




Functioning problems linked to top disability-causing conditions in Nigeria: A scoping review



Authors:

Rentia A. Maart¹ 
 Maria Y. Charumbira¹ 
 Quinette A. Louw¹ 

Affiliations:

¹Department of Rehabilitation and Health Sciences, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa

Corresponding author:

Rentia Maart,
 14572044@sun.ac.za

Dates:

Received: 12 Mar. 2024
 Accepted: 13 June 2024
 Published: 25 July 2024

How to cite this article:

Maart, R.A., Charumbira, M.Y. & Louw, Q.A., 2024, 'Functioning problems linked to top disability-causing conditions in Nigeria: A scoping review', *Rehabilitation and Developing Health Systems* 1(1), a6. <https://doi.org/10.4102/radhs.v1i1.6>

Copyright:

© 2024. The Authors.
 Licensee: AOSIS. This work is licensed under the Creative Commons Attribution License.

Background: The need for rehabilitation in Nigeria is expected to increase because of the concerning rise in the prevalence of non-communicable diseases (NCDs). Rehabilitation aims to enhance or restore function in individuals with health conditions. Identifying context- and country-specific functioning problems may assist with strengthening rehabilitation in health systems.

Aim: This scoping review aimed to provide data from peer-reviewed journals on the functioning problems experienced by adults as a result of conditions contributing to the highest associated years lived with disability (YLD).

Setting: This review focused on Nigeria.

Methods: Peer-reviewed articles published between January 2006 and January 2024 were searched across five databases. Using the *Rehab4All* application, data on functioning problems presenting in 11 conditions contributing to the highest associated YLD in Nigeria were extracted from 131 eligible articles. Functioning problems were deductively coded according to the International Classification of Functioning, Disability and Health (ICF) framework.

Results: Eighty-eight functioning problems were identified. The most prevalent functioning problem was loss of sexual interest, while the most reported problems were related to mental and pain and sensory functions according to the ICF domains. Some functioning problems spanned several ICF domains and categories.

Conclusion: The identification of these functioning problems can guide priority areas in terms of clinical, policy and funding decisions. A multi-faceted approach is needed to address the complexities of certain healthcare conditions.

Contribution: A comprehensive description of functioning problems resulting from conditions contributing to the highest associated YLD in Nigeria, using the *Rehab4All* application, can assist in strengthening rehabilitation within the healthcare system of Nigeria.

Keywords: rehabilitation; Nigeria; public healthcare; health systems; International Classification of Functioning, Disability and Health; ICF; low- and middle-income countries; LMICs; functioning.

Introduction

The ultimate goal of rehabilitation is to enhance or restore function in individuals with health conditions (Cieza et al. 2020). Functioning has been recognised by the World Health Organization (WHO) as the third health indicator in addition to mortality and morbidity (Stucki & Bickenbach 2017). Health indicators are used to monitor the performance of health systems in terms of population outcomes (Stucki & Bickenbach 2017). While mortality and morbidity are indicators of the lifespan and survival of conditions and the distribution of health conditions within a population, functioning not only indicates the health state and clinical outcomes of interventions but also serves as a measure to assess the impact of the health system on an individual's lived experience of health (Stucki & Bickenbach 2017). Functioning is therefore an important indicator to address the personalised needs of individuals and communities.

The rise in the prevalence of non-communicable diseases (NCDs), advances in medical technology and an ageing population have resulted in more people experiencing disability or functioning decline globally (Cieza et al. 2020). Furthermore, communicable diseases, for example, human immunodeficiency virus and/or acquired immunodeficiency syndrome (HIV and/or AIDS), malaria,

Note: Additional supporting information may be found in the online version of this article as Online Appendix 1–4.

Read online:



Scan this QR code with your smart phone or mobile device to read online.

cholera and Ebola, to mention a few, significantly contribute to the mortality rate in Africa (Boutayeb 2010). Subsequently, with more people suffering from a decline in function, the already unmet need for rehabilitation is rapidly increasing as well. Rehabilitation services in Africa have been reported to be inaccessible and inequitable because of inadequate resources and expertise (Geberemichael et al. 2019). Hence, the importance of the global call to action by the WHO to strengthen rehabilitation in health systems to provide quality, affordable care to those who need it, ensuring improved health outcomes and contributing to economic and societal benefits (WHO 2019). The emphasis is especially on low- and middle-income countries (LMICs) where resources are limited, and the population needs are high (Geberemichael et al. 2019; WHO 2019).

Nigeria is the most populous country in Africa and is estimated to become the world's third-most populous country in the world by the year 2100 after China and India (Abubakar et al. 2022). Although the country's population is relatively young, the reported health outcomes of Nigeria are below par considering the country's poor progress towards achieving the health-related Sustainable Development Goals (SDGs) (Abubakar et al. 2022). An analysis of Nigeria's population health outcomes based on the Global Burden of Disease (GBD) study (the world's largest research programme that assesses mortality and disability from major diseases, injuries and risk factors) showed an increase in life expectancy, a decrease in mortality across all age groups and an increase in health expenditure largely because of excessive out-of-pocket payments for healthcare (Angell et al. 2022). However, there is a concerning rise in the prevalence of NCDs in Nigeria (Angell et al. 2022) which will subsequently increase the disease burden and influence the need for rehabilitation in the country.

Health systems strengthening and prioritisation of rehabilitation services are needed to address the increasing need for rehabilitation. However, this will require evidence from empirical data to persuade stakeholders such as policy-makers, funders and governments to buy into the added value of rehabilitation services. There is a lack of data on disability and rehabilitation services, especially in LMICs, in the literature (Geberemichael et al. 2019; Louw et al. 2023) and more so in primary healthcare (PHC) settings (WHO 2018). Collecting, disseminating and analysing data on disability and rehabilitation services can facilitate political decision-making, aid in equitable resource allocation and distribution as well as enhance governance and collaboration within and between sectors (Geberemichael et al. 2019). Providing data on functioning in specific contexts can drive the political motivation to prioritise rehabilitation in health systems (Cieza et al. 2020).

Several factors such as, but not limited to, the physical, political and economic environment; genetics; social support; income; social status as well as access and use of health services impact an individual's health status (WHO 2024). Therefore, it can be accepted that the health profiles of populations may differ worldwide, between and within countries because of these factors. This is evident from, for example, the GBD studies that are regularly conducted. In resource-limited LMICs such as

Nigeria, the health outcomes of individuals are often poor because of the higher burden of disease and prioritisation of limited resources across different levels of care (Louw et al. 2023). This may result in a unique profile of functioning problems for different conditions in different settings. For example, HIV and/or AIDS may result in different functioning problems such as pain, mobility and mental health-related problems (Kietrys et al. 2019). However, in countries or settings where adequate and appropriate care is available and accessed, these problems may be limited or reduced compared to a low-resource setting where access to medication, education on HIV and/or AIDS and proper care is limited because of various socio-economic and environmental factors. It is therefore important that functioning problems that are context- and country-specific are identified (and recorded) to assist with strengthening the case of prioritising rehabilitation in health systems, especially in LMICs. The International Classification of Functioning, Disability and Health (ICF) is the WHO's conceptual framework for health and disability (WHO 2001). It is a versatile tool that measures and describes functioning in relation to environmental and personal factors, but most of all it provides a 'standard language and framework for the description of health and health-related states' (WHO 2001). Therefore, regardless of the context of the health profile, the description of the functioning problems will be understood by every stakeholder who understands the ICF.

Using the ICF can facilitate the collection of aggregated data and especially provide contextual factors such as environmental barriers or facilitators that impact an individual's functioning capacity. Such information can play a crucial role in a country's decision-making processes regarding the development, implementation and monitoring of disability and rehabilitation services (Maart & Sykes 2022). This study therefore aims to provide data from peer-reviewed literature on the functioning problems experienced by Nigerian adults because of conditions contributing to the highest associated years lived with disability (YLD) in Nigeria.

