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Review Article

Mental Health Research in Cameroon: a Systematic Narrative Review Spanning 2005 to 2021

Recherche en Santé Mentale au Cameroun : une Revue Narrative Systématique Couvrant la Période 2005 à 2021

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ABSTRACT

Introduction. This report is a systematic narrative review that addresses the need for a synthesis and focuses on how mental health and mental illness have been addressed in published research in Cameroon during the period 2005–2021. **Methodology**. Research studies about mental health or mental illness in Cameroon, in English or French were included. Exclusion criteria included review articles, dissertations and theses, conference presentations; and articles with combined data and analysis of different locations of which the Cameroon components could not be extracted. Medline, EBSCOhost Research Databases, Google Scholar, and PubMed were searched, with the last search in December 2021. The included articles were read several times and entered into Covidence, an online review application. Information from all articles was extracted into Excel and then analyzed. 105 articles met the inclusion criteria. **Results**. Of these articles, half discussed mental health without using a formal diagnostic term, 68% were cross sectional, and one-third focused on HIV. Results are presented in six themes: Naming mental health; Prevalence and Incidence; Screening and Assessment; Social Pressures and Social Exclusion; Interventions; Mental health and Psychiatric systems. No studies focused on concepts or idioms related to mental health, and very few addressed treatments. Due to the many challenges of publishing and finding peer-reviewed research, some relevant studies might have been missed. This review supports the need for more locally relevant research, more support to mental health researchers through all phases of the research process, and for mental health intervention studies. **Conclusion**. The recent mental health strategy put forward by the Cameroon Ministry of Public Health may address some of these gaps.

RÉSUMÉ

Introduction. Ce rapport est une revue narrative systématique qui répond au besoin d'une synthèse et qui se concentre sur la manière dont la santé mentale et la maladie mentale ont été abordées dans les recherches publiées au Cameroun entre 2005 et 2021. **Méthodologie.** Les études de recherche portant sur la santé mentale ou la maladie mentale au Cameroun, en anglais ou en français, ont été incluses. Les critères d'exclusion comprenaient les articles de revue, les dissertations et les thèses, les présentations lors de conférences ; ainsi que les articles combinant des données et des analyses de différentes localisations dont les composantes camerounaises ne pouvaient pas être extraites. Medline, les bases de données de recherche d'EBSCOhost, Google Scholar et PubMed ont été consultés, la dernière recherche datant de décembre 2021. Les articles inclus ont été lus plusieurs fois et introduits dans Covidence, une application de revue en ligne. Les informations de tous les articles ont été extraites dans Excel puis analysées. 105 articles répondaient aux critères d'inclusion. **Résultats.** Parmi ces articles, la moitié traitaient de la santé mentale sans utiliser de terme diagnostique formel, 68% étaient transversaux et un tiers étaient axés sur le VIH. Les résultats sont présentés en six thèmes : dénomination de la santé mentale ; prévalence et incidence ; dépistage et évaluation ; pressions sociales et exclusion sociale ; interventions ; santé mentale et systèmes psychiatriques. Aucune étude ne s'est penchée sur les concepts ou les idiomes liés à la santé mentale, et très peu ont abordé les traitements. En raison des nombreux défis liés à la publication et à la recherche d'études évaluées par des pairs, certaines études pertinentes ont pu être manquées. Cette revue soutient la nécessité de mener des recherches plus pertinentes localement, d'apporter davantage de soutien aux chercheurs en santé mentale à toutes les phases du processus de recherche, et de réaliser des études d'intervention en santé mentale. **Conclusion.** La récente stratégie en matière de santé mentale présentée par le ministère de la Santé publique du Cameroun pourrait combler certaines de ces lacunes.

IMPACT STATEMENT

This systematic narrative review provides an overview of mental health research in Cameroon. Our findings provide valuable insights for mental health service providers, students, policymakers, local governments, and researchers in Cameroon and, more broadly, as the review identifies areas that have been studied, tools used, and the need for intervention and impact research.

We identified 105 studies, which indicate both a growing body of literature and the need for more research. Few studies addressed local understandings and idioms of mental health or illness, and well-being; many studies used concepts such as depression and burnout without linking them to localized concepts. Several studies reported a high prevalence of mental disorders among the groups studied, with few interventions provided, highlighting the high need for interventions tailored to these settings.

Our findings also point to the importance of approaches that are relevant to local groups, that are intersectional, and that address social determinants of health. To our knowledge, this is the first comprehensive review that focuses on mental health and illness in Cameroon. The methods used in this review can also be instructive for people who aim to conduct research for a national, regional, or local area. We identified a lack of studies focused on the implementation of mental health policies and plans, or on mental health systems. This review supports the other work that reveals gaps within implementation science in African and global mental health.

The findings and conclusions from this research should be used as guidance for the development of mental health systems in Cameroon, and to guide others in conducting similar reviews.

INTRODUCTION

Mental health (MH) programs are attracting attention globally, including in Africa (1–5). The discourses centre around ways to address "treatment gaps" by using a variety of approaches, such as task shifting, community-based programming, and access to pharmaceuticals (6–8). Research in mental health, distress, well-being, and quality of life can inform programs and policy. Yet, mental health in Africa is understood in local terms and has local, cultural contexts (9–11) so there can be limited usefulness of approaches and categories developed by non-African bodies such as the American Diagnostic and Statistical Manual of Mental Disorders (12) when attempting to understand the specifics of a particular country or district. While general diagnostic categories can illuminate topics to consider, issues related to mental health and mental distress must be understood within local contexts, in ways which extend beyond medical pathologies.

As part of a broader program of work, we decided to examine mental health in Cameroon using the lens of published research. We recognize that "mental health" and "mental illness" cannot be understood by solely examining published research. Other approaches use the arts (such as theatre, literature, visual arts, and film), or oral, narrative traditions to learn and share information about mental health and treatment.

In this paper, to reflect the current dominant discourses in which mental health work is situated, we use the terms mental health and mental illness. Others may use terms such as mental health challenges, mental disorder, distress, mental difficulty, psychiatric disability, psychiatric impairment, well-being, specific diagnostic labels, or names for life challenges. Local terms are also used in practice in Cameroon. The research literature on mental health and mental illness is not consistent because of these differing and contested definitions and ways of understanding what is being examined.

Cameroon Law N°., 2010/002, decreed in 2018, aims to protect persons with disabilities, and explicitly includes mental disabilities. In the original French, these are "débiles, autistes, infirmes moteurs cérébraux, mongoliens, micro et macrocéphales, maladies psychiatriques et épileptiques". Translated to English they are "debilitated, autistic, cerebral palsy, Mongolian, micro and macrocephalic, psychiatric and epileptic diseases" (13). Therefore, people who live with psychiatric disability, mental illnesses, or functional impairments due to mental conditions would be included in this protection (14). In addition, recent work has highlighted deficits in Cameroon's mental health system and legislation (15).

We begin the review with this brief discussion of concepts and terms because understanding terminology and context is foundational to the scope of the paper. Terminology and language influence views of mental illness and treatment, and impacts family and community understandings and responses. Concepts and language impact what is researched, how knowledge is shared, and direct and shape policies, services, programs, and resource allocation. Different definitions, and the use and misuse of terminology, leads to various responses and outcomes.

This paper is a narrative review focusing on how mental health and mental illness have been addressed in published research in Cameroon between 2005–2021. Providing this overview of the published research can shed light on aspects related to mental illnesses; can assist decision-makers, practitioners, researchers, students, and others to understand what has been done; and can provoke further discussion and research. A narrative review and synthesis, one that describes an overview in words, provides an accessible way to understand this body of knowledge.

PATIENTS AND METHODS

Our first step in conducting this broad review was to develop an approach that met our purpose. We drew from sources about review methodologies **(16,17)** to develop a three-phase approach for our review. The first phase was defining the scope of the review and identifying included articles. This project emerged from a bibliometric review examining health research in Cameroon described elsewhere (18). An initial analysis of the approximately 2400 articles in that collection showed a lack of mental health studies. The original database was from 2005 to 2015. For the current paper, we added searches for 2016 to 2021. The overall scope of the current review defined

the terms, concepts, frames of reference, and the types of articles that would be included. In this step, we identified and discussed 6 broad perspectives on mental health and illness and their implications for research: historical perspectives on mental health research in Africa; cultural understandings and traditional healing practices; psychiatric and biomedical models; biopsychosocial theories; critical and post-colonial perspectives; and religious and spiritual perspectives. These frameworks are outlined in Table 1 and assisted us in identifying key search terms. Each of these views of well-being, quality of life, and mental health contribute to research. There is increasing recognition that research and services should integrate mental health and physical health in Africa (e.g. 19,20).

