their treatment goals such as the continuation of treatment and viral suppression, which ultimately lead to better health outcomes. In order for governments and policymakers to allocate resources and provide the necessary interventions

for PLHIV with mental health conditions, a rapid review of the research is recommended.

The aim of the current systematic review and meta-analysis is to rapidly review the prevalence of depression, anxiety, psychological stress, insomnia and loneliness among PLHIV during the COVID-19 pandemic.

METHODS

This review has been registered with PROSPERO (registration number: CRD42021249731) and was conducted in accordance with PRISMA guidelines (Table S1) [33].

Literature search

Two investigators (KWL and PBO) independently searched multiple databases (PubMed, Medline, CINAHL, and Scopus) on 30 April 2021 to seek relevant studies using the search strategy which consisted of (COVID-19 OR coronavirus OR 2019-NCOV OR nCoV* OR COVID* OR SARS-CoV*) AND (HIV OR human immunodeficiency virus* OR AIDS OR acquired immunodeficiency syndrome) AND [(mood disorder OR depress* OR melancholi* OR dysthymia) OR (anxiety OR anxious* OR panic OR agoraphobia OR phobia) OR (psychological stress OR stress symptom OR emotional stress OR life stress OR perceived stress OR psychological distress) OR (insomnia OR disorders of initiating and maintaining sleep OR early awakening OR sleep initiation dysfunction OR sleeplessness OR sleep disorder) OR (loneliness OR social isolation OR alienation)] (Table S2). We did not impose any language or geographical area restriction on eligibility for inclusion; however, they should be published in the year 2020 or 2021 as this review examined the mental illness of PLHIV during the COVID-19 pandemic.

Data handling

We identified all relevant articles through the mentioned databases and imported them into the Endnote program (v. X5), after which the removal of duplicate articles was performed. Subsequently, we (KWL and PBO) reviewed the titles and abstracts for their relevance. We then assessed the full texts of the selected articles for their eligibility to be recruited into the systematic review and meta-analysis.

Inclusion and exclusion criteria

Only cross-sectional studies were eligible for inclusion. The study to be included for meta-analysis must have data on the number of PLHIV with and without symptoms of depression, anxiety, psychological stress/distress, insomnia or loneliness. We excluded review articles, short communications and research letters with cross-sectional design without results. We also excluded preprints from this review. Studies in which the variable of mental health conditions was reported only in mean score ± SD were included in the systematic review but not in the meta-analysis. Where there were disagreements among the investigators, discussions and consultations with a senior investigator (SMC) were held to resolve the disagreement before we reached the final consensus for quantitative analysis.

Patient, intervention, comparison and outcome

Participants were defined as people/persons living with HIV. Exposure referred to the presence of any symptoms of depression, anxiety, psychological stress/distress, insomnia or loneliness. We did not impose a comparator for the current review because it might carry important data for comparison. The main outcome for the systematic review and meta-analysis was the pooled prevalence of mental health conditions among PLHIV.

Data extraction

Two investigators (KWL and PBO) performed this step independently by reviewing all manuscripts, and another two investigators (SMC and CSC) proofread the results. The information that we extracted from the included studies were the basic characteristics of those studies as well as the participant (PLHIV) demographic characteristics, method of screening for mental health conditions, and the number of cases with mental health conditions at different severity levels.

Quality assessment

The quality of the included papers was assessed independently by two investigators (KWL and PBO) using the checklist 'Strengthening the Reporting of Observational Studies in Epidemiology' (STROBE), which is commonly used to assess the quality of cross-sectional studies [34]. Quality assessment of the included studies involved assessing eligibility criteria, sampling strategies, sample sizes, non-response rates and explanations of study limitations and measurement biases influenced by measurement techniques. It has 22 items to assess the presence of components in studies. The study was

considered as 'good' if STROBE scores ≥ 14/22, otherwise it was graded as 'poor'. Five of the 10 studies deemed relevant to this review were of high quality. As only a limited number of eligible articles were available, all articles were included in the subsequent analysis despite their quality. The details of the inclusion and exclusion criteria and the extraction process of the articles can be found in Figure 1. The quality grade summary of the studies is shown in Table 1 and details of assessment were shown in Table S3.