Methodology

A scoping review was conducted to summarise and disseminate the evidence from peer-reviewed journals of functioning problems that result from the priority conditions that contribute to the highest associated YLD in Nigerian adults (Arksey & O'Malley 2005; Peters et al. 2020). The scoping review framework described by Arksey and O'Malley (2005) in conjunction with the updated guidance for conducting a scoping review presented by Peters et al. (2020), was used to report the scoping review in a transparent and organised manner. No scoping review protocol was published for this study; however, the protocol of a similar review (Charumbira, Berner & Louw 2022b) was followed in this study. The steps followed in conducting the scoping review are explained next.

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) were used to facilitate the transparent reporting of the review

(Tricco et al. 2018) (Online Appendix 1). The ICF framework was used to guide the interpretation and analyses of the results. The functioning problems were mapped to the ICF, which provides a standardised framework for reporting impairments of body function and structure, activity limitations and participation restrictions (WHO 2001). The health and health-related domains of the ICF are described in terms of (1) body function and body structure as well as (2) activity and participation. The authors did not consider environmental factors, as they wanted to first ascertain what the most common functioning problems resulting from the top conditions contributing to YLD in Nigeria were. Furthermore, environmental factors would require a more in-depth interpretation of functioning in different contexts, which was beyond the objectives of this scoping review.

The research questions for the review were as follows: (1) *What conditions are the highest contributors to associated YLD in Nigeria for which rehabilitation is a key intervention?* (2) *What is the spectrum of functioning problems that have been reported among Nigerian adults with the conditions contributing to the highest associated YLD in Nigeria?* (3) *What are the most common ICF domains and categories affected by the most prevalent functioning problems among adults in Nigeria?*

The eligibility of the research questions was informed by the PCC (population, concept, context) mnemonic namely, adults 18 years and older (population) living in Nigeria (context) who present with functioning problems amenable to rehabilitation as a result of the listed conditions contributing to the highest associated YLD in Nigeria (concept) (Peters et al. 2020).

Top 10 conditions in Nigeria amenable to rehabilitation, plus HIV and/or AIDS, according to Global Burden of Disease estimates

The authors followed a step-by-step process for the selection of conditions.

Firstly, the authors used the GBD compare tool to establish the conditions contributing most to the highest number of associated YLD in Nigeria by applying the following filters: the measure of *YLD* (the indicator for which the estimates are produced); *number* (the unit by which the measure is expressed); *all causes* (the cause pertains to a single or aggregation of disease or injury that cause death or disability); in Nigeria (location); for all ages and both sexes for the most recent period, namely 2019. The results from the GBD compare tool of the conditions contributing to YLD in Nigeria were exported into a Microsoft Excel spreadsheet and filters were applied to rank the conditions from highest to lowest in terms of numbers instead of rate or percentage.

Secondly, the authors used the results from the study conducted by Cieza et al. (2020) who determined global estimates of the need for rehabilitation based on the GBD 2019 study, to determine which of these conditions (ranked from highest to lowest) are amenable to rehabilitation. The authors excluded conditions such as anaemia, for which rehabilitation is not necessarily indicated as a primary intervention (Cieza et al. 2020). Table 1 presents the top 10 conditions contributing to the highest number of associated YLD in Nigeria for which rehabilitation is a key intervention plus HIV and/or AIDS, because of its high prevalence in

TABLE 1: Top conditions contributing to the highest number of associated years lived with disability in Nigeria.

Disease	Value/number (highest to lowest)	References	Number of articles
LBP, mechanical	1 273 516.0	Gureje et al. 2007; Mbada et al. 2019; Nottidge et al. 2020; Obanife et al. 2021; Odole and Olugbenga-Alfred 2018; Olatubi et al. 2022	6
Age-related hearing loss	861 746.1	Obasikene et al. 2012; Sogebi, Olusoga-Peters and Oluwapelumi 2013; Wouters et al. 2020	3
Blindness and vision loss	443 939.6	Onuigbo et al. 2018	1
Road injuries	261 605.0	Kawu 2010, 2012	2
HIV and/or AIDS	260 144.1	Abdullahi and Adeiza 2020; Abiodun, Lawal and Omokanye 2018; Abiodun et al. 2019, 2022; Ade-Ojo, Dada and Adeyanju 2022; Adedeji et al. 2023; Adeiza and Habib 2019; Adejumo et al. 2016; Adekanmbi, Nwanji and Oladele 2022; Adeoti et al. 2019; Adewole, Olagundoye and Ajumobi 2021; Adewuya et al. 2007, 2008; Adio and Fiebai 2010; Agaba et al. 2017; Akinboro, Onayemi and Mejiuni 2014; Babalola, Oluleye and Ashaye 2022; Bharti et al. 2021; Chikezie et al. 2012, 2013; Ebrim and Otokwala 2013; Egbe et al. 2017; Ejikeme et al. 2023; Emina and Odjimogho 2010; Emorinken et al. 2021; Farley et al. 2010; Fink et al. 2019; Jumare et al. 2018, 2020; Kolawole Wasiu and Alakija Kazeem 2010; Njoku et al. 2021; Nweke et al. 2022; Obimakinde, Achenbach and Ogunniyi 2021; Odafe et al. 2012; Ogba, Abia-Bassey and Epoke 2013; Okwara, Ozoh and Nwatu 2015; Oladeji et al. 2017; Olagunju et al. 2012a, 2012b; Olisah, Baiyewu and Sheikh 2010, 2011; Olley et al. 2017; Onyedum et al. 2010; Osahon and Onunu 2007; Oyedokun et al. 2014; Oyedun and Oluwatoyin 2023; Royal et al. 2016; Seb-Akahomen, Lawani and James 2018, 2019; Sunmonu et al. 2015; Yakasai et al. 2015; Yusuf et al. 2017	52
Schizophrenia	226 741.1	Aguocha et al. 2015; Akinsulore et al. 2014; Esan and Ephraim-Oluwanuga 2021, 2022; Esan and Esan 2018; Esan and Fawole 2013; Fakorede, Ogunwale and Akinhanmi 2020; Ogunnubi et al. 2022	8
Neck pain	205 478.4	-	0
OA	198 149.5	Akinpelu et al. 2009; Akintayo et al. 2019; Akpabio et al. 2021; Ayeni et al. 2019; Chimbo et al. 2021; Ekediegwu et al. 2022; Odole et al. 2015; Yerima and Adelowo 2017	8
COPD	192 660.5	Akor, Adeniyi and Erhabor 2020; Desalu et al. 2014; Obaseki et al. 2016; Ojuawo et al. 2019	4
Stroke	191 149.2	Abubakar and Jamoh 2017; Aderibigbe et al. 2020; Aghukwa and Aghukwa 2011; Ajiboye et al. 2013; Akinpelu et al. 2013; Akinyemi et al. 2014, 2015; Akosile et al. 2011, 2016; Baba and Yarube 2021; Bashir et al. 2017; Ezema et al. 2018; Ezeugwu et al. 2013; Fatoye et al. 2009; Ibeneme et al. 2017; Imarhiagbe 2014; Imarhiagbe and Abidakun 2018; Iwuozo et al. 2023; Kossi et al. 2021; Obembe et al. 2013, 2014a; 2014b; Ojagbemi, Akinyemi and Baiyewu 2014; Ojagbemi, Bello and Flugbadebo 2019; Ojagbemi et al. 2013, 2017a, 2017b, 2020a, 2020b, 2020c, 2021a, 2021b; Ojagbemi and Owolabi 2013; Oladiji et al. 2009; Olaoye, Soeker and Anthea 2021; Olibamoyo et al. 2019; Olubor, Uhumwangho and Omoti 2016; Oni et al. 2018; Oyewole et al. 2016, 2017; Peters et al. 2012; Vincent-Onabajo and Blasu 2016; Vincent-Onabajo et al. 2014, 2016, 2018	45
ASD	129 491.9	Akabogu et al. 2020	1
Total no. of articles	-	-	130

OA, osteoarthritis; LBP, lower back pain; COPD, chronic obstructive pulmonary disease; ASD, autism spectrum disorder; HIV and/or AIDS, human immunodeficiency virus and/or acquired immunodeficiency syndrome.