Table 1: Ways of researching mental health and illness

	Classification System of problems or disorders	**Explanation**	**Intervention or Treatment**	**Key terms**
Historical perspectives on mental health research in Africa Approaches to mental health and illness that are seen from different periods of time.	Varies	Places understanding of mental health and illness in historical contexts	Depends on the era and topic	N/A
.			vii.	
Traditional healing and medicine Approaches to healing which have cultural and social roots, have been shared orally and practically through generations, and include a range of perspectives and intervention approaches that include personal, community, natural, and supernatural explanations. Includes traditional midwifery, traditional healers/doctors, Indigenous healers/doctors; herbalists, people who sell traditional medicine and who also consult about problems (but might not consider themselves "healers") and others. Traditional healers can be very patient-centred, e.g. focused more on emotions, relationships, psychosocial topics, and issues of daily life rather than solely illness issues. Often seen to work more collaboratively with patients and families, and to discuss patients' concepts of illness and treatment.	Varies in different places in Cameroon. See Hillenbrand, 2006; Ngassa 2003.	Varies depending on the provider Can include witchcraft, sorcery, and non-physical causes of distress.	Emphasizes a range of interventions including herbal treatments, attention to restoring relationship balance with ancestors, social networks and personal relationships. Might include psychiatric symptoms related to ideas about secret or spiritual/supernatural explanations e.g. that one's soul has been sold to somebody else by a third party.	traditional healers or doctors indigenous healers or healing; herbalist witchcraft sorcery

Table 1: Ways of researching mental health and illness (ctd)

	Classification System of problems or disorders	Explanation	Intervention or Treatment	Key terms
Religious and spiritual Around the world, mental health and illness are often understood from a religious or spiritual perspective.		Research about the intertwining of religious understandings of mental health - Often not addressed in mainstream western psychiatric literature	- Emphasize religious responses to difficulty such as prayer, repentance,	Culture-bound syndromes Demonic possession Faith healers Spirit possession
Psychiatric and biomedical models The "Western" medicine tradition that emphasizes a reductionistic, dualistic approach which separates mind from body (Engel, 1977) and places focus on hypothesized disease processes and symptoms. Locates mental health, mental illness and psychiatric disorders primarily in the brain and mind. "Mental" means relating to the mind. Practitioners (e.g. medical doctors, nurses) are seen to have more expert knowledge than patients, have more social status, and often work with patients in a hierarchical manner.	Two widely established (Westernized) systems that classify mental disorders; 'ICD-10 Chapter V: Mental and behavioural disorders, since 1949 part of the International Classification of Diseases produced by the WHO, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) produced by the American Psychiatric Association (APA) since 1952	assumes that mental disorders are brain diseases (Deacon, 2013). Mental Illness is viewed as organic brain pathology, with mental disorders theorized to be due to malfunctioning of neural circuitry, developmental processes shaped by a complex interaction of genetic anomalies, defective brain structure and function, and imbalanced neurotransmitters (Deacon, 2013). Commonly referenced neurotransmitters include dopamine, serotonin, norephenephrine.	places emphasis on interventions targeted at treating biological abnormalities in brain chemistry, including pharmaceutical interventions (Deacon, 2013) and electroconvulsive therapy.	Mental illness Mental disorder Specific diagnostic categories such as depression, schizophrenia, anxiety
Biopsychosocial theories of mental health and well-being Combines biological theories of mental health/illness with psychological and social theories. One of the primary models used in Western mainstream psychiatry. The main catalyst for the development of the recovery model came from the consumer-survivor movement, which is a diverse group of individuals who either are ex-consumers of mental health services or currently access mental health services, who are empowered to advocate for and protect their rights as patients (Guidry-Grimes, 2022)	'ICD-10 Chapter V: Mental and behavioural disorders, since 1949 part of the International Classification of Diseases produced by the WHO, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) produced by the American Psychiatric Association (APA) since 1952	mental health and mental illness can be understood by considering a combination of factors: biological, psychological (thoughts, emotions, and behaviours), and social (socio-economical, socio-environmental, cultural) Cognitive and behavioural (psychological) theories Diathesis-stress models Biopsychosocial model was first theorized by George L. Engel (1977), psychiatrist. Other theories include attachment theory, psychoanalytic theory	Recovery (social) model supports an individual's potential for recovery from mental illness or disability, viewing recovery as a unique personal process, in which new meaning and purpose in life is developed, as opposed to a set end (Anthony, 1993). Emphasizes holistic interventions, such as Psychotherapy, Cognitive behaviour therapy, psychoanalytic therapy, Dialectic Behaviour Therapy; Interpersonal Therapy	Well-being Stress Recovery Psychological distress Psychosocial rehabilitation Psychiatric disability

Table 1: Ways of researching mental health and illness (ctd)

	Classification System of problems or disorders	Explanation	Intervention or Treatment	Key terms
Critical and Post-colonial Perspectives Critical perspectives question medical and positivistic models, including biomedical models of "psychiatric illness" (Foucault, 1964; Mills, 2014) and have a long history in Africa (Fanon, 1952). Critical theoretical perspectives are explicitly interested in wider social-political contexts, are not focused only on individualistic explanations of distress, and examine how power and privilege impact emotional lives. Critical perspectives aim to promote broader understandings of mental health and distress, and more equitable outcomes, with less emphasis on medical decision making (Bracken, Giller and Summerfield, 2016; Fernando, 2014; Guidry-Grimes, 2022).	Not one systematic categorization system. Focuses on questioning and critiquing the foundations of established labels and categories, and centering first person accounts.	Critical perspectives question or "problematize" concepts and assumptions related to mental health, mental illness, and psychiatry. By calling attention to dominant discourses and previously invisible practices and assumptions, critical perspectives offer avenues for alternative ways of understanding human experiences (Kincheloe and McLaren, 2005). Critical post-colonial approaches to mental health research tend to include people with lived experience and advocacy for social action (e.g. institutional policy change, legal reform) as foundational components.	Emphasizes structural and institutional change, and increased collaboration between providers and patients.	Oppression, Discrimination, Stigma

The reviewers came to a consensus about additional topics to include. Papers were included if the topic was discussed in a meaningful way and could assist with answering our research questions. These topics included (1) Fear, e.g., fear of treatment for physical illness, because ongoing fear contributes to diminished mental health; (2) Coping and resilience, because coping is a key component of mental well-being; (3) Stigma and community inclusion and exclusion, because stigma affects mental well-being. Articles were included which focused on stigma related to mental illness and the impacts of stigma generally; (4) Suicide, because it is an indicator of poor mental health and an outcome of concern in the field. After seeing some articles about (5) sexual and gender violence and the impacts on MH, we ran an additional search on sexual violence and mental health-related issues which identified relevant articles. (6) Quality of life was included if it was the focus of the study because it is so closely linked to mental health. (7) Epilepsy was included because it is often seen as a mental health issue in Cameroon. Because our broad goal was to understand the research work that has been published related to mental health in Cameroon, we did not exclude any study types. Intervention studies were included if they met the other inclusion criteria. Case studies that met other inclusion criteria were included if they were written as a research study and not anecdotal. This approach was similar to other narrative reviewers, such as Dixon-Woods and colleagues (17) who stated "We aimed to prioritize papers that appeared to be relevant, rather than particular study types or papers that met particular methodological standards" (p.4). This paper is focused on research related to mental health in Cameroon; health systems and legislation are briefly addressed and articles were included if mental health was the focus of the paper. A full review of the legal issues related to psychiatry and mental health in Cameroon is beyond the scope of this paper. Research studies were included if they were published in a peer reviewed journal between January 1, 2005 and December 31, 2021. To be included the work had to be an original research study about mental health or mental illness in Cameroon, either in English or French. Exclusion criteria were 1) review articles, dissertations and theses, conference presentations articles, study protocols; 2) not published in English or French; 3) not available in full text online; 4) articles with combined data and analysis of different locations of which the Cameroon components could not be extracted; 5) articles that were an economic analysis of an issue (e.g., poverty) with no clear discussion of mental health issues.

We searched the larger database from the previous work and the results of previous searches (18,19) for articles that met the inclusion criteria and removed duplicates. We reviewed the titles and abstracts for obvious inclusions and exclusions. We conducted new searches in the databases available through the University of Toronto library. The full list of databases is included in Appendix 1. Search terms included: Cameroon or Cameroun AND mental health or mental illness or mental well-being or mental disorder or mental health-related quality of life or psychiatric illness or psychiatry; or psychiatric combined with epidemiology, incidence, prevalence, assessment, treatments, or interventions; depression, schizophrenia, and anxiety. In addition, we asked colleagues working in the mental health field in Cameroon for recommendations about articles that might have been missed in the database searches. The primary focus of the article did not have to be mental health or illness; we included studies that addressed mental health within the examination of another topic, such as HIV or poverty. In keeping with understanding mental health as more than a diagnosis, possible topics were discussed prior to searching the databases, and the list was revisited as we moved through the search process. Studies addressing physical well-being were included if there was something substantive about one of our areas of interest in relation to physical well-being, physical problems, or illness. Specific health conditions were included if the paper had a significant component related to mental health, for example, depression and HIV; depression and Buruli ulcer; pregnancy and mental health. We used Covidence, an online review application, to support the review process. The titles and abstracts of potential articles were screened. Studies that were included from the screening process were reviewed in full-text format by 2 reviewers. If there were questions about inclusion, the study was read in full and discussed between at least two of the authors to reach consensus. The team developed a Data Extraction Template. Data were extracted by one author and then checked by another author, working independently. Variables used during the data extraction process included participant sample size and gender; aim of the study; location of the study; study design; assessment tools used; diagnosis studied, Diagnostic and Statistical Manual (12) or International Classification of Diseases (20) or other; interventions studied; funding sources; and locations of the study. Questions related to data extraction were discussed by the team during weekly meetings. Missing data from the source article was indicated in the extraction chart. We did not contact study authors for missing information. No automated tools were used for screening or data extraction. Due to the nature of this review, we did not examine specific outcomes from interventions. We did not assess the risk of bias. We noted stated conflicts of interest declared by the authors. Because we wanted to be as inclusive as possible, we did not make any assessment of the quality of studies, or exclude studies based on weak study designs or reporting. Meta-analysis and sensitivity analyses were not performed. We did not consider effect measures, as most of the studies were not intervention studies and did not include effect data. Following extraction, we exported (as CSV) the dataset of included studies from Covidence to an Excel workbook where the data was cleaned. When information was missing, we went back to the original article, and if the information was available, we added it to the Excel workbook. Some information was amalgamated and grouped during the analysis. Data was converted to allow for analysis in tables.