Data syntheses

For the meta-analysis, we derived the prevalence of depression, anxiety, psychological stress/distress, insomnia and loneliness from cross-sectional studies that reported inception cohorts of PLHIV at baseline. The numerator would be the total number of cases summed up of PLHIV with moderate-to-severe symptoms; the denominator would be the total number of PLHIV in that study. Values of numerator and denominator of all studies were used to derive pooled prevalence of the outcome variables. Meta-analyses were performed for studies that reported the same mental health conditions. At least two studies are needed to generate the forest plot. We performed the meta-analyses by employing the Open Meta (Analyst)® software [35]. We produced the pooled prevalence and their respective 95% CIs using a random-effects model (the DerSimonian and Laird method). We assessed heterogeneity using I^2, with a p-value < 0.05 being considered significant.

RESULTS

Search results

A total of 197 articles were identified in the initial screening (Figure 1). After we removed the duplicate articles ($n = 77$), we retrieved 120 articles for further assessment. After we screened for suitability based on the title and the abstract, we selected 25 articles for full-text assessment. After careful evaluation of the articles, 10 remaining articles were finally included for the systematic review. From these articles, six cross-sectional studies were considered eligible for meta-analysis to produce the pooled prevalence of moderate-to-severe symptoms of mental health conditions. Only three studies [36–38] were used simultaneously for the meta-analyses for the pooled prevalence of depression and anxiety.

Description of included studies

Table 1 summarizes the main characteristics of the 10 studies [36–45]. A total sample of 3127 PLHIV from seven countries was included in this systematic review. Four of
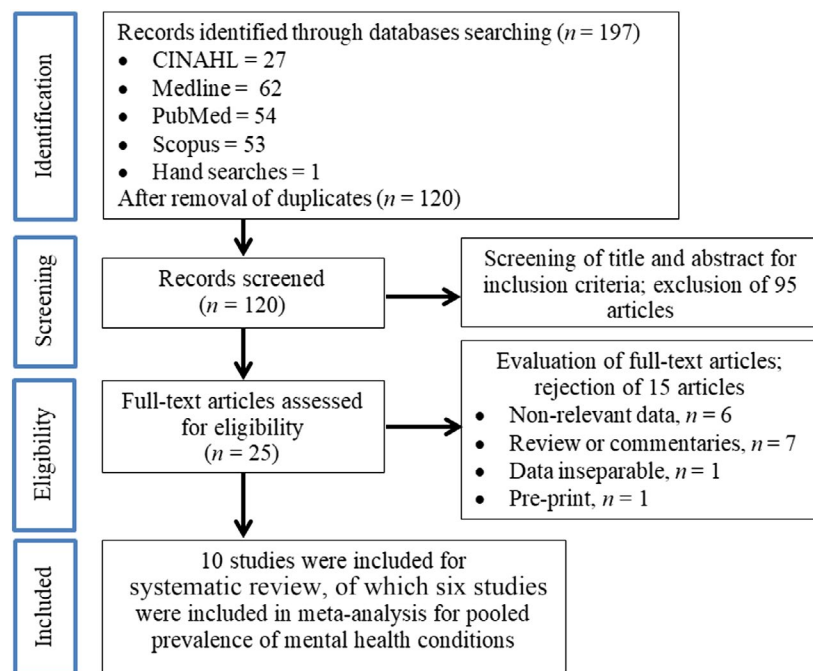

FIGURE 1 Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram of the literature screening process

these studies were conducted in the USA, and one each from Argentina, Belgium, India, Italy, Kenya and Turkey.

Out of 10 studies, six [36–38,41–43] reported data on depression, and two [41,43] out of these six studies reported the mean depression score. Hence, these two studies [41,43] were not included in the meta-analysis. Five types of tools to screen for depression symptoms were used across these studies: the Beck Depression Inventory – II, Center for Epidemiologic Studies – Depression Scale, Depression Anxiety Stress Scale-21 (DASS-21), and two versions of the Patient Health Questionnaire (PHQ-2 and PHQ-9). From these, we counted the number of cases in each symptom severity level as the unit of measurement to estimate the pooled prevalence of depression in the meta-analysis.