Africa and Nigeria as well as the relationship between HIV and/or AIDS and disability (Joe-Ikechebelu et al. 2019; Onovo et al. 2023).

Search methods

An electronic online search for peer-reviewed articles was conducted across five databases, including PubMed/MEDLINE, Web of Science, SABINET, Scopus and EBSCOhost (Africa-Wide Information and CINAHL). One author conducted the initial searches in June 2023 and updated the searches in February 2024. The searches were limited to full-text, peer-reviewed articles available in the English language, of adults (18 years and older) in Nigeria, published between January 2006 and January 2024. The date range was selected in line with other similar reviews (Charumbira et al. 2022b) using the same starting date to facilitate future comparisons between countries.

The eligibility criteria for this study were as follows: the authors included studies reporting on functioning problems in male and female adults (> 18 years) in Nigeria, with at least one of the conditions contributing to the highest associated YLD in Nigeria according to the GBD 2019 data. Eligible articles had to report on impairments, activity limitations and participation restrictions related to the conditions that contribute to the highest associated YLD in Nigeria and its prevalence. Articles that reported on functioning problems that are not amenable to rehabilitation or that did not report on the prevalence of functioning problems amenable to rehabilitation were excluded. Grey literature was not considered for this study. Only peer-reviewed published data were considered eligible for inclusion as peer-reviewed data would already have been scrutinised and gone through a vetting process by experts in the field.

Different variations in line with the PCC framework were used to search the selected databases. Medical Subject Heading (MeSH) terms were used to ensure that all variations of the descriptions associated with the listed health conditions were included. No MeSH terms were used for the population (adults) or the context (Nigeria), as these components were already narrowed down and were specific. Different variations of the key terms related to functioning problems including 'activity limitation', 'functional impairment', 'functional loss', 'disability' and 'participation restriction' were used across all databases. The search strategy included *Title, Abstract and Keywords* fields to ensure the inclusion of all eligible articles of which the titles do not reflect the content of the articles. The reference lists of eligible articles were screened manually for additional potential eligible articles that may have been missed during the initial searches. The full search strategy can be found in Online Appendix 2. All the retrieved articles were imported to Mendeley for the deduplication process, after which the articles were transferred to Rayyan reference management software for further screening of the potential eligible articles.

Study selection

The main author (R.A.M.) reviewed the titles and abstracts of all the articles to determine the eligibility of the articles, according to predefined criteria discussed by the research team using the Rayyan reference management software. The main author (R.A.M.) consulted with M.Y.C. to discuss any uncertainties about the eligibility of the articles. Thereafter, the main author (R.A.M.) reviewed all the full-text articles for eligibility and further discussed any uncertainties with the other authors. The reasons for the exclusion of the ineligible articles were documented.

Extracting the data

The data were extracted and collated using a secure web-based software application, *Rehab4All* (Charumbira et al. 2022a), which has been used in a similar previous study by Charumbira et al. (2022b). The *Rehab4All* application provides an innovative, online method of capturing and synthesising data on functioning problems that are context- and country-specific using the ICF framework. The application allows entry of various data such as author, title of article, year of publication, mean age, sample size, study design, level of care (community, primary clinic, hospital, specialised facility, rehabilitation facility), setting (urban, rural, semi-rural), country, condition, category and gender. The outcome measures used to measure the prevalence of the functioning problem can also be selected. The data of the eligible articles were extracted and entered into the application by the main author (R.A.M.) and cross-checked by a second author (Q.A.L.). Prevalence (point, annual or lifetime) statistics from the eligible articles were entered into the application for the identified functioning problems. The authors did not have to contact any authors for additional information regarding any of the data. The process of data extraction was piloted (as suggested by Peters et al. 2020) as part of the training of the main author on using the *Rehab4All* application by one of the other authors who used the application in a previous study. Data extraction was cross-checked by Q.A.L.

Data analysis

One author deductively coded the reported functioning problems from the eligible articles using the ICF framework. The functioning problems were coded according to the different levels of the ICF framework namely ICF components at level one, which are indicated by the letters b, s, d and e for body function, body structure, activities and participation or environmental factors, respectively. Level two indicates the different domains of each level one component, namely b = 9 domains, s = 9 domains, d = 10 domains and e = 5 domains. The second-level domains can be further coded with a number referring to third-level categories and fourth-level qualifiers (Charumbira et al. 2022b). A second author (Q.A.L.) checked for accuracy and completeness of the coding. The authors discussed any uncertainty or disagreements until a

consensus was reached by the whole research team. For example, if an ICF domain or category did not explicitly describe the functioning problem identified in an article, the authors had to discuss which of the ICF domain descriptions aligned the best with the identified functioning problem. An example of such a scenario is 'alcohol abuse', which falls under the domain 'energy and drive functions' and is further described under 'craving' in the ICF browser.

The weighted prevalence of the functioning problems was calculated if prevalence statistics were available for at least five articles. The authors made an executive decision to use five articles to calculate the weighted prevalence based on a similar study conducted in South Africa (Charumbira et al. 2022b) as well as consideration for the total number of articles retrieved for this article and the data yielded from the included studies.

Trustworthiness of the data

The authors employed several strategies to ensure the validity of the data obtained and analysed for this study. The main author received training on the methods to conduct the scoping review in line with the study's objectives. One of the authors of this article, conducted a similar review and was familiar with the *Rehab4All* application used for the data extraction and analysis and could therefore provide the necessary training required to conduct this review. The training involved explaining and identifying the specific criteria for inclusion in the study, a pilot run of extracting data from a sample study using the *Rehab4All* application and training on data analyses. The authors frequently consulted throughout the research process, and a second author randomly spot-checked the extracted data to check for accuracy. In addition, the authors employed software (Rayyan) to organise and track the screening process to ensure the authors did not overlook any articles.

Ethical considerations

This article followed all ethical standards for research without direct contact with human or animal subjects.

Results

The results of this study presented next include an overview of the included articles, a description of the study characteristics, and the prevalence of the most common functioning problems identified for the listed conditions. The functioning problems are then further explained in terms of the ICF domains and components, highlighting which functioning problems were reported on most or had the highest prevalence in relation to the specific domain. Furthermore, the authors illustrate the most frequently occurring functioning problems across the different conditions. Lastly, the most prevalent functioning problems are mapped to the ICF to showcase which domains and components are mostly affected by the most prevalent functioning problems in Nigerian adults suffering from one or more of the top conditions contributing to YLD.

Overview of the included articles

A total of 130 articles were eligible for inclusion. The PRISMA Flow diagram (Online Appendix 3) describes the details of the search results and the reasons for excluding records at the various stages of the process. Human immunodeficiency virus or acquired immunodeficiency syndrome yielded the most articles ($n = 52$) that reported on functioning problems, followed by stroke. These two conditions combined yielded approximately 75% ($n = 97/130$ articles) of the eligible articles included in this review. No eligible articles could be retrieved for neck pain.

Study characteristics

Most of the studies (59%) were conducted at primary care clinics (including out-patient clinics at hospitals), while 16% of the studies were conducted at both rehabilitation facilities and at hospital-level, respectively. One study was conducted at a specialised facility, six at community level, and five studies did not report the level of care. With regards to geo-location, two studies were conducted in a rural setting, seven in an urban setting, while 93% of the studies did not stipulate the setting. The study designs included cross-sectional designs ($n = 110$); quasi-experimental ($n = 5$); case study or series ($n = 5$); randomised control trials (RCTs) and cohort studies ($n = 3$, respectively) and case-control ($n = 2$), surveys ($n = 2$) and reviews ($n = 1$).