We used Excel to tabulate the information and prepare charts. Simple pivot tables were used to synthesize the quantitative results. For each category that had qualitative results, one member of the team did an initial analysis, which was then discussed with other team members. After the preliminary reading of the results, the authors discussed and decided on subgroup analysis. At this phase, included studies were read in full to answer our questions and to categorize them into key themes. We developed tables and charts to categorize the articles and kept track of the answers to the questions we were asking. Examples of the questions are: How was mental illness defined? What were the most prominent kinds of research addressing mental health or illness? and What were the key recommendations arising from the studies? Recognizing that several topics were addressed in each paper, we agreed that one study could be included in more than one theme. Themes were constructed in two ways. First, we identified *a priori* themes (themes we knew we wanted to look for) and secondly, we remained open to what became evident in the review, identifying new themes as they became apparent. To do this analysis, we adapted the analytic processes described by Braun and Clarke (21) and Dixon-Woods et al (17). An initial set of themes was identified by the end of this phase. The third phase of the process was to finalize the themes. Team discussions focused on clarifying the key themes and regrouping information as we compared and refined themes. We wrote detailed descriptions of the findings for each theme and compared and contrasted results from each study. Due to the number of papers and themes, not all themes could be reported in this paper, so part of this process was to narrow the reporting to key themes. As we conducted this review of the available literature and included all studies which met the broad inclusion criteria, we do not believe that there is a high risk of bias due to missing results arising from reporting biases. We did not use any additional methods to assess the certainty of including all possible studies in this body of evidence.

RESULTS

Study selection

The initial searches yielded 394 studies which were entered into Covidence; from these, 105 studies met the inclusion criteria. While most excluded studies were identified during the screening process, 45 studies appeared to meet the inclusion criteria but were excluded when the full text was read. Reasons for exclusion included that the article did not have enough content about mental health or illness, the article was not fully available

in full text, the paper was a conference presentation or a book chapter, the paper was not a research study, or we could not identify Cameroonian participants from participants from other locations.

Study characteristics

The included studies are in a publicly available Zotero library (22). An overview of the included studies is included in Table 2. Two-thirds of the studies were cross-sectional studies and were focused on assessment of individual patients; the other studies used a variety of research designs. One third of the studies were focused on people living with HIV.

Table 2: Overview of the Included Studies (N = 105)

	Nb of studies	%
Total number of studies (N=105)	**105**	100
Case control study	2	2
Cross sectional	71	68
Qualitative research	13	12
Case report	4	4
Cohort Study	3	3
Prevalence Study	2	2
Other - e.g., psychological autopsy; Mixed methods; anthropology/ethnography; case control study; experimental study; cross country analysis	10	9
Assessment tools used		
HADS	2	2
PHQ-9 and other versions	20	19
GAD-7	3	3
CES-D	3	3
SRQ-20 and other versions	2	2
BDI-II and other versions	4	4
OLBI	5	5
SF-12/36 and other versions	3	3
Other (MMSE, CAGE, QIDS, IHDS, CIDI, CADI, EPDS, HSS, COMQoL, Euro-Qol, Stigma index, DAQ, WHOQoL scale, WHOQoL-HIV BREF, HIV stigma scale, PCL-5, Basic Need Satisfaction in Life Scale, questionnaires produced by authors)	59	56
Interventions		
Study included intervention related to mental health or illness	40	38
Intervention not discussed in a significant way	65	62
Gender		
Women	14	13
Men	3	3
Both women and men	85	81
Gender not provided/not relevant	3	3
Children, boys, girls	6	6
Mental health Conditions addressed in the studies		
Study included a formal diagnosis (e.g., depression, anxiety)	55	52
Addressed mental health issues without stating formal diagnosis	50	48
Depression including major depressive disorder	40	38
Articles that included diagnosis (n=53)	*N=55*	
Depression including major depressive disorder	40	73
Anxiety	11	20
Schizophrenia	5	9
Burnout	6	11
Epilepsy	10	18
HIV population	*N=105*	
Study had HIV focus	33	31
Non-HIV focus	72	69
Regions of study All locations were counted; For studies with more than one location, all locations were counted, therefore the total of locations is 156, and the percentages sum to more than 100.	*N=105*	
Adamawa	6	6
Central	45	43
East	8	8
Far North	4	4
Littoral	23	22
North	3	3
North West	34	32
South	8	8
South West	19	18
West	9	9

We did not do an assessment of bias within each study. Very few of the studies focused on, or even mentioned, mental health interventions or outcomes.

Since this is a narrative review, we did not do a synthesis of quantitative results of the included studies. Although it can be useful in reviews to consider all outcomes, through a presentation of a statistical analysis for each study, we did not do a systematic summary of statistics or effect estimates because of the diversity in topics, and the very low number of comparable interventions. In some cases, information was not clear or was missing, and these studies were kept in the review because we wanted to have as comprehensive a list as possible. We did not compare studies for heterogeneity. Sensitivity analyses were not conducted to assess the robustness of the synthesized results, as this analysis was not relevant to our questions.

Naming within the Cameroon Context

We did not identify any article that examined ways of naming mental health and illness in the Cameroon context, or which explored mental health and illness from localized, cultural perspectives. Alupo and colleagues **(23)** explored "psychological well-being" with refugees and internally displaced persons, yet did not define this

concept. One study, by St. Louis and Roberts (24), named general "mental illness" as the topic of their research. This study discussed the differences in attitudes towards people with mental illness and found that attitudes of Cameroon participants were more negative and stigmatizing than those from North America. Forty (38%) articles named "depression" or "depressive symptoms" with some of these using the terminology "Major Depressive Disorder" (MDD) (e.g. 25–28). However, very few of these papers provided definitions or discussion about what "depression" meant (apart from the use of criteria in the selected assessment tool), or provided comparable concepts or language derived from local understandings. Many studies that identified a diagnosis looked at depression alone. Depression was also discussed within the context of HIV/AIDS (25–31), one study also included dementia (32). One article on Parkinson's discussed depression and anxiety (33), one article discussed depression in relation to addictions **(34).** Anxiety only, or anxiety with depression or other diagnoses, was addressed in 11 papers (10%). Only five papers directly addressed schizophrenia, all of which were in French **(34–38).** A small number of studies mentioned schizophrenia or psychosis, such as Cubo et al., **(33)** who included assessment of psychosis in their study of Parkinson's disease, and Animbom Ngong (39), who included participants with "schizoid personality disorder". Negative attitudes about epilepsy were explored by Professor AK Njamnshi and colleagues in several studies. Epilepsy in Cameroon is viewed as a mental health issue, with social and participation restrictions placed on people named "epileptics," which significantly affect well-being and mental health (40). Allotey and Reidpath (40), and Njamnshi and colleagues (41,42,42,43) found that although negative attitudes and misconceptions were still present among students and traditional healers, attitudes towards people with epilepsy were more favourable among these two groups than among the general public. This body of literature indicates that attitudes vary across locations and by other factors, such as professional and population groups. Other diagnostic categories addressed in small numbers of papers were burnout, autism, post-traumatic stress disorder (PTSD,) trauma, attention deficit / hyperactivity disorder (ADHD), chronic mental disorder (CMD), suicide, bipolar disorder, substance-related psychotic disorder, neurocognitive dysfunction, neuropsychological performance, psychosis, schizoid personality disorder, post-partum depression, cognitive deficit, alcohol abuse, and dementia.

Prevalence and Incidence of Mental Health Conditions

Very little was reported on the incidence of mental illnesses or mental health disorders, or on the complexity of adapting tools for use to assess incidence and prevalence in Cameroon. We did not identify any broad study assessing the incidence and prevalence of mental illnesses in the country. Fotso and colleagues briefly discuss mental disorders in their review of disability questions in the Cameroon census, stating, "The prevalence rates of different types of disabilities are also different from one survey to another, with the highest prevalence rates of motor, sensorial and mental disabilities found when using the Demographic Health and Multiple Indicator Cluster Survey instrument" **(44);** however, they do not discuss psychiatric disability or mental health disorders specifically. In their study, mental disability included behavioural, intellectual, and mental disorders, and the surveys compared in the article each had different definitions and prevalence rates for these terms. Just over 50% of the articles addressed a formal diagnosis (e.g. depression, anxiety, schizophrenia). Ntone and colleagues stated that well over half (57.9%) of the 787 university students in their sample had identifiable DSM-IV personality traits, but did not explain precisely how data was collected or expand on factors that might have led to this prevalence (45). Forty studies (38%) included depression, and few provided a discussion of assessing depression in the Cameroon context. The remaining studies either addressed another mental health condition or did not include a formal diagnosis. There was no study which focused solely on the assessment or treatment of anxiety. We did not identify any studies which addressed the incidence or prevalence of schizophrenia in the general population. The prevalence of depression in specific populations, such as people living with HIV, poverty, diabetes, and post-partum women, was a common focus in articles. One study focused on addictions **(34**) and one study on burnout addressed addiction **(46).** Gaynes et. al., found that one in five participants who were HIV positive met lifetime criteria for major depressive disorder (MDD) and 7% had MDD within the prior year **(25);** 3% had MDD within the past month **(27).** In a study of female sex workers across the country, Abelson and colleagues **(47)** found that half lived with some level of depression, and these authors made the case that depression and mental illness need to be understood in the context of broader, complex health disparities.