There were six studies [36–38,41,44,45] reporting data related to anxiety among PLHIV. Five of them [36–38,44,45] presented the number of cases with severity scales, and data on anxiety in one study [41] were reported in the mean score. Five types of screening tools were used: Hospital Anxiety and Depression Scale – anxiety subscale, DASS-21, Beck Anxiety Inventory, and two versions of the Generalized Anxiety Disorder (GAD-2 and GAD-7).

As shown in Table 1, four studies [36,39,40,43] reported data on psychological stress symptoms, three studies reported data on loneliness [40,41,43], and none reported data on insomnia. The tools used for psychological stress/distress screening were the Perceived Stress Scale, DASS-21 and the Impact of Event Scale-Revised. For loneliness, two types of tools were used: the Loneliness Brief Form and UCLA Loneliness Scale.

Prevalence of mental health conditions among PLHIV amid COVID-19 pandemic

Six studies that reported the number of cases with moderate-to-severe depression or anxiety among PLHIV were included for the meta-analysis using a random-effects model. The pooled prevalence of moderate-to-severe depression among PLHIV was 16.9% (95% CI: 3.8–30.0%) based on data extracted from four studies (Figure 2). The pooled prevalence of moderate-severe anxiety among PLHIV was 23.0% (95% CI: 12.0–34.0%) based on data extracted from five studies (Figure 3).

Other than depression and anxiety, there were also studies that reported stress and loneliness among PLHIV amid the COVID-19 pandemic, but none of the studies reported insomnia. Studies reporting on these mental health conditions were not pooled into the meta-analysis because these studies either employed different scales to assess mental health or insufficient number of studies for a meta-analysis were found; hence these results were

not deemed to be appropriate to be included in the meta-analysis. Overall, based on the range of minimum and maximum scores of the scales, the mean values of mental health conditions did not appear to be seriously high. However, it was noted that PLHIV (23 ± 13.9 scores) had a higher mean value than non-PLHIV (14.1 ± 10.4 scores) for loneliness [41]. There were another two studies that reported on loneliness [40,43] using the Loneliness Brief Form and UCLA Loneliness Scale. These studies included only PLHIV as participants. As the studies did not provide the number of participants at different loneliness severity levels, overall interpretation was difficult.

For the prevalence of stress, there were three studies that reported stress score in mean values, two of which used the Perceived Stress Scale [40,43], and one study did not specify which scale was used in their study [39]. For studies that used the Perceived Stress Scale, the mean scores of two studies were 5.2 out of a maximum score of 16 for Ballivian et al. [40] and 8.2 out of a maximum score of 25 for Jones et al. [43]. Due to the differences in the scoring system between the two studies, they were deemed ineligible for the meta-analysis.

DISCUSSION

A rapid review of the literature was conducted to determine the prevalence of mental health conditions in PLHIV amidst the COVID-19 pandemic. This review collected 10 studies which were cross-sectional in nature for secondary analysis. Most of these studies were conducted in the United States and Europe, which indicates the presence of a knowledge gap when it comes to countries in the global south. Although there appear to be some studies conducted in developing nations, these studies often seem to be under-reported, resulting in a skewed picture of the situation when compared with that of nations in the global north.

According to our analysis, in the population of those who were HIV-positive, the prevalence rates of depression and anxiety among PLHIV as a result of the pandemic are 16.9% and 23%, respectively. According to a CDC study, the rapid spread of COVID-19 has exacerbated stress in a number of vulnerable populations, such as those with chronic health conditions, including PLHIV [46,47]. The health threat posed by COVID-19 has led countries to implement strategies to contain the epidemic and reduce the burden on health systems [48]. More than 100 countries have implemented various degrees of movement restrictions, which have been dubbed 'lockdowns' by the media [49]. As a result of the strict enforcement of quarantine and restricted mobility in many countries, access to proper healthcare for PLHIV has been severely compromised.