Prevalence of common functioning problems

A total of 88 functioning problems could be identified across 130 articles. The prevalence of the top functioning problems was calculated if the prevalence data were available from at least five articles. Based on these criteria, the weighted prevalence of 18 functioning problems could be calculated (Figure 1). The most prevalent functioning

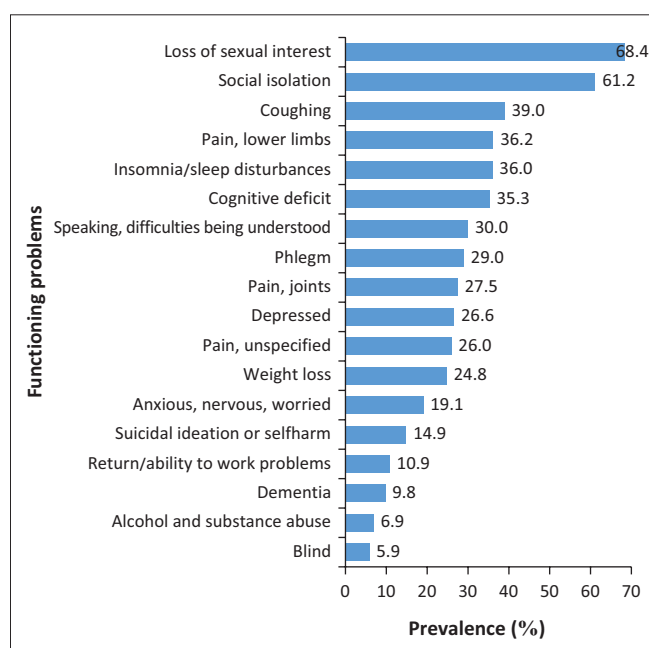


FIGURE 1: Prevalence of common presenting functioning problems (> 4 articles).

problem was *loss of sexual interest* (68.4%), followed by *social isolation* (61.2%) and *coughing* (39.0%). The least prevalent problem was *blindness*, with a prevalence of approximately 6%.

Breakdown of functioning problems according to international classification of functioning domains and components

Considering the top functioning problems of which the prevalence was calculated (Figure 1), the authors identified that, according to the ICF domains, the most common functioning problems relate to:

1. Mental functions (b1) – reported in 112 articles;
2. Sensory functions and pain (b2) – reported in 25 articles.

Figures 2 and 3 present the prevalence of the different functioning problems related to each of the abovementioned ICF domains, regardless of the number of articles that reported on the problem. The prevalence data in the figures indicate the populated prevalence data from the *Rehab4All* application for each functioning problem.

Functioning problems related to mental functions (b1)

Figure 2 presents the prevalence data and number of articles reporting on the different types of functioning problems linked to mental functions. Fourteen different functioning problems were identified. *Depression* was the most reported (39 articles) mental health functioning problem with a prevalence of 26.6%, whereas *alcohol and substance abuse* had the lowest prevalence of 6.9% reported in a total of nine articles.

Functioning problems related to pain and sensory functions (b2)

For the ICF domain on sensory functions and pain, 22 different functioning problems relating to the ear, eye and pain were identified (Figure 3). *Unspecified pain* was the most reported functioning problem across 10 articles, with a 26% prevalence, while *generalised body pain* had the highest prevalence of 97% but was only reported in one article.

International classification of functioning domains

Figure 4 depicts the mapping of all the reported functioning problems to the ICF domains. Mental functions

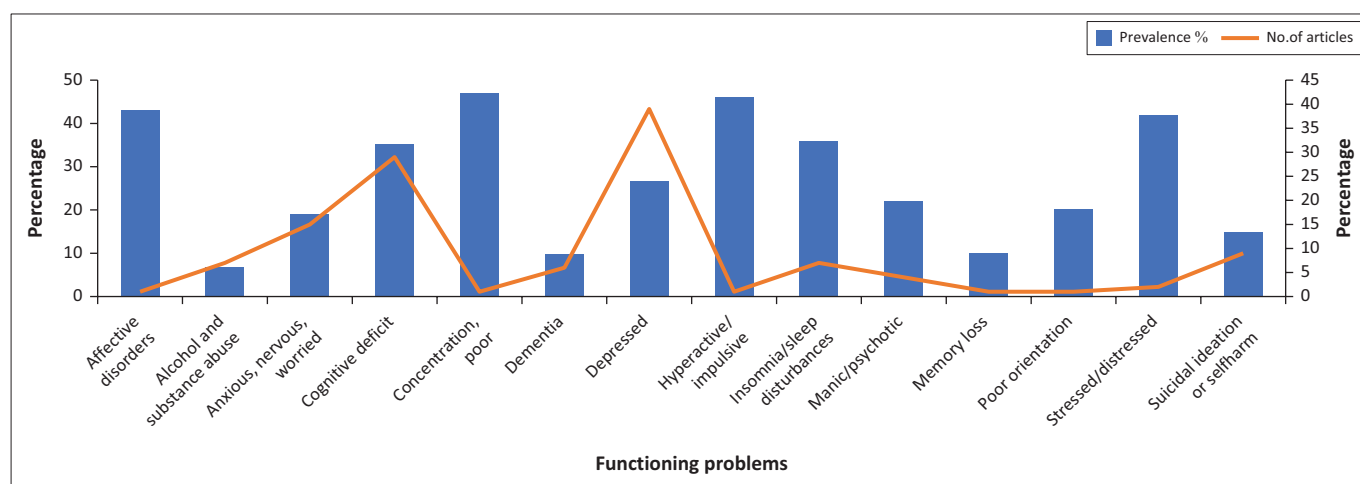


FIGURE 2: Prevalence and number of articles on functioning problems related to mental functions.

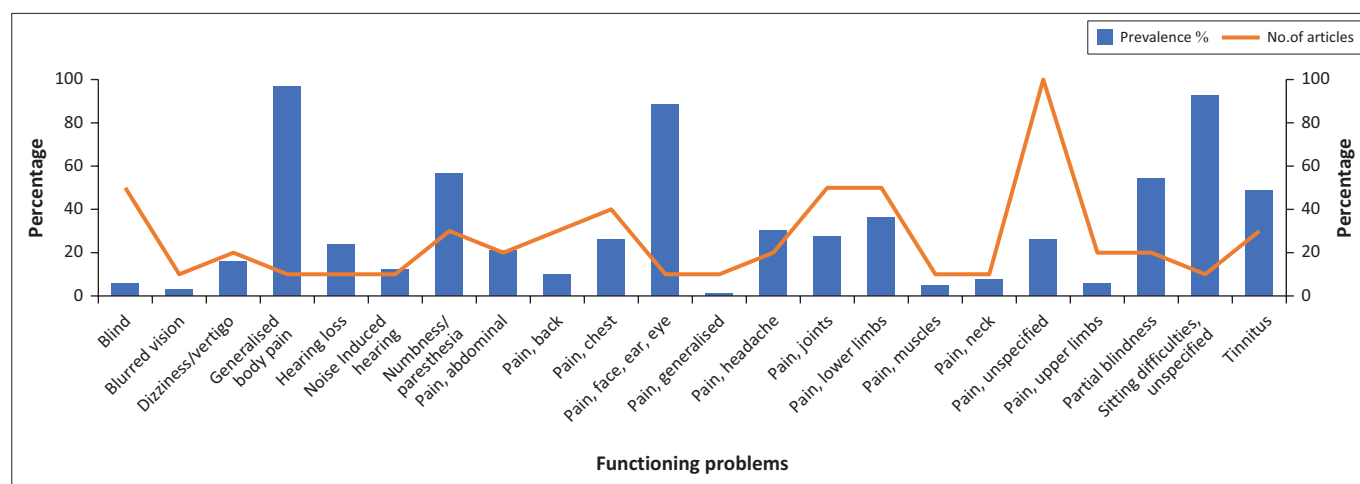


FIGURE 3: Prevalence and number of articles on functioning problems related to sensory functions and pain.