Of the few studies discussing cognitive impairment, one study reported a prevalence of 20.2% in its sample population (48). Some articles reported on the incidence or prevalence of specific disorders. For example, HIV-associated neurocognitive disorders appeared in two studies (49,50). Cubo and colleagues (33) reported that the prevalence of Parkinson's disease appeared to be on the rise in Cameroon, briefly touching on cognitive changes. Ruffieux and colleagues reported the prevalence of mild or severe cognitive impairment in children and youth with sickle cell disease to be 37.5% of sample population (51). We did not find articles which reported on the incidence or prevalence of dementia generally, Alzheimer's disease, or non-HIV related dementia. Of the six papers which examined burnout in medical personnel, several were from one large study (52–55, 66). This study took place with nurses, medical students, and nursing students in Douala, Bamenda, and Buea. One study, by Mandengue and colleagues (46), examined whether physical activity could mitigate the impacts of burnout; they concluded it did not. High current (e.g., 42% in the study by Mandegue) or potential levels of burnout were identified in all groups. These studies found that few practitioners had heard about burnout and that there is a significant

need for more research into burnout, depression, and substance use.Some articles addressed the links between violence and mental health. For example, Parmer and colleagues reported the lifetime prevalence of sexual violence among Djohong district female heads of households as 35.2% (47,56,57). Abelson and colleagues (47), Cordoba (58) and Parcesepe (59) used different study approaches to examine links between mental health, depression, violence, and other factors among women living in Yaounde. Each study concluded that additional research on the topic of violence and mental health was needed.

Screening and Assessment

Many of the included articles focused on screening and/or assessment of mental health conditions in some way, using a medical or psychiatric perspective. An overview of the tools used is presented in Table 3.

Table 3: Assessments Identified

	Location	Study Participants	Tool Version and Cutoff values	Findings about Dx/Condition and N (%)
PHQ-9 (N=20)				
Abba et al. 2018	Douala	Patients with type 2 diabetes	PHQ-9 cut-off values not reported	PHQ-9 results not reported
Abelson et al. 2019	Yaounde, Douala, Bertoua, Kribi and Bamenda	Female sex workers	PHQ-9: 0-26 Severe: 20-27 Moderately severe: 15-19 Moderate: 10-14 Mild: 5-9 None: 0-4	Depression: 3% severe; 5% moderately severe; 10% moderate; 32% mild, 50% none; Depression: Total of any level, 49.8% Depression significantly associated with inconsistent condom use. 56% of respondents with severe depression reported experiencing sexual violence (p 454).
Asangbeh et al. 2016	Mbengwi	People living with HIV/AIDS on antiretroviral therapy.	PHQ-9 Positive depression > 10	Any Depression: 28.7%. Independent predictors of depression included monthly income less than 20,000 FCFA (US$40), presence of HIV/AIDS symptoms, and CD4 count <200 (p 206) Suicidal ideation reported in 8.6% of depressed patients. All 7 participants who changed their regimen to include Efavirenz screened positive for depression (p 206)
Atashili et al. 2013	Bamenda	Adults 18 – 55 years, receiving treatment at Bamenda Regional Hospital AIDS Treatment Centre	PHQ-9 cutoff values not reported	Depression symptoms alone not reported;only reported in relation to dementia
Filiatreau et al. 2021	Cities not specified - North West; South West; Central	Adults 21 years or more initiating HIV care	PHQ-9 0 - 27 Severe or Moderate: >9	Severe or Moderate Depressive symptoms: 87 (54.0%) None or Mild: 71 (46%) Depressive symptom score (IQR): 10 (4–13)
Gaynes et al. 2015	Bamenda	HIV+ patients	PHQ-9 Severe: 20-27 Moderately severe: 15-19 Moderate: 10-14	Baseline: Severe: 6 (15%); Moderately severe: 11 (27%); Moderate: 24 (59%); Mean score at baseline: 14.4 Mean score at 4-month Intervention: Categories not reported: 1.6 90% of participants achieved remission (PHQ-9 < 5).
Kehbila et al. 2016	Limbe, Kumba	Adults with pulmonary tuberculosis (National Tuberculosis Control Programme guidelines).	PHQ-9 0-27 Moderate depression 15–27 Mild depression 5–14 No depression 0–4	Prevalence of Depressive symptoms: 61% of TB patients Major: 110 (41.5 %) Moderate: 65 (24.5 %) Mild: 97 (36.6 %) None: not reported
Kouotou et al. 2016	Yaounde	Patients diagnosed with acne	PHQ-9 (0-27) Depressive Symptoms: 10-27 No Depression: 0-9	Depressive Symptoms: 11 (6.1%)
L'Akoa et al. 2013	Yaounde	Newly diagnosed HIV patients	PHQ-9 Severe: 20-27 Moderately severe: 15-19 Moderate: 10-14 None: 0-9	Severe Depressive symptoms: 1% Moderately severe: 16% Moderate: 46% None: 37% Some depressive symptoms: 63% of total (p.3)

Table 3: Assessments Identified (ctd)

	Location	Study Participants	Tool Version and Cutoff values	Findings about Dx/Condition and N (%)
Mbanga et al. 2018	Cities not specified North west and South west regions	Nurses working in state-owned and private institutions	PHQ-9 Severe: 20-27 Moderately severe: 15-19 Moderate: 10-14 Mild: 5-9	Severe depression 2 (1.40%) Moderately severe depression 9 (6.29%) Moderate depression 32 (22.38%) Mild depression 46 (32.17%) None 54 (37.76%) Overall depression 89 (62.24%)
Mbanga et al. 2018	Buea, Bamenda, Douala	Medical and nursing university students	PHQ-9	PHQ-9 results not reported in categories PHQ mean score 6.92; range: 0-25
Mbanga et al. 2019	Bamenda, Limbe, Buea, Mutengene, Mbingo	Nurses working in 5 hospitals at all levels of health care.	PHQ-9 Severe: 20-27 Moderately severe: 15-19 Moderate: 10-14 Mild: 5-9	Severe depression: 2 (1.40%) Moderately severe depression: 9 (6.29%) Moderate depression: 32 (22.38%) Mild depression: 46 (32.17%) None: 54 (37.76%) Overall depression: 89 (62.24%)
Ngasa et al. 2017	Buea, Bamenda, Douala, Yaounde	Medical students in 4 medical schools	PHQ-9 Severe: 20-27 Moderately severe: 15-19 Moderate: 10-14 Mild: 5-9	Severe depression 5 (0.80%) Moderately severe depression 21 (3.4%) Moderate depression 163 (26.4%) Mild depression 214 (34.6%) None (34.8%) Overall depression 403/618 (65.2%)
Ngum et al. 2017	Buea, Limbe	HIV/AIDS patients on highly active antiretroviral therapy at the Buea Regional and Limbe Regional Hospital aged 21 years+	PHQ-9 Severe: 20-27 Moderately severe: 15-19 Moderate: 10-14 Mild: 5-9	Prevalence of any depressive symptoms: 80 (26.7%) Severe depression: 0% Moderately severe depression: 2 (0.7%) Moderate depression: 8 (2.7%) Mild depression: 70 (23.3%)
Njim et al. 2019	Douala, Buea, Bamenda, Bangangté, Yaounde	Medical students in selected medical schools	PHQ-9 Not reported	Findings about depression not reported
Parcesepe et al. 2021	Not specified	PLWHIV individuals newly initiating HIV care	PHQ-9 (0-27) Severe/Moderate: > = 10 Mild/No: < 10	Severe or Moderate depressive symptoms: 86 (20.5%) Mild or no symptoms: 334 (79.5%)
Pence et al. 2012	Bamenda	HIV positive adults on ART	PHQ-9 Used cut-offs of >=12, >= 10 and >=8	Major Depressive Disorder Above 10: 3 (0.0075%)
Pence et al. 2014	Bamenda	HIV infected patients at Bamenda Day Hospital AIDS Treatment Center	PHQ-9 Severe: 20-27 Moderate: 10-19 Moderate/Severe: >=10 Mild: 5-9 Absent: 0-4	Baseline: Severe: 13 % Moderate: 87% Median score (interquartile range): 13 (12-16) Week 12:Median score (interquartile range): 2 (0–3) 46 (87%) achieved depression remission (PHQ-9 <5) by 12 weeks
Semrau et al. 2019	All regions in Cameroon-Not specified	people identified as having lower limb lymphoedema (either podoconiosis or lymphoedema of other cause)	PHQ-9 Severe: 20-27 Moderately severe: 15-19 Moderate: 10-14 Mild: 5-9 No depression: 0-4	Severe: 0 (0%) Moderately severe: 1 (1.2%) Moderate: 2 (2.4%) Mild: 29 (34.9%) No depression: 51 (61.4%)
Toguem et al. 2019	Douala	Patients of general practitioners	PHQ-9 Cutoff values not reported	Major Depressive Disorder: 10% Minor Depressive Disorder: 22.5% Total Depression Disorder: 32.5% *Nb of participants not provided*
HADS (N = 2)				
Cubo et al. 2014	Cameroon (Douala and the rest of the country)	Outpatients diagnosed with idiopathic Parkinson's Disease	HADS Cutoff values not reported	Participants from Cameroon (population): HADS depression: 8.9 ± 2.5 HADS anxiety: 9.3 ± 3.5 Participants from Cameroon (Non-treated with dopaminergic drugs): HADS depression: 10.8 ± 2.4 HADS anxiety: 18.2 ± 5.0 *Nbers in each subgroup not known*