TABLE 1 Characteristics of the included studies

No	Author	Year	Country	Quality assessment (total score/22)	Method of screening (range of score)				
					Depression	Anxiety	Stress	Insomnia	Loneliness
1	Algarin et al. [39][a]	2020	USA	Poor (8/22)	NA	NA	NS (range 1–10)	NA	NA
2	Ballivian et al. [40][a]	2020	Argentina	Poor (13/22)	NA	NA	PSS (range 0–16)	NA	Loneliness Brief Form (range 3–15)
3	Cooley et al. [41][a]	2021	USA	Poor (8/22)	Beck Depression Inventory-II (range 0–63)	HADS – Anxiety Subscale (range 0–21)	NA	NA	UCLA Loneliness Scale (range 0–60)
4	Delle Donne et al. [36]	2021	Italy	Good (14/22)	DASS-21 Depression Subcale (range 0–42)	DASS-21 Anxiety Subscale (range 0–42)	DASS-21 Stress Subscale (range 0–42) and IES-R (range 0–88)	NA	NA
5	Dyer et al. [42]	2021	Kenya	Poor (11/22)	PHQ-9 (range 0–27)	NA	NA	NA	NA
6	Jones et al. [43][a]	2021	USA	Good (14/22)	CES-Depression Scale (range 0–60)	NA	PSS (range 0–25)	NA	UCLA Loneliness Scale (range 0–60)
7	Kuman et al. [44]	2020	Turkey	Good (14/22)	NA	Beck Anxiety Inventory (range 0–63)	NA	NA	NA
8	Marbaniang et al. [45]	2020	India	Good (14/22)	NA	GAD-7 (range 0–21)	NA	NA	NA
9	Pizzirusso et al. [37]	2021	USA	Poor (12/22)	PHQ-2 (range 0–6)	GAD-2 (range 0–6)	NA	NA	NA
10	Siewe Fodjo et al. [38]	2020	Belgium	Good (14/22)	PHQ-2 (range 0–6)	GAD-2 (range 0–6)	NA	NA	NA

Note: Remark:

- Hospital Anxiety and Depression Scale – Anxiety Subscale has seven items, rated on a four-point Likert scale ranging from 0 to 3.
- Beck Depression Inventory II has 21 items, rated on a four-point Likert scale ranging from 0 to 3.
- UCLA Loneliness Scale has 20 items, rated on a four-point Likert scale ranging from 0 to 3.
- IES-R has 22 items, rated on a five-point Likert scale ranging from 0 to 4. For severity of distress as per IES-R score, normal (0–12), mild (24–32), moderate (33–36) and severe (> 37).
- DASS-21 has 21 items, rated on a four-point Likert scale ranging from 0 to 3. Severity of depression subscale was categorized into normal (0–9), mild (10–12), moderate (13–20), severe (21–27), and extremely severe (28–42); for severity of anxiety, normal (0–6), mild (7–9), moderate (10–14), severe (15–19), and extremely severe (20–42); for stress subscale, normal (0–10), mild (11–18), moderate (19–26), severe (27–34) and extremely severe (35–42).
- PHQ-9 has nine items, rated on a four-point Likert scale ranging from 0 to 3. Depression severity was defined as normal (0–4), mild (5–9), moderate (10–14), moderately severe (15–19) and severe (20–27).
- CES-Depression Scale (CES-D) has 20 items, rated on a four-point Likert scale ranging from 0 to 3.
- PSS has four items, rated on a five-point Likert scale ranging from 1 to 5 for Jones et al.; and 0 to 4 for Ballivian et al.
- Beck Anxiety Inventory has 21 items rated on a four-point Likert scale ranging from 0 to 3. Anxiety symptoms severity was defined as normal (0–7), mild (8–15), moderate (16–25) and severe (26–63). Kuman et al. used 16 as cut-off score for clinically significant anxiety.
- GAD-7 has seven items rated on a four-point Likert scale ranging from 0 to 3. Anxiety symptom severity was defined as minimal (0–4), mild (5–9), moderate (10–14) and severe (15–21).
- PHQ-2 has two items rated on a four-point Likert scale ranging from 0 to 3. It is recommended that a person with a total score of 3 or higher for PHQ-2 proceed with PHQ-9 or a clinical interview to assess for major depressive disorder.
- GAD-2 has two items rated on a four-point Likert scale ranging from 0 to 3. It is recommended that a person with a total score of 3 or higher for GAD-2 proceed with a diagnostic evaluation for generalized anxiety disorder.