(b1) were reported on the most, followed by sensory functions and pain (b2) and cardiovascular, haematological, immunological and respiratory functions (b4). The domain on major life areas (d8) was the least reported on.

Contribution of the top 11 conditions to the types of problems

The authors identified a total of 88 different reported functioning problems resulting from the selected 11 conditions for which rehabilitation is a key intervention. Online Appendix 4 presents the full spectrum of the different functioning problems identified for each condition and the recurrence thereof across all the conditions. Table 2 depicts the most recurring reported functioning problems if they occurred in at least 3 conditions. For example, *alcohol and substance abuse* were reported for stroke, HIV and/or AIDS, and schizophrenia and were therefore included in Table 2. Furthermore, Table 2 also illustrates the ICF domains that correlate with the most occurring functioning problems across the 11 conditions. Functioning problems relating to mental functions occurred the most frequently among 6 of

the 11 conditions namely stroke, HIV and/or AIDS, schizophrenia, LBP, blindness and COPD. Hearing loss did not yield any of the most recurring functioning problems as identified in Table 2.

Table 3 presents a further breakdown of which ICF components, domains and categories were affected by the most prevalent functioning problems (> 4 articles) in terms of body function, body structure and activity limitation. Some of the functioning problems, including *cognitive deficit; speaking, difficulties being understood; suicidal ideation or self-harm* affected both body function and activity limitation components. Feeling *depressed*, spanned across three components of the ICF namely, body function, body structure as well as activity limitation. Six of the eight body function components; five out of nine activity limitation components; and three out of eight body structure components were affected by the most prevalent reported functioning problems in Nigeria. The ICF domain affected the most by functioning problems were related to mental functions (Table 3).

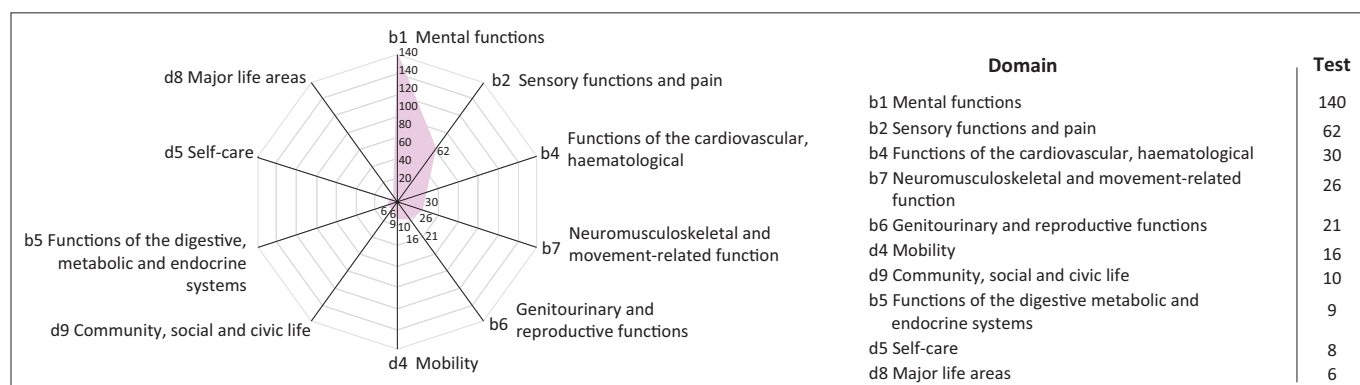


FIGURE 4: International classification of functioning domains.

TABLE 2: Most recurring reported functioning problems resulting from the top 11 conditions.

Problem	Stroke	HIV and/or AIDS	LBP	Schizo	HL	OA	RI	Blindness	ASD	COPD	ICF domain
Alcohol and substance abuse	√	√	√	-	-	-	-	-	-	-	b1: Mental functions
Anxious, nervous, worried	√	√	√	√	-	-	-	-	-	-	
Cognitive deficit	√	√	-	√	-	-	-	-	-	-	
Depressed	√	√	-	√	-	√	-	√	-	-	
Insomnia/sleep disturbances	√	√	√	√	-	√	-	-	-	-	
Suicidal ideation or self-harm	√	√	-	√	-	-	-	-	-	-	
Any sexual dysfunction	√	√	√	-	-	-	-	-	-	-	b6: Genitourinary and reproductive functions
Erectile dysfunction	√	-	√	√	-	-	-	-	-	-	
Loss of sexual interest	√	√	√	√	-	-	-	-	-	-	
Orgasm	√	√	√	√	-	-	-	-	-	-	
Vaginal lubrication	√	-	√	√	-	-	-	-	-	-	
Numbness/paraesthesia	√	-	√	-	-	-	√	-	-	-	b2: Pain and sensory functions
Pain, joints	√	√	-	-	-	√	-	-	-	-	
Pain, unspecified	√	√	√	-	-	√	-	-	-	-	
Reduced muscle strength	√	√	√	-	-	-	-	-	-	-	b7: NMS and movement functions
Restricted motion	-	√	√	-	-	√	-	-	-	-	
Dependence with mobility	√	√	-	√	-	-	-	-	-	-	d4: Mobility
Fatigue/tiredness	√	√	-	-	-	-	-	-	-	√	b4: Cardio-respiratory
Return/ability to work problems	√	√	-	√	-	-	-	-	-	-	d8: Major life areas
Social isolation	√	√	-	√	-	-	-	-	√	-	d9: Community, social and civic life

LBP, lower back pain; Schizo, Schizophrenia; HL, hearing loss; OA, osteoarthritis; RI, road injuries; ASD, Autism Spectrum Disorder; COPD, Chronic Obstructive Pulmonary Disease; ICF, international classification of functioning; HIV and/or AIDS, human immunodeficiency virus and/or acquired immunodeficiency syndrome.

TABLE 3: International classification of functioning domains and categories for the most prevalent functioning problems (> 4 articles).

Functioning problem	ICF component	ICF domain	ICF category
Loss of sexual interest	Body function	b6 Genitourinary and reproductive functions	b640 Sexual functions
Social isolation	Activity limitation	d9 Community, social and civic life	d910 Community life d920 Recreation and leisure d998 Community, social and civic life, other specified d999 Community, social and civic life, unspecified
Cognitive deficit	Body function	b1 Mental functions	b152 Emotional functions
	Body function	b1 Mental functions	b147 Psychomotor functions b160 Thought functions b110 Consciousness functions b140 Attention functions b144 Memory functions b164 Higher-level cognitive functions b117 Intellectual functions
		b3 Voice and speech functions	b330 Fluency and rhythm of speech functions
	Activity limitation	d1 Learning and applying knowledge	d198 Learning and applying knowledge, other specified
			b134 Sleep functions
Insomnia/sleep disturbances	Body function	b1 Mental functions	b134 Sleep functions
Pain, lower limbs	Body function	b2 Sensory functions and pain	b280 Sensation of pain
Pain, unspecified	Body function	b2 Sensory functions and pain	b289 Sensation of pain, other specified and unspecified b280 Sensation of pain
Speaking, difficulties being understood	Body function	b3 Voice and speech functions b1 Mental functions	b399 Voice and speech functions, unspecified b167 Mental functions of language
	Activity limitation	d3 Communication	d330 Speaking
Coughing	Body structure	s4 Structures of the cardiovascular, immunological and respiratory systems	s430 Structure of respiratory system
	Body function	b4 Functions of the cardiovascular, haematological, immunological and respiratory systems	b450 Additional functions of the respiratory system
Depressed	Body structure	s1 Structures of the nervous system	s110 Structure of brain
	Activity limitation	d9 Community, social and civic life	d910 Community life
	Body function	b1 Mental functions	b152 Emotional functions
Anxious, nervous, worried	Body function	b1 Mental functions	b152 Emotional functions
Suicidal ideation or self-harm	Body function	b1 Mental functions	b152 Emotional functions
Blind	Body function	b2 Sensory functions and pain	b210 Seeing functions
Return/ability to work problems	Activity limitation	d8 Major life areas	d845 Acquiring, keeping and terminating a job d859 Work and employment, other specified and unspecified
Dementia	Body function	b1 Mental functions	b117 Intellectual functions
Phlegm	Body function	b4 Functions of the cardiovascular, haematological, immunological and respiratory systems	b450 Additional functions of the respiratory system b450 Additional functions of the respiratory system
Pain, joints	Body structure	s7 Structures related to movement	s750 Structure of lower extremity
	Body function	b2 Sensory functions and pain	b280 Sensation of pain
Weight loss	Body function	b5 Functions of the digestive, metabolic and endocrine systems	b530 Weight maintenance functions
Alcohol and substance abuse	Body function	b1 Mental functions	b130 Energy and drive functions