Table 3: Assessments Identified (ctd)

	Location	Study Participants	Tool Version and Cutoff values	Findings about Dx/Condition and N (%)
Mboua et al. 2021	All ten regions	Healthcare professionals working in the health structures and the offices of the civil society anywhere in Cameroon	HADS >=8 (anxiety or depression) Severe: 15-21 Moderate: 11-14 Mild: 8-10 None: <=7	Anxiety: 41.8% Severe: 15.3% Moderate: 26.5% None:21.3% Depression: 42.8% Severe: 9.6% Moderate: 33.1% None: 28.6% Anxiety-depression comorbidity: 14.73% Major depressive disorder: 8.2% Adjustment disorder: 3.3% *Numbers of participants in each group not provided*
GAD-7 (N=3)				
Filiatreau et al. 2021	Cities not specified: North-West, South-West and Central regions	Adults 21 years of age or more initiating HIV care at any of the three study sites PLWH with symptoms of mental health and substance use disorder (MSD)	GAD-7 (0-21) Moderate to Severe: > 9	Moderate or severe anxiety symptoms: 52 (32.3%) Anxiety symptom score (Interquartile Range): 7 (3–11)
Kouotou et al. 2016	Yaounde	Patients diagnosed with acne	GAD-7 (0-21) Anxiety: >=10 No anxiety: <10	Anxiety: 14 (7.7%)
Parcesepe et al. 2021	Not specified	People newly initiating HIV care at 3 sites 21 years+	GAD (0-21) Moderate/Severe: >=10 No/Mild: < 10	Moderate/severe symptoms: 51 (12.3%) No/mild symptoms: 363 (87.7%)
CES-D (N=3)				
Peltzer & Pengpid 2015	Yaounde	undergraduate university students 16 to 30 years	Center for Epidemiologic Studies Depression Scale (CES-D) 15 and more: severe depressive symptoms 10 to 14: moderate depressive symptoms 0 to 9: mild depressive symptoms	Severe depressive symptoms: 88 (14%) Moderate depressive symptoms: 179 (28.5%) No symptoms of depression: 360 (57.4%)
Hall et al. 2017	Yaounde	240 individuals with diabetes	CES-D > 16	Depressive Symptoms: 145 (60.5%) no Depressive Symptoms: 95 (39.5)
Hofer et al. 2017	Bamenda	230 Individuals 60 to 93 years	CES-D cut-off not reported	CES-D scores not directly reported Effect of -.02 (S.E.=.01;z=-2.25;p\.05; CI-.03 to-.01): Higher levels of intimacy maintenance predicted enhanced need satisfaction and was associated with lower levels of depressive symptoms
SRQ-20 (N=2)				
Cordoba et al. 2021	Yaounde	Pregnant women living with HIV	SRQ-20 (0-20) Cut-offs: 8+	Probable Common Mental Disorder (CMD): 93 (42.3)%
Parcesepe et al. 2021	Yaounde	Pregnant women living with HIV	SRQ-20 (0-20) Cut-offs: 10+ and 8+	Mean (SD) SRQ-20 score: 6.8 (4.0) Using cut-off 10 and above: Probable common mental disorder: 59 (25.7%) Using cut-off 8 and above: Probable common mental disorder: 97 (42.2%)
BDI (N=4)				
Fonsah et al. 2017	Yaounde	HIV-infected persons from HIV voluntary counseling and testing services	BDI-II 29 -63 severe depression 20 -28 moderate depression 14 -19 mild depression 0 -13 minimal depression	BDI scores not reported Authors state higher levels of depression symptoms among females, but no interaction between gender and Beck depression scores (p.14)
Kanmogne et al. 2010	Yaounde	161 HIV+ individuals	BDI-II cutoffs not provided	HIV- mean scores 14.64 ± 9.48 HIV+ mean scores 13.48 ± 8.88

Table 3: Assessments Identified (ctd)

	Location	Study Participants	Tool Version and Cutoff values	Findings about Dx/Condition and N (%)
Kanmogne et al. 2017	Yaounde	270 adults (169 HIV+ and 101 HIV-)	BDI-II 29 - 63 severe depression 20 -28 moderate depression 14 -19 mild depression 0 -13 minimal depression The BDI- Fast Screen (FS) 13-21 severe depression 9±12 moderate depression; 4±8 indicating mild depression 0±3 indicating minimal depression; ;	BDI-II Total Score Minimal/Mild: HIV+ 112 (66.27%) Controls 81 (80.2%) Moderate/Severe: HIV+ 57 (33.73%) Controls 20 (19.8%) BECK FS Score Minimal/Mild, HIV+ 143 (85.12%) Controls 90 (89.11%) Moderate/Severe, HIV+ 25 (14.88%) Controls 11 (10.89%)
Teuwafeu et al. 2016	Yaounde, Bamenda, Buea	52 Women on maintenance hemodialysis for at least 3 months	BDI (Used 20 questions) "Normal": <15 Depression: >=15	Depression present: 5 (10%) Severe depression: 2 (4%)
OLBI (N=5)				
Mbanga et al. 2018	Cities not specified; North west and South west regions	Nurses working in state-owned and private institutions	OLBI score Parameters: exhaustion and disengagement	Mean total OLBI score: 38.36 ± 5.68 (min = 25, max = 52) Mean score for disengagement: 17.31 ± 3.28 (min = 8, max = 26) Mean score for exhaustion: 21.05 ± 3.46 (min = 13, max = 29) Number of people in each group not provided
Mbanga et al. 2018	Buea, Bamenda, Douala	Medical and nursing university students	OLBI score	Mean total OLBI score: 37.58 ± 5.37 Number in subgroup not provided
Mbanga et al. 2019	Bamenda, Limbe, Buea, Mutengene, Mbingo	Nurses working in private and public hospitals at all levels of health care.	OLBI score (4-64) Parameters: exhaustion and disengagement (details not provided)	Mean total OLBI score: 38.36 (SD = 5.68, min = 25, max = 52) Number of people in each subgroup not provided
Njim et al. 2018	Buea, Bamenda	Nursing students from state-owned and private nursing schools	OLBI score Parameters: exhaustion (intense physical, affective, and cognitive strain) and disengagement (characterized as cynicism referring to distancing from one's work in general)	Average for disengagement: 17.10 ± 3.09 (min = 8, max = 26) Average for exhaustion: 20.94 ± 3.04 (min = 13, max = 31) Number of people in each group not provided
Njim et al. 2019	Douala, Buea, Bamenda, Yaounde, Bangangté	Medical students in selected medical schools	OLBI score Parameters: exhaustion (intense physical, affective, and cognitive strain) and disengagement (characterized as cynicism referring to distancing from one's work in general)	Average for disengagement: 16.64 ± 3.39 (range 9 - 31) Average for exhaustion: 20.49 ± 3.53 (range 11 - 32) Number of people in each group not provided
SF-12/36 (N=3)				
Allotey & Reidpath 2007	Yaounde and unnamed villages	People with epilepsy for at least five years	SF-12	26 (62%) rated their health as 'poor' 38 (90%) rated their health as 'poor' or 'fair'
Boyer et al. 2012	Douala, Yaounde, Other cities not specified	People living with HIV	Medical Outcomes Study Short-Form General Health Survey MOS SF-12 2nd version Two aggregate scores: Physical component summary (PCS) and mental component summary (MCS) —both ranging from 0 to 100 (higher values corresponding to better HRQL)	Sample size: 1985 Physical component summary score (PCS): mean health-related quality of life (HRQL) = 49.1, SD = 9.16, median = 51.34, IQR = 44.39 - 55.89 Mental component summary score (MCS): mean HRQL = 45.1, SD = 9.35, median = 45.27, IQR = 38.55 - 51.28 Mental health (MH): mean HRQL = 63.8, SD = 20.6, median = 62.5, IQR = 50–75
Teuwafeu et al. 2016	Yaounde, Bamenda, Buea	Women aged 18 years and above on maintenance hemodialysis for at least three months	SF-36 cutoff values not reported	Poor Quality of life: 14 (27%) Poor Psychological aspect: 17 (33%) Poor Social aspect: 13 (25%) Poor Somatic aspect: 39 (75%) Poor Environmental aspect: 17 (33%)

The most commonly used assessment was the Patient Health Questionnaire (PHQ-9)(26–29,32,47,53,55,59–70). A few used the World Health Organization's Composite International Diagnostic Instrument (CIDI) (25,27,32) or the Center for Epidemiologic Studies Depression Scale (CES-D)(71–73); two used the Hospital Anxiety & Depression Scale (HADS) **(33,74);** and four used a version of the Beck Depression Inventory (BDI) **(49,75–77).** Very few discussed the cross-cultural validity of using the chosen scale, and no adaptation was described for local contexts using local idioms. Several studies involved the assessment of the "quality of life," "well-being," or "psychosocial burden" of participants. Three used the 12-Medical Outcomes Study Short Form General Health Survey instrument (SF-12) or other versions **(40,77,78),** which assesses both physical and mental health-related quality of life. One study measured quality of life using the Euro-Qol **(33),** while one study measured the "cognitive aspect" of well-being using the Basic Need Satisfaction in Life Scale **(72),** and one study measured psychosocial burden using an adapted survey instrument for caregiver burden in sickle cell disease **(79).** Neurocognitive functioning of participants was included in some studies. Tools used were the International HIV Dementia Scale (IHDS) which consists of three sub-tests **(32,50,80);** the Scales for Outcomes in Parkinson's Disease (SCOPA) that utilized a cognitive subscale **(33),** and the HIV Neurobehavioral Research Center (HNRC) international neuropsychological (NP) Test Battery consisting of 19 sub-tests **(49).** Ruffieux and colleagues developed NP test batteries assembled specifically for their studies, consisting of 14 sub-tests **(81)** and 10 sub-tests **(51).** HIV-positive participants scored significantly lower on NP tests relative to participants without HIV (49,80). For example, 21.1% of HIV-positive participants received lower scores on the IHDS compared to 2.5% of HIV-negative participants **(80).** Atashili and colleagues (32) found that 85% of participants on antiretroviral therapy (ART) screened positive for dementia (<=10 on IHDS) and called for more dementia assessment, for future studies to assess the validity of the IHDS on patients on ART, and for better assessment and evaluation of long-term outcomes in patients that screen positive for dementia **(82).** Participants with Parkinson's Disease in Cameroon were found to be more severely cognitively impaired compared to participants in Spain (33). Ruffieux and colleagues **(81)** found that 37.5% of children with Sickle Cell Disease had mild to severe cognitive deficits.