Abbreviations: CES, Center for Epidemiologic Studies; DASS, Depression Anxiety Stress Scale; GAD, Generalized Anxiety Disorder; HADS, Hospital Anxiety and Depression Scale; IES-R, Impact of Event Scale-Revised; NA, Not available; NS, Non-specific; PHQ, Patient Health Questionnaire; PSS, Perceived Stress Scale.

[a]Study was only included for systematic review.

[b]Number of participants with severity symptoms that has clinical significance and required further diagnostic evaluation.

[Corrections added on 7 April 2022, after first online publication: in Table 1, under 'Author' column, the reference citations were incorrect and have been corrected in this version.]

| Total HIV	Characteristics of PLHIV		No. of HIV+ mental health conditions (Moderate and above which has clinical significance) or average score (SD)				
	Average age (SD)	Gender [n (%)]	Depression	Anxiety	Stress	Insomnia	Loneliness
16	57.4 (6.0)	Male, 6 (37.5); female, 10 (62.5)	NA	NA	4.4 (3.3)	NA	NA
1336	45.8 (10.3)	Male, 892 (66.8); female, 444 (33.2)	NA	NA	5.2 (3.3)	NA	6.0 (3.0)
133	50.3 (12.7)	Male, 89 (67.0); female, 44 (33.0)	13.8 (11.4)	7.7 (4.4)	NA	NA	23 (13.9)
98	NA	Male, 74 (75.5); female, 24 (24.5)	Mild, 9; moderate, 4; severe, 1	Mild, 7; moderate, 3; severe, 1	Mild, 6 by DASS-S; OR mild, 19; moderate, 3; severe, 22 by IES-R	NA	NA
486	NA	Male, 171 (35.2); female, 315 (64.8)	Mild, 45; moderate-severe, 3	NA	NA	NA	NA
218	53.3 (10.9)	Male, 98 (45.0); female, 120 (55.0)	13.4 (6.0)	NA	8.2 (1.4)	NA	4.9 (1.9)
307	Median: 33 (range 18–77)	Male, 289 (94.1); female, 18 (5.9)	NA	Moderate-severe, 79	NA	NA	NA
167	Median: 44 (interquartile range 40–50)	Male, 66 (39.5); female, 100 (59.9); transgender women, 1 (0.6)	NA	Moderate-severe, 41	NA	NA	NA
49	62.1 (7.7)	Male, 30 (61.2); female, 19 (38.8)	22[b]	21[b]	NA	NA	NA
317	43.4 (11.7)	Male, 227 (71.6); female, 87 (27.4); others, 3 (0.9)	74[b]	72[b]	NA	NA	NA
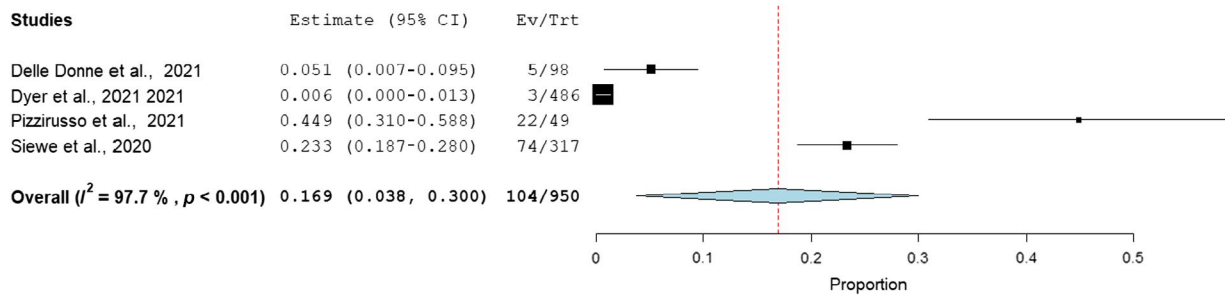
FIGURE 2 Forest plot of pooled prevalence of depression among people living with HIV (PLHIV) amid the COVID-19 pandemic. Ev/Trt, event in the treatment group
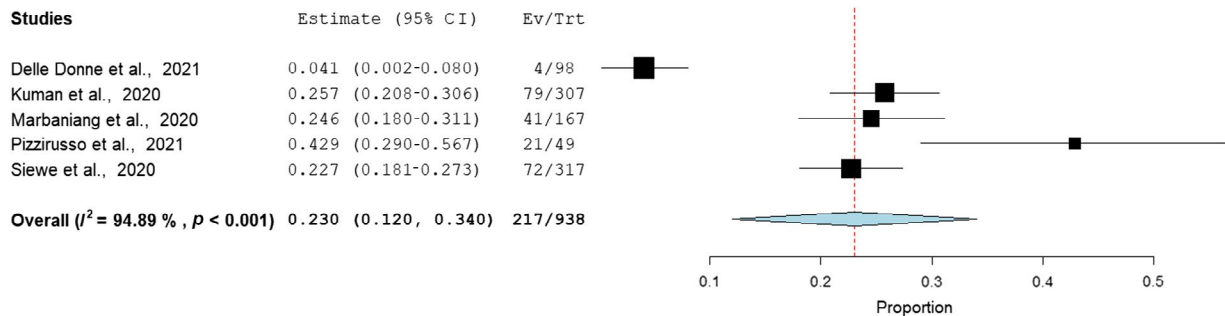