ICF, international classification of functioning.

Discussion

This scoping review reported on the top conditions contributing to the highest number of associated YLD in Nigeria and provided prevalence data on the main functioning problems associated with these conditions in adult Nigerians. The most prevalent functioning problem is related to sexual dysfunction, notably *loss of sexual interest*. Other prevalent functioning problems identified in this study related to mental functions, pain and sensory functions as well as cardiovascular and respiratory functions according to the ICF framework. Similarly, recurring functioning problems across the eleven conditions were predominantly related to mental functions, followed by genitourinary and reproductive functions, pain and sensory functions. Almost three-quarters of the retrieved articles were based on HIV and/or AIDS and stroke patients, which subsequently highlighted the large

number of functioning problems associated with these conditions.

Primary conditions contributing to the highest number of associated years lived with disability in Nigeria

The burden of disability in Nigeria is largely attributed to communicable, maternal and neonatal diseases, and nutritional deficiencies (Abubakar et al. 2022). However, there is evidence of the growing burden of NCDs impacting the health outcomes of the Nigerian population. The findings of this study revealed that 8 of the 11 identified conditions contributing to the highest associated YLD in Nigeria for which rehabilitation is a key intervention are NCDs. However, research on these conditions appears to be limited, apart from HIV and/or AIDS and stroke. This is of major concern as the results from this study concur

with the findings of the GBD study 2019 indicating that, globally, disability caused by NCDs and injuries resulted in more than half of all life lost (measured by disability-adjusted life years) (Vos et al. 2020). The increased burden of disability has a direct impact on a country's healthcare expenditure (Vos et al. 2020). However, despite increased healthcare spending in Nigeria since 2001, the country's health outcomes remain suboptimal (Angell et al. 2022).

Addressing disability is paramount to mitigate the burden of disease and healthcare expenditure (Vos et al. 2020). Investment in rehabilitation not only enhances health outcomes but also yields economic benefits by reducing hospital readmissions or length of stay contributing to human capacity development and promoting workforce participation (WHO 2017). However, rehabilitation services in Africa are highly inaccessible and unequal (Geberemichael et al. 2019) necessitating strengthening of rehabilitation in health systems and healthcare policy for Nigeria (Ogundunmade et al. 2022).

Most prevalent functioning problem – Loss of sexual interest in an African population

The most prevalent functioning problem identified in the study was *loss of sexual interest* (68.4%) which was reported in stroke, HIV and/or AIDS, LBP and schizophrenia, illustrating the commonality of sexual dysfunction across a range of conditions. The results indicate a higher prevalence of *loss of sexual interest* among adult Nigerians than what has been reported on similar problems in the literature in different settings. For example, one study reported the prevalence of low sexual interest ranged between 17% – 55% for females and 15% – 25% for males within various age categories (McCabe et al. 2016). Although the study did not determine causal relationships, the high prevalence of *loss of sexual interest* identified in the study may be linked to the high prevalence of social isolation (61.2%) that the authors also found. Hence, the stigma and discrimination associated with conditions like HIV and schizophrenia can lead to difficulties in forming and maintaining intimate relationships, and thus contribute to a decrease in sexual interest and/or activity. Similarly, global estimates suggest that the prevalence of sexual dysfunction among people with schizophrenia is 56.4%, while the prevalence for the loss of libido was 41.0% (Korchia et al. 2023). The authors also identified a high level of depression (26.0%) and pain (27.5%) in this population which can diminish sexual interest and enjoyment. This concurs with Cokar et al. (2024) who reported decreased sexual desire in 59.3% of women and 50.0% of men with chronic LBP.

Sexual health forms an important part of the overall well-being of an individual, couples and families (Ramlachan & Naidoo 2024). Rehabilitation for sexual dysfunctions encompasses a multi-disciplinary approach (Elliott, Hocaloski & Carlson 2017) including pelvic floor therapy, exercise, sex education, couples therapy, psychosocial support and medication therapy (Park et al. 2023; Song et al. 2011). Literature reports that healthcare professionals,

including rehabilitation professionals, aren't always equipped to deal with the sexuality issues of patients because of their perceived inadequacy or incompetence to deal with these issues, the sensitivity around sexuality, time constraints, lack of training and lack of awareness and knowledge of patients' sexual health concerns (McGrath & Lynch 2014; Pascual et al. 2021). Thus, there is a need to improve the awareness of clinicians and policymakers on common functioning problems associated with different conditions.

Rehabilitation forms a key strategy for achieving SDG 3 and advancing Universal Health Coverage (WHO 2019). Identifying priority conditions and associated key functioning problems can guide clinical practice and policymaking on what areas need to be prioritised. The results of the review highlight that stroke and HIV and/or AIDS result in numerous functioning problems that span across various ICF domains and affect different ICF categories. For example, mental health-related problems were more frequently reported for stroke patients than were functioning problems related to movement and pain or sensory functions in Nigerian adults. This highlights that problems linked to mental functions need to be prioritised within the rehabilitation and management of stroke patients (Terrill, Schwartz & Belagaje 2018). As important as it is to address these problems in clinical practice in providing holistic and improved person-centred care, these data also provide evidence for policymakers and funders to recognise priority areas.

The findings can guide other healthcare professionals in settings where the rehabilitation workforce is limited or unavailable (such as PHC) to identify priority problems and referral to the appropriate healthcare professionals as needed. In addition, the WHO is in the process of compiling a basic rehabilitation package for PHC and low-resource settings that will guide evidence-based, low-cost, high-impact interventions that can be delivered safely and effectively by PHC workers including doctors and nurses (WHO 2023). Combining the WHO's basic rehabilitation package with the knowledge of the prevalence and occurrence of various functioning problems in Nigerian adults can prove to be valuable for rehabilitation professionals and other healthcare workers (where the rehabilitation workforce is limited), especially in a PHC setting to effectively address the health and rehabilitation needs of patients.

International classification of functioning domains

Considering the classification of the functioning problems according to the ICF domains and categories, the two main domains affected included functioning problems related to mental functions as well as functioning problems related to pain and sensory functions.