Social pressures and social exclusion

Cameroon is a country where social ties are important and impact well-being; community responses can promote well-being (e.g. **40,83,84).** In addition to community support, stigma, discrimination, and social exclusion have significantly impacted mental health **(36,85,86).** We identified 27 articles that addressed difficult social pressures, stigma, or social exclusion in some way. However, only one article was specifically about attitudes toward mental health and illness (87). This study compared public attitudes toward mental illness in Cameroon and Canada. The study reported that "Cameroonians had significantly worse overall impressions of persons with mental illness and were more likely to accept supernatural causes of mental illness than Canadians" **(87)** leading to social exclusion and stigma. They also noted that the city-dwelling participants reported fewer supernatural causes than rural Cameroonians, as drawn from a comparison to Njamnshi and colleagues' study of epilepsy **(41).** Links between physical and mental health, social inclusion and exclusion, and the challenges of being different in highly normative social settings were explored in papers either explicitly or indirectly. For example, van der Sijpt's papers (88,89) provided an analysis of the complexity of how women negotiate reproductive health. An overarching point underlined in this work is the "social body," which is the social phenomenon that happens to a woman's body, when it is beyond her direct control **(88).** Recognizing that stigma and discrimination are mental health issues, we noted that in this body of research there was much more research about HIV and stigma than about mental health or mental illness and stigma. HIV-related stigma can contribute to mental health issues **(78,90,91).** Boyer and colleagues **(78)** found that psychosocial support for individuals with HIV can improve health-related outcomes, whilst also posing a beneficial impact on health systems functioning. Njozing (92) reported that 80% of the respondents who refused testing felt that stigma in society created anxiety and despair, and feared what would happen if they tested positive (e.g., physical assault, abandonment). Social attitudes and practices toward people with epilepsy were the focus of several studies. These studies concluded that there were high levels of stigma and discrimination against people with epilepsy and that for many people, traditional beliefs appeared to be related to perceptions of epilepsy as being a form of insanity or caused by witchcraft, often leading to social exclusion **(40–42,93–98).** However, there were also significant variations in different locations and groups. In summary, stigma and social pressures are evidenced as having an impact on mental health and well-being in Cameroon but this intersection has been largely understudied.

Interventions for mental illness or mental distress

One of the aims of our study was to identify recent research on interventions for mental health issues, mental illnesses, and mental distress. However, very little was seen in this body of literature specifically about interventions for mental health issues or mental illnesses. Less than one-third of the studies addressed interventions. The identified interventions primarily focused on pharmaceuticals or some forms of counselling, with a few papers addressing how traditional healers provide psychosocial support.

A few articles specifically addressed pharmaceutical interventions for mental health -related issues. For example, one study included how medication for Parkinson's Disease impacted mental health **(33);** one study discussed medication for epilepsy **(40)** and one included medication for depression and HIV **(28).**

Medications were mentioned briefly in other papers. Studies with a discussion of psychosocial interventions and counselling were mostly focused on counselling related to HIV. Therefore, we separated counselling into two separate topics: 1) General counselling, and 2) HIV counselling. Each of these themes is discussed further below. A small number of papers focused on interventions for specific groups. For example, Animbom Ngong presented the results of a study using therapeutic theatre for persons with significant mental illnesses; in this study, benefits included improvements in self-esteem, communication, and improved interpersonal relationships **(39).**

Counselling

Very few articles discussed general types of counselling. Ntone and colleagues identified the lack of community psychosocial services, especially for people who were living on the streets **(36).** Some articles addressed the need for counselling for women experiencing violence **(47,56)** or information about counselling for specific populations or conditions **(91,99–102).** For example, Mbetbo explored interventions, faith, and the experiences of gay men, finding that general psychotherapy and counselling could assist gay men in adjusting to the extreme conditions they face in the country. He stated that counselling should include acceptance of sexual orientation and of faith-based discussions **(91).** Two adolescents were counselled for recurrent trance crises **(103).** Labhardt found that traditional healers were more client-centered than Western-trained practitioners in counselling approaches with their patients, focusing on psychosocial elements and lifestyle **(104).**

HIV Counselling

Over 15 articles discussed counselling related to HIV (27, 28, 59, 61, 62, 75, 78, 85, 90, 91, 100,105–111). Studies focused on the association between HIV counselling and antiretroviral treatment (ART) adherence, as well as acceptability of counselling. The focus on developing a positive therapeutic relationship between the counsellor and participant appeared to be one of the most important concepts from these studies. For example, one article provided insight into counsellors' perspectives on the impact of the relationship (109). Lack of psychosocial consultation was associated with a higher risk of non-adherence to ART (106). Dissatisfaction with the information provided by healthcare staff during counselling sessions was found to be a component of ART adherence behaviours (30). A lack of psychosocial support from social and community health workers was associated with a decrease in mental health-related quality of life (78). HIV counselling had a high rate of acceptability among intrapartum women in Cameroon (111). Some participants found healthcare staff to be supportive, humanitarian, sympathetic, and knowledgeable. However, other participants felt coerced into getting tested due to their desire to be respectful to the counsellors (110). This study also found that many counsellors viewed their profession as being of service to humanity.

Traditional healers

Many people in Cameroon seek support and treatment from traditional healers (10,83,112) so we were interested in the research examining their contributions across the spectrum of mental health issues. The attitudes and practices of traditional healers toward mental disorders are important to understand since their services are more available than trained mental health professionals. For example, Njamnshi et al (42) note that there was about one traditional healer for every 4650 people in the area of their study and that over 50% of them believed that epilepsy was a form of insanity caused by witchcraft.

Five articles addressed traditional healers and mental health issues in some way, however, only Ngassa's 2003 study did an in-depth overview of the ways in which traditional healers addressed psychiatric conditions (10). Two articles (40,42) were solely about epilepsy and included psychosocial counselling by traditional healers, as one aspect of how people received treatment; the other three were Carson et al (83), which reported on the use of traditional medicines for well-being; Labhardt (104) which addressed traditional healers broadly; and, Njozing et al (109) which included traditional healers in psychosocial treatment options for people living with HIV.

These results indicate that minimal research has been done recently on the work of traditional healers, particularly from a mental health or mental illness perspective. None of the articles we identified explored the interventions used by traditional healers to treat mental disorders. Labhardt and colleagues (104), not focused on mental health issues, found that traditional healers may have a stronger emotional connection and a more client-centred approach than modern medicine practitioners.

Traditional healers can collaborate with medical practitioners, social workers, and others who are providing mental health services, and these relationships may present opportunities for reaching more people who are experiencing mental disorders. Njozing reported one example of how collaboration between traditional healers and medical practitioners facilitated counselling and assisted patients with HIV in dealing with mental health concerns (109). Collaboration was also supported by the findings of the Batibo epilepsy study (42), finding that many traditional healers were willing to refer patients to the hospital when they perceived that was the best option and providing evidence that collaboration between modern and traditional health systems is possible. In summary, despite the pervasiveness of traditional healing, very few recent studies explore the connections between traditional practitioners and mental health.

Mental health and psychiatric systems

As we began this review, this category was to include papers on mental health services in healthcare systems or other systems (e.g., social and community services, education) or that described psychiatric systems. Studies were localized and rarely referenced broader mental health systems. None of the English or French articles that

were included focused solely on the country's mental health or psychiatric system. Articles published recently appear to make more mention of the need for a national mental health policy and improved services at all levels, which are more integrated with other health services (for example, (67,76,113,114).

The studies that did address mental health systems in some way were related to specific groups, such as epilepsy (40,93), suicide (115), tuberculosis (63), professional burnout (e.g., (46,52–55), and community development and security (57,105).

Four publications (from 2 studies) were about HIV health systems, not specifically mental health systems (78,106,109,110). These studies make substantive contributions to discussions about the need for mental health services and a coordinated mental health system.

We identified five studies focused on information about children and adolescent mental health conditions (51,81,103,116,117) but none about children's mental health systems or services in general.

Despite the national strategic plan for mental health (118), this review illustrates an apparent lack of trained mental health workers and considerable strain on those providing mental health services. Mbanga and colleagues made the following statements, about the heavy impact of burnout: "mental health is highly neglected in Cameroon … Consequently, mental health professionals and mental health institutions are far and wide apart, making it difficult for affected individuals to seek the professional help they need. This highlights the increasing need for the development and deployment of mental health institutions and professionals respectively around the country, in an effort to pay more attention to the mental health of Cameroonians in general, and high-risk individuals such as nurses in particular." (53).