FIGURE 3 Forest plot of pooled prevalence of anxiety among people living with HIV (PLHIV) amid the COVID-19 pandemic. Ev/Trt, event in the treatment group

Many hospitals have been declared centres for COVID-19 cases and intensive care units were mainly occupied with COVID-19 patients instead of those with other chronic diseases, such as AIDS-related complications [50]. PLHIV may experience barriers in accessing optimal care, which includes routine blood investigation for viral load monitoring as well as regularly receiving life-saving antiretroviral medication. The HIV services that cater to PLHIV are interrupted due to a reduction in non-urgent medical appointments [51]. While many healthcare providers offer telemedicine services, confidentiality may be an issue of concern. Moreover, the method is not always effective and some do not take advantage of these services for various reasons [52]. Some PLHIV prefer human face-to-face consultation because they can receive emotional and counselling support from healthcare advisors when having crucial conversations that are more personal and intimate in nature. The reduced social interaction during the pandemic often leads to a sense of vulnerability, which puts PLHIV at a high risk of contracting other infections and co-infections. In the worst cases, some PLHIV have chosen to discontinue their medications during quarantine because of stigmatization and discrimination, or the need to hide their HIV status from family members [53]. In addition, misinformation and fabricated messages about COVID-19, such as the coronavirus being an HIV-based bioweapon, have led to an increase in social stigma toward PLHIV. Disruptions in healthcare, increased risks

of HIV status disclosure and stigma may have contributed to anxiety symptoms among PLHIV during the COVID-19 outbreak [53].

Moreover, research shows that PLHIVs are two to four times more vulnerable to the risk of developing depression before COVID-19 [9,54,55]. While physical distance guidelines can prevent the spread of COVID-19, these guidelines can affect one's social and emotional well-being. It is possible that people may be even less inclined to physically interact with others, which can exacerbate feelings of isolation and loneliness in communities [56]. Because HIV is more prevalent among the disenfranchised communities, PLHIV may not have access to resources such as mobile phones and internet access to help them cope with physical social distancing, which could explain the rise in prevalence of depression among PLHIV during enforced social isolation [57]. These conditions of isolation have been further expounded as a result of governmental policies in place which ceased all non-government organization-based activities and programmes during the lockdown periods so as to avoid further spread of COVID-19. Hence, without access to human intervention in counselling and redirection of resources, many PLHIV had very little avenues of support, which forced them to isolate themselves even further. This lack of support systems (which should include monitoring, evaluation and intervention programmes) presents a gap that needs to be addressed by many local

governments should similar situations or incidents arise in the future.

Furthermore, PLHIV may be less likely to adhere to their antiretroviral medications if they experience depression-related symptoms such as loss of interest or suicidal thoughts [58]. PLHIV who have poor adherence to ART or poor self-care management are at risk of developing complications should they contract COVID-19, and succumb due to their compromised immune system [50]. Hence, it is even more important for healthcare providers to increase their advocacy for treatment adherence and participation among PLHIV amidst the plight of COVID-19. The pandemic has also resulted in many people losing their jobs [59]. This is particularly true for people with HIV who experienced employment-related discrimination even before the pandemic [50]. Applicants may be rejected for a job if they are HIV-positive, even if they have the necessary skills and competencies [60].