Functioning problems related to mental functions (b1)

Mental health-related functioning problems were not only the most prevalent, but also the most recurring functioning

problems, necessitating urgent attention in Nigeria. Stigma associated with mental health problems within the community and among healthcare workers (Adewuya & Oguntade 2007; Audu et al. 2013), limited access to mental healthcare, inadequate policy implementation, lack of knowledge on mental health problems and health-seeking behaviour all contribute to inadequate servicing of the mental healthcare needs of Africans (Nicholas, Joshua & Elizabeth 2022). Nigeria has the highest number of persons with depression in Africa and ranks 15th in the world for the number of suicides (Brathwaite et al. 2020). The findings align with these statistics, emphasising the need to address mental health-related problems at all levels of care. Suggestions to improve access to mental healthcare and rehabilitation services for the mentally ill in Nigeria include integrated mental healthcare at primary care level (since most of psychiatric care occurs in hospitals in Nigeria) (Soroye, Oleribe & Taylor-Robinson 2021).

Additionally, providing funding and resources for implementation of healthcare strategies to improve mental healthcare such as specialised training for healthcare professionals at primary care level, involving the community, adequate policy and backing from the government, and a collaborative effort are necessary to ensure better health outcomes for the mentally ill (Geberemichael et al. 2019; Nicholas et al. 2022; Soroye et al. 2021). Furthermore, increasing awareness through social media, engagement with community and church leaders, and providing education and support to families of the mentally ill will assist in addressing stigma and addressing mental health-related functioning problems.

Functioning problems related to pain and sensory functions (b2)

The second most prevalent type of functioning problems according to the findings, relate to pain and sensory functions including functioning problems related to the sense-organs. Age-related hearing loss and blindness and vision loss ranked 5th and 7th among the leading causes of YLD in Nigeria according to the GBD 2019 study (Angell et al. 2022), despite Nigeria being one of the youngest nations on the African continent and having a low life expectancy of 54 years (Abubakar et al. 2022). Rehabilitation for hearing loss includes surgery or using assistive technology to improve the hearing threshold (Ogunkeyede et al. 2019). However, in LMIC, such as Nigeria, low cost and available assistive technology is problematic, which subsequently hampers the rehabilitation of individuals with hearing loss and therefore contributing to an increased disease burden (Ogunkeyede et al. 2019; Vos et al. 2020). Rehabilitation for the visually impaired in Nigeria is reported to focus on vocational and educational rehabilitation but lacks emphasis on the emotional and psychological aspects such as depression, anxiety and loneliness often associated with blindness (Okonji & Kanu 2019). High-quality research is therefore needed to ensure that rehabilitation for the visually impaired, regardless of the cause thereof, encompasses a holistic, multi-disciplinary approach that addresses all aspects of functioning impairment, activity limitation and participation restriction.

In addition to the functioning problems related to the sense organs, pain-related functioning problems were frequently reported within the pain and sensory functions of the ICF domain. The experience of pain is not limited to a specific health condition, but rather how an individual experiences pain is influenced by different factors, including the pathophysiology of the condition, age, gender, cultural and religious influence and various other factors (Wiech, Ploner & Tracey 2008). The complexity of pain perception and its occurrence in different conditions often makes the diagnosis and management thereof challenging (Vardeh, Mannion & Woolf 2016). In addition, the high economic costs and social burden associated with chronic pain globally (Phillips 2009) is of great concern. For example, Fatoye et al. (2023) illustrated the high economic costs associated with LBP in LMICs, including Nigeria in a recent systematic review. The study findings highlight how commonly pain-related functioning problems occur, whether it be the primary or secondary complaint, and the importance of healthcare providers being equipped with the right skillset to be able to address these problems in patients with different conditions and thereby contributing to the reduction of the economic burden caused by chronic pain.

Strengths and limitations

This scoping review adds to the body of knowledge on functioning problems associated with conditions contributing to the burden of disease in Nigeria in the adult population. It provides clinicians, policymakers, researchers and other stakeholders with comprehensive data on the prevalence and recurrence of functioning problems in Nigeria. Using the ICF to map the different functioning problems will ensure a common understanding of and insights into the problems that patients may experience.

This review included peer-reviewed articles only which reported on the prevalence of functioning problems, which can result in a skewed representation of the true prevalence of a functioning problem associated with the listed conditions. One author conducted the screening process of the article titles and abstracts because of time and resource constraints. The authors acknowledge that this process may limit the reliability and validity of the study results; however, the steps taken by the authors to enhance the trustworthiness of this study have been explained earlier in the article. Furthermore, approximately 75% of the included articles were on stroke and HIV and/or AIDS. Because of the relatively small number of articles reporting on functioning problems for the other conditions, an underrepresentation of additional functioning problems in other conditions is possible. According to the Director-General of the National Agency for the Control of AIDs (NACA), Nigeria has the largest global fund portfolio for HIV and AIDS (Adebowale-Tambe 2022). Perhaps the large number of articles included in this study on HIV and AIDS reflects the funding backing for this type of research. Although the authors cannot comment on the other conditions, it is worth considering the possibility that stroke research is also largely funded, while

research on the other conditions may not receive such strong funding backing.

Future research

To validate the current data on functioning problems in Nigeria, qualitative studies could be used to corroborate and/or further explore the complexities of the identified functioning problems for adults in Nigeria. Additional factors such as personal and environmental factors, which were not included in this study, can be further explored through qualitative or observational studies. The *Rehab4All* application proved useful in this study to limit human error, facilitate the data extraction and analyses processes, and can be used in the future to populate similar data for other countries.

Conclusion

This scoping review provided data on the conditions that contribute to the highest associated YLD in Nigeria and comprehensively described the various functioning problems resulting from the listed conditions in terms of the ICF framework. The most prevalent functioning problem was related to sexual dysfunction while the most common functioning problems were associated with mental functions as well as pain and sensory functions. The identification of these functioning problems can provide guidance for priority areas in terms of clinical, policy and funding decisions. The results emphasise that functioning problems can span across several ICF domains and categories indicating that a multi-faceted approach is needed to address the complexities of certain healthcare conditions.

The results of this study are not only applicable to rehabilitation professionals but can be useful in settings where the rehabilitation workforce is limited, such as PHC settings, and guide other healthcare workers to identify problems and potential interventions or encourage appropriate referrals to relevant healthcare providers as needed. The *Rehab4All* application proved to be a valuable tool in conducting this research by populating different data and limiting human error in the data extraction and analysis processes. The authors encourage other LMICs to conduct similar studies to provide the context-specific data needed to strengthen rehabilitation within their respective health systems.

Acknowledgements

The authors wish to thank Alvina Matthee of the Faculty of Medicine and Health Sciences Library, University of Stellenbosch for guidance in developing the literature search strategy. They also thank Denric Blaauw for the development of the *Rehab4all* application.

Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

R.A.M. was the major contributor in drafting and writing the article. Conceptualisation, Q.A.L.; Methodology, R.A.M, Q.A.L. and M.Y.C.; Software, Q.A.L.; Validation, Q.A.L. and M.Y.C.; Formal Analysis, R.A.M. and Q.A.L.; Investigation, R.A.M. and Q.A.L.; Data Curation, R.A.M. and Q.A.L.; Writing – Original Draft Preparation, R.A.M.; Writing – Review and Editing, Q.A.L. and M.Y.C.; Visualisation, R.A.M. and Q.A.L.; Funding Acquisition, Q.A.L. All authors have read and agreed to the published version of the article.

Funding information

This research was funded by the Medical Research Council of South Africa (Grant SU-PT-15/10-000005) and the National Research Foundation Chair Initiative (UID 115461).

Data availability

The data presented in this study are available on request from the corresponding author, R.A.M. The data are not publicly available because of privacy restrictions of *Rehab4all* application developed.

Disclaimer

The views and opinions expressed in this article are those of the authors and are the product of professional research. They do not necessarily reflect the official policy or position of any affiliated institution, funder, agency or that of the publisher. The authors are responsible for this article's results, findings and content.