Kuegoung et al. (115) aimed to assess the capacity of health services at the district level to deliver quality mental health care in the Guidiguis Health District, Far North Region, as an example of how mental health services were provided within broader primary healthcare (PHC). They stated: "The Mental Health and Human Behaviour Programme is one of 28 vertical programmes designed in Cameroon's 2001–2010 Health Sector Strategic Plan. This programme aims to provide mental health services to 80% of health districts in Cameroon and prevent 10% of behavioural problems in communities (MINSANTE 2002)." (115). However, at the time of their study (2010), there were "no specific medications or guidelines for the management of mental health disorders within PHC facilities" (115). Doctors had minimal mental health training and had not been supervised regarding mental health care in practice. The authors reported that people with mental illness were referred to the specialised psychiatric hospital in Yaounde, more than 900 km away, with no feedback or follow-up to medical doctors in Guidiguis. The authors called for the integration of mental health services into front-line PHC following international guidelines, and with traditional and spiritual healers (115).

Other healthcare providers, such as nurses and community health workers, can provide psychosocial and mental health interventions if trained and supported. Adequate training of nurses on mental health disorders and suicidality is needed (115). Boyer et al. (106) reported that some psychosocial support was available for study participants through HIV services, yet identified that there was a significant lack of psychosocial services from health workers such as social workers and community health workers with specialized training and they did not have the skills and attitudes to provide these services. Njozing (109) identified a similar situation: chronic understaffing impacted the mental health of both patients and staff. The authors identified extremely difficult working conditions and called for better training of counsellors, while protecting individual rights, attending to the impacts of various conditions on the health system, and development of adequate quality control measures (109).

Understanding the link between support groups, poverty, and mental distress is critical. In Cameroon, social determinants of health, such as poverty, social exclusion, and discrimination can have significant negative impacts on mental health. A few studies provided evidence for the value of systematically providing support groups to promote mental health and ameliorate poverty (78,91,106,109). Njozing stated: "A more sustainable intervention to tackle poverty and address the psychosocial needs of these patients was to refer them to HIV support groups … where they received peer support and counselling, and most especially empowering them economically with subsidies to engage in income-generating activities" (109).

DISCUSSION

This review examined published mental health research in Cameroon from 2005 to 2021. To our knowledge, this is the first systematic, published review of research related to mental health in Cameroon. Although limited to published literature, it provides an overview of how mental health issues have been named and assessed, and indicates that there is a significant lack of research on mental health interventions in the country. There is a relatively small but growing number of research articles addressing mental health and mental illness in Cameroon. The topic of social stigma and exclusion was common in these studies, indicating that people with mental health conditions continue to be marginalized; this marginalization appears to be reflected in health research communities where few researchers choose mental health topics. Our results are supported by other reviews which indicate that mental health and psychiatry are not well represented in the corpus of published health research in Cameroon (18,119,120).

Naming mental health and illness

The ways in which mental health is talked about are necessary to consider. Local understandings should be included **(121).** Cameroon has a vibrant and diverse

cultural history related to localized mental health concepts (see for example, 10). Although we did not identify recent studies that comprehensively explored the naming and understanding of "mental health" and "mental illness" in the Cameroon context, there are other works that do explore this field. Ngassa **(10)** published a book based on research with traditional healers, and their mental health practices. Makuchi, in *Your Madness, Not Mine*, **(122)** and Torrey Peters in *The Bamenda Syndrome* **(123)** are examples of fiction that enlighten readers on concepts of mental illness.

In a review about idioms of distress, including cultural concepts of distress, Cork and colleagues **(124)** identified no studies from Cameroon. They suggested that intervention outcomes are better when attention to local naming is included, compared to standard interventions, and advocated for the integration of idioms in all aspects of mental health, including assessment measures and interventions, to improve understanding of suffering, improve communication and treatment outcomes, and reduce stigma **(124).** Similar to the findings in our review, Cork et al found that many researchers did not engage in forward and backward linguistic translation procedures (124). Allocating more resources for translation, along with cultural interpretations and understanding, would probably lead to more robust findings in future research in Cameroon since it is a linguistically and culturally diverse country.

Mental health outcomes

The results of this review indicate that there is a lack of research on outcomes of mental health services. The percentage of mental health research output in total research output within the country is approximately 1.37% and has been decreasing over the years **(120).** Although some mental health outcomes like suicide rates are reported to be improving **(120),** this review did not uncover data to support these claims.

Some studies showed that HIV patients, Sickle Cell Disease patients, and other groups present a high prevalence of cognitive deficits. Neuropsychological assessment enables the detection of cognitive deficits that would otherwise not have been noticed. Early detection provides a setting for possible cognitive rehabilitation and/or school-based interventions. Therefore, there is a need for usable, culturally relevant, and more complex assessments of, and interventions for, cognition appropriate to the Cameroon context. Neuropsychology appears to have potential as a valuable tool in sub-Saharan Africa **(51).**

Mental Health services and systems

Mental health policy is "an organized set of values, principles, objectives and areas for action to improve the mental health of a population" **(125)** and guides mental health systems and services. The World Health Organization recommends that mental health services be integrated into health systems, not be standalone services (126). In Cameroon, mental health is included in primary care **(127)** and policy and planning statements related to mental health service have been released, for example in 2016 (118) and 2022 **(128).** In 2016, the government reported that there was no reliable mental health information system **(118).** Our review did not identify studies focused on mental health systems or mental health policy. Most of the ones that did mention mental health systems or services did so briefly. However, in 2022, Toguem and colleagues published an insightful situational analysis of the mental health system in the West Region **(129).** Building on the national changes, they found that six districts out of 20 in this region were offering mental health services and a new program for psychiatric nursing had been initiated. They identified that hospital-based mental health indicators were reported every three months to the Ministry of Public Health, however they did not identify any recent mental health related study or any published mental health report by the regional delegation or the government about mental health in the region **(129).** Experts consulted for this review stated that often localized or national mental health research and programs are not published, making them inaccessible to build on. Examples include university faculty members who are not incentivized to publish their work, non-governmental organizations who do not publish in peer-reviewed journals, and graduate students who are not supported to submit for publication. It could be useful to identify how such research is being used, what the barriers are to publishing, and to develop supportive strategies to encourage and facilitate publication of these studies. We heard anecdotal reports of research networks and mental health training in various parts of the country **(130),** which need to be studied. For example, Buba reported that research on mental health had been done in Bamenda **(131).** Combining this work – the available studies, the information that is being collected but not published, and recent national policies –could lead to better directions for further policy development and implementation to ensure that services continue to grow regionally and nationally. The WHO World Mental Health Report 2022 **(5)** identified three paths for transformation: deepen the value and commitment given to mental health, reshape environments, and strengthen mental health care. The development of mental health services in Cameroon and future research could use these paths as a framework for planning and implementation to continue to build the knowledge base for mental health systems in the country.

Implications for practice

There is limited knowledge of mental health practice and even fewer trained mental health specialists **(93,120).** With an approximate 1% of government's health expenditure being directed towards mental health (120), there have been very limited resources available to address mental illnesses and support mental health systems. According to the 2020 Mental Health Atlas, in Cameroon, there were 12 psychiatrists (0.05 per 100,000 population) and 150 mental health nurses (0.58 per 100,000 population) in the whole country **(120).** There is clearly a need to train staff in psychiatric and mental health practices including the use of appropriate assessment tools, interpretation of findings, and

treatments, with integration into traditional and culturally accepted practices.

There is a need for public education on mental health and illnesses. Extensive efforts to diminish mental health stigma faced by the public and family members were called for by many of the authors of the studies in this review. For example, Ntone et al. (36) support mental health promotion in communities to decrease stigma and promote psychosocial rehabilitation.

Assessment tools should be specific to the population that the providers are working with. Health care providers, including mental health providers, should be aware of the different versions of tools that are available so that they can select and use the ones most appropriate to their setting. There is a need to have assessment tools formally translated to local languages using forward and backward translation as recommended in the WHO Translation Package **(132),** and to include local idioms.

This review identified few substantial studies examining interventions for mental health conditions, or the impacts of interventions. Although promising, reported interventions tended to be for specific groups and with small sample sizes. For example, Gaynes et al. (26) reported that better depression care improved HIV outcomes, but we found little follow-up research to evaluate depression care. Animbom found that an innovative theatre-based program engaged participants and had the potential to improve outcomes (39) with no published follow-up studies. This lack of intervention research is similar to other African countries; Mabrouk and colleagues **(133)** in a systematic review related to mental health only identified 62 intervention studies for youth with mental health conditions; none were from Cameroon.

Implications for research

There are several implications for future research. The three-phase methodological approach used in this review can be used as a model for researchers continuing to synthesize bodies of literature in a narrative format. There appears to be a strong need for research about Indigenous understandings of mental health; turning to historical and arts-based research could assist with this work. Few of the articles in this review examined or evaluated interventions and outcomes, indicating the potential for more work to be done about interventions that would be most efficacious and acceptable for different groups within the country.

There is a need for Cameroonian participatory and user-led research for a more robust understanding of experiences related to mental health. This review did not identify any studies which would fall into the category of participatory user-led research by persons with mental health conditions. Recognizing that there are barriers to full participation in research, including the dominance of the biomedical model, stigma, and many systemic barriers, and that users have a range of intersecting vulnerabilities, it will take time for these studies to be developed and carried out. However, as Flores and colleagues state: “Participatory research and Global South leadership must foreground local epistemologies that can contribute to the global debate about participation and mental health research” (p.1).