Aggravated by the ongoing uncertainty of the situation surrounding the pandemic, research has shown that some individuals may resort to maladaptive addictive behaviours, such as substance use, self-blame or denial [61]. Unsurprisingly, PLHIV with depression are at risk of experiencing treatment failure [62], develop lower CD4 counts [63], and engage in risky sexual behaviours [64]. More research is needed to examine the mental health outcomes, such as post-traumatic stress and suicidal attempts, and effective coping mechanisms among PLHIV during the pandemic.

Strengths and limitations

This review paper highlights the mental health conditions of PLHIV in the context of the global pandemic. The mental health implications are greater for vulnerable populations such as PLHIV and require more attention from mental health professionals. In this regard, mental health professionals need to collaborate with governments and health authorities to assist PLHIV to strengthen resilience amidst COVID-19 that will help them manage and reduce the psychological impact of the pandemic. However, it is also noted that in some developing countries, the lack of trained mental health professionals is seen as a cause for concern. With the increase in number of mental health cases reported during the COVID-19 period alone, there were fewer resources of support and counselling made available, even more so for PLHIV. This is a red alert that needs immediate attention within the global healthcare community to ensure that everyone is entitled to proper care regardless of economic status.

This review, however, is not without its limitations. First, it relied on aggregate published data, and the studies we analysed were all periodic, which may reflect the mental state of the population over time. The mental state of the population changes over time and in the environment. Thus, psychological impact assessments of COVID-19 need to be studied from a longitudinal perspective.

Second, the data originated from several different studies, each with different designs, data collection instruments and demographic samples. Therefore, the substantial heterogeneity in the studies could not be well explained by the variables studied. Moreover, more than half of the included studies demonstrated poor methodological quality, including sample size, variable selection and sampling technique, which may have caused bias. It is therefore necessary to interpret the results with caution. Third, this review is hampered by the low number of studies looked at, which makes it impossible to conduct a systematic meta-regression analysis to assess aspects of mental health other than depression and anxiety. In addition, the papers reviewed utilized self-report data via cross-sectional studies, and our reviews were also limited to specific databases. Further follow-up studies may be required to better understand the mental health status of the HIV population.

CONCLUSIONS

Mental health and PLHIV have often been looked at as two distinct issues in most medical and public health studies. However, our research has shown that these two issues are intertwined within this marginalized community, and the mental health burden in PLHIV is compounded by the current public health crisis (i.e. COVID-19). Whilst access to essential HIV services is important, support for mental health should be provided while access to care is restricted. All the important stakeholders (healthcare providers, community leaders, governments, and even public and private sectors) should work closely to investigate the deficiencies in the current systems and propose new framework changes that will not only help to fill these deficient gaps in the support systems but also ensure that the system will be resilient should another health crisis like the COVID-19 pandemic occur. Changes within the systems and a holistic approach are needed to address the mental health needs of PLHIV. These policies should potentially include a complete revamp of the public welfare, education and support systems while at the same time strengthening the current judicial institutions to alleviate fear from stigma against PLHIV. These changes are necessary and in line with the 17 UN Sustainable Development Goals for society to develop positively and draw resilience and strength from all levels of a diverse population.

In conclusion, the worldwide COVID-19 pandemic has exacerbated mental health problems among PLHIV. In the current rapid systematic review and meta-analysis, the results showed that around one-fifth of PLHIV had variable degrees of mental health conditions. There is still a large lacuna of research on the mental health status of PLHIV. Therefore, more research is urgently needed to address this lacuna, so that appropriate and timely preventive activities or programmes could be developed as one of the response measures to the pandemic.

CONFLICTS OF INTEREST

The authors declare there are no conflicts of interest.

AUTHOR CONTRIBUTIONS

Conceptualization: KWL, SHL and CSA; data curation: CSA; formal analysis: KWL, CSA, SHL, SMC and PBO; funding acquisition: PBO; methodology: KWL, CSA, SMC and PBO; project administration: LTDO; resources: SHL and LTDO; software: KWL; supervision: SMC; validation: KWL, CSA, SMC and PBO; writing – original draft: KWL, CSA, CSA, LTDO and PBO; writing – review and editing: KWL, SHL, CSA and SMC. All authors have read and agreed to the published version of the manuscript.

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