There is an apparent scarcity of literature on the mental health impacts of political conflicts. The Boko Haram situation began to worsen in 2015 in the northern regions and continues to be an active conflict area **(134)** yet the mental health impacts are not well researched. There does appear to be a recent, growing body of literature about the traumatic effects of what is known as the Anglophone Conflict **(135–137).** This conflict is clearly having devastating impacts on the population’s mental health as emerging studies such as Kibuh and Fokum (138), Wolter (139), and Elvis, Ngenge, and Funteh **(140)** have demonstrated. While it is extremely difficult to conduct research and collect information about mental health in situations of conflict, these studies show that it is possible and necessary work.

Limitations

Although we attempted to identify all studies that met the inclusion criteria, it is possible that some articles were missed. The small number of articles we identified that were published in French might not be reflective of the body of work that has been done in French. Some articles might be published in journals that are not indexed in widely used databases, and others might have used other keywords. Given the lack of published literature, future reviews could benefit from the inclusion of grey literature, such as organizational reports and magazine articles. In addition, due to the number of articles and the wide range of topics covered, we were not able to discuss all the papers in detail in the current paper, and some key points might have been missed. Each topic we identified (and several others) would be worth exploring in more depth.

CONCLUSION

This study provided a narrative review focused on how mental health and mental illness have been addressed in published research in Cameroon during the period 2005–2021, using 105 research articles. Themes and subthemes were identified in the review, including how mental health issues are named, assessed, and treated. Areas for further research were identified. There appears to be particular gaps about interventions and the mental health system of the country. As more training, programming, and research is undertaken, research on the broad picture is fundamental and needs to be championed. We hope this review will provide useful information for students, practitioners, researchers, and other decision-makers as they continue building mental health services in Cameroon.

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Other Information

This review was not registered. A full protocol for this study was not prepared. This review was started in 2013 and was not published at that time. It was updated in 2022 as part of the preparation of this version.

The template for the data collection was created using Covidence; the data extracted, and the analysis are in Excel files held by the authors.

Author Contribution statement

SPF: Formal analysis, Resources, Data Curation, Writing - Original Draft, Writing - Review & Editing, Visualization.
LC: Conceptualization, Methodology, Formal analysis, Resources, Data Curation, Writing - Original Draft, Writing - Review & Editing, Visualization, Supervision, Project administration.
LW: Conceptualization; Methodology, Formal analysis, Data Curation, Writing - Original Draft, Writing - Review & Editing.

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Conflict of Interest statement

The authors declare that they do not have any conflicts of interest.

Data Availability statement

Articles cited are included in a Zotero library which is publicly available. Details about the data extraction process are available on request from the authors.

Appendix 1

Search Terms adapted for the databases searched: psychiatry, mental health; depression; anxiety; AND Cameroon OR Cameroun; for example, Cameroon AND health, Cameroon AND "mental health"; Cameroon AND disab*; Cameroun AND sante; Cameroon AND wellbeing; Cameroun AND disab*; Cameroun AND handicap*

Databases: Google Scholar; PubMed; MedLine, EBSCO, OVID

Interface – EBSCO host Research Databases **Search Screen** - Advanced Search

EBSCO Databases - Africa-Wide Information;AgeLine;Alternative Press Index;Alternative Press Index Archive;America: History & Life;Anthropology Plus;Applied Science & Business Periodicals Retrospective: 1913-1983 (H.W. Wilson);Applied Science & Technology Index Retrospective: 1913-1983 (H.W. Wilson);Art Full Text (H.W. Wilson);Atla Historical Monographs Collection: Series 1;Atla Religion Database with AtlaSerials;Bibliography of Asian Studies;Bibliography of Indigenous Peoples in North America;Book Review Digest Retrospective: 1903-1982 (H.W. Wilson);Business Source Premier;Canadian Literary Centre;Child Development & Adolescent Studies;CINAHL Plus with Full Text;Criminal Justice Abstracts with Full Text;Ebony Magazine Archive;eBook Collection (EBSCOhost);EconLit;Education Index Retrospective: 1929-1983 (H.W. Wilson);Education Source;European Views of the Americas: 1493 to 1750; Film & Television Literature Index;Gender Studies Database;GreenFILE;Historical Abstracts;History of Science, Technology & Medicine;Humanities & Social Sciences Index Retrospective: 1907-1984 (H.W. Wilson);Humanities International Index;Index to Legal Periodicals Retrospective: 1908-1981 (H.W. Wilson);Left Index;LGBTQ+ Source;Library Literature & Information Science Full Text (H.W. Wilson);Library Literature & Information Science Retrospective: 1905-1983 (H.W. Wilson);Library, Information Science & Technology Abstracts;MLA Directory of Periodicals;MLA International Bibliography;Music Index;New Testament Abstracts;Old Testament Abstracts;Readers' Guide Retrospective: 1890-1982 (H.W. Wilson);Regional Business News;RILM Abstracts of Music Literature;RIPM – With Full Text;SPORTDiscus

OVID Interface: Embase Classic+Embase, APA PsycInfo, Ovid Healthstar, AMED (Allied and Complementary Medicine) JBI EBP Database, International Pharmaceutical Abstracts, Health and Psychosocial Instruments, Mental Measurements Yearbook, Journals@Ovid Full Text , Books@Ovid, CAB Abstracts, NASW Clinical Register, Social Work Abstracts, International Index to Film Periodicals, International Index to TV Periodicals, Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations

Searched title and abstracts; filters used when needed such as: Human Species

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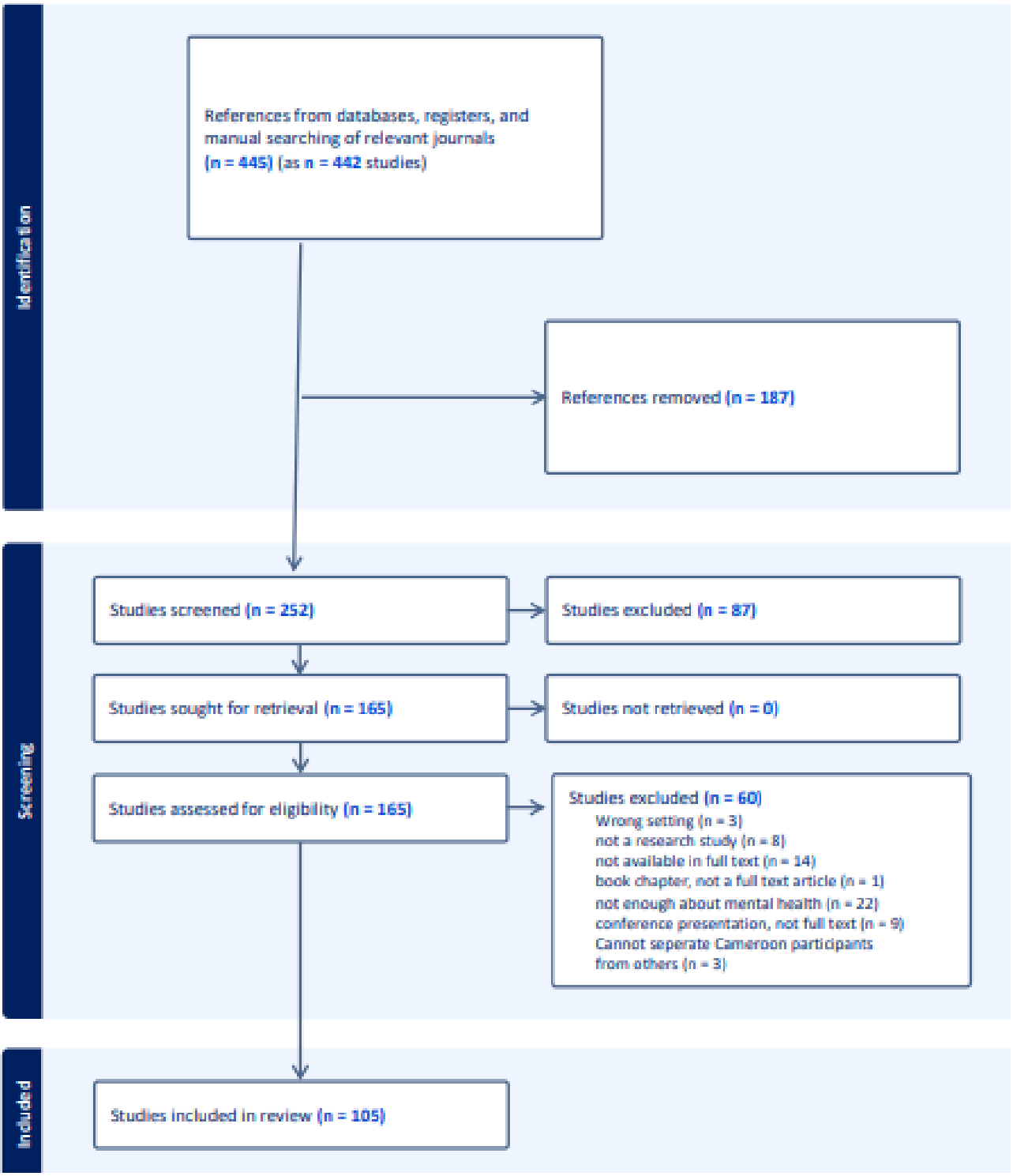

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