References

- Abdullahi, U. & Adeiza, M.A., 2020, 'The role of immune restoration using highly active antiretroviral therapy in the management of AIDS-related Kaposi's sarcoma coexisting with pulmonary tuberculosis', *Nigerian Postgraduate Medical Journal* 27(1), 63–66. https://doi.org/10.4103/npmj.npmj_102_19
- Abiodun, O., Lawal, I. & Omokanye, C., 2018, 'PLHIV are more likely to have mental distress: Evidence from a comparison of a cross-section of HIV and diabetes patients at Tertiary Hospitals in Nigeria', *AIDS Care* 30(8), 1050–1057. <https://doi.org/10.1080/09540121.2018.1441973>
- Abiodun, O., Sodeinde, K., Adepoju, A., Ohiaogun, F., Mbonu, F., Adelowo, O. et al., 2019, 'Sexual functioning, sexual distress, and well-being of sexually active adult women living with HIV: An HIV program-based cross-sectional study', *Sexuality Research and Social Policy* 17(4), 558–567. <https://doi.org/10.1007/s13178-019-00414-z>
- Abiodun, O., Sodeinde, K., Imhoni, G., Omotosho, A. & Amaike, C., 2022, 'Social isolation is associated with major depressive disorders among women accessing HIV/AIDS care in Nigeria', *AIDS Care* 34(6), 741–745. <https://doi.org/10.1080/09540121.2021.1944595>
- Abubakar, I., Dalglish, S.L., Angell, B., Sanuade, O., Abimbola, S., Adamu, A.L. et al., 2022, 'The Lancet Nigeria commission: Investing in health and the future of the nation', *Lancet* 399(10330), 1155–1200. [https://doi.org/10.1016/S0140-6736\(21\)02488-0](https://doi.org/10.1016/S0140-6736(21)02488-0)
- Abubakar, S. & Jamoh, B., 2017, 'Dysphagia following acute stroke and its effect on short-term outcome', *Nigerian Postgraduate Medical Journal* 24(3), 182–186. https://doi.org/10.4103/npmj.npmj_96_17
- Ade-Ojo, I.P., Dada, M.U. & Adeyanju, T.B., 2022, 'Comparison of anxiety and depression among HIV-positive and HIV-negative pregnant women during COVID-19 pandemic in Ekiti State, Southwest Nigeria', *International Journal of General Medicine* 15, 4123–4130. <https://doi.org/10.2147/IJGM.S362225>
- Adebowale-Tambe, N., 2022, 'HIV/AIDS: Nigeria has largest global fund portfolio – Official', *Premium Times*, 14 June, viewed 28 May 2024, from <https://www.premiumtimesng.com/news/top-news/537087-hiv-aids-nigeria-has-largest-global-fund-portfolio-official.html?tztc=1>.
- Adedeji, W.A., Ma, Q., Raji, A.M., Cha, R., Rasaki, O.M., Hutson, A. et al., 2023, 'Prevalence of depression among people living with HIV in rural hospitals in South-Western Nigeria-Association with clinico-demographic factors', *AIDS Research and Therapy* 20(1), 89. <https://doi.org/10.1186/s12981-023-00586-0>

- Adeiza, M.A. & Habib, A.G., 2019, 'A cross-sectional study of cytomegalovirus retinitis in HIV-1 infected adults in Nigeria', *Nigerian Journal of Clinical Practice* 22(3), 293–297. https://doi.org/10.4103/njcp.njcp_82_18
- Adejumo, O., Oladeji, B., Akpa, O., Malee, K., Baiyewu, O., Ogunniyi, A. et al., 2016, 'Psychiatric disorders and adherence to antiretroviral therapy among a population of HIV-infected adults in Nigeria', *International Journal of STD & AIDS* 27(11), 938–949. <https://doi.org/10.1177/0956462415600582>
- Adekanmbi, O., Nwanji, I. & Oladele, R., 2022, 'Disseminated histoplasmosis in an AIDS patient with immunologic non-response to HAART: A case report', *Journal of Medical Mycology* 32(3), 101271. <https://doi.org/10.1016/j.jmycmed.2022.101271>
- Adeoti, A.O., Dada, M., Elebiyo, T., Fadare, J. & Ojo, O., 2019, 'Survey of antiretroviral therapy adherence and predictors of poor adherence among HIV patients in a tertiary institution in Nigeria', *Pan African Medical Journal* 33, 277. <https://doi.org/10.11604/pamj.2019.33.277.18711>
- Aderibigbe, A.S., Famurewa, O.C., Komolafe, M.A., Omisore, A.D. & Adetiloye, V.A., 2020, 'Sonographic soft tissue arthritic changes associated with post-stroke hemiplegic knee pain: Utility of musculoskeletal ultrasound in a resource-limited setting', *Polish Journal of Radiology* 85, e45–e52. <https://doi.org/10.5114/pjr.2020.93149>
- Adewole, O., Olagundoye, O. & Ajumobi, I., 2021, 'Depression and its associated factors among people living with HIV/AIDS attending the HIV/AIDS CLINIC in Southwest Nigeria', *Family Medicine & Primary Care Review* 23(1), 7–12. <https://doi.org/10.5114/fmpcr.2021.103149>
- Adewuya, A.O., Afolabi, M.O., Ola, B.A., Ogundele, O.A., Ajibare, A.O. & Oladipo, B.F., 2007, 'Psychiatric disorders among the HIV-positive population in Nigeria: A control study', *Journal of Psychosomatic Research* 63(2), 203–206. <https://doi.org/10.1016/j.jpsychores.2007.03.006>
- Adewuya, A.O., Afolabi, M.O., Ola, B.A., Ogundele, O.A., Ajibare, A.O., Oladipo, B.F. et al., 2008, 'Relationship between depression and quality of life in persons with HIV infection in Nigeria', *International Journal of Psychiatry in Medicine* 38(1), 43–51. <https://doi.org/10.2190/PM.38.1.d>
- Adewuya, A.O. & Oguntade, A.A., 2007, 'Doctors' attitude towards people with mental illness in Western Nigeria', *Social Psychiatry and Psychiatric Epidemiology* 42(11), 931–936. <https://doi.org/10.1007/s00127-007-0246-4>
- Adio, A.O. & Fiebai, B., 2010, 'Herpes zoster ophthalmicus and HIV seropositivity in South-south Nigeria', *Nigerian Journal of Medicine* 19(2), 162–164. <https://doi.org/10.4314/njm.v19i2.56508>
- Agaba, P.A., Meloni, S.T., Sule, H.M., Agaba, E.I., Idoko, J.A. & Kanki, P.J., 2017, 'Sexual dysfunction and its determinants among women infected with HIV', *International Journal of Gynecology & Obstetrics* 137(3), 301–308. <https://doi.org/10.1002/ijgo.12140>
- Aghukwa, N.C. & Aghukwa, N.C., 2011, 'Speech and language difficulties in a patient with schizophrenia-like disorder: A case report', *Nigerian journal of medicine: Journal of the National Association of Resident Doctors of Nigeria* 20(3), 387–390. <http://europepmc.org/abstract/MED/21970225>
- Aguocha, C., Aguocha, K., Uwakwe, R. & Onyema, G., 2015, 'Co-morbid anxiety disorders in patients with schizophrenia in a tertiary institution in South East Nigeria: Prevalence and correlates', *African Health Sciences* 15(1), 137–145. <https://doi.org/10.4314/ahs.v15i1.19>
- Ajiboye, P.O., Abiodun, O.A., Tunde-Ayinmode, M.F., Buhari, O.I., Sanya, E.O. & Wahab, K.W., 2013, 'Psychiatric morbidity in stroke patients attending a neurology clinic in Nigeria', *African Health Sciences* 13(3), 624–631. <https://doi.org/10.4314/ahs.v13i3.15>
- Akabogu, J., Nnamani, A., Otu, M.S., Uloh-Bethels, A.C., Ukoah, E., Iyekekpolo, O.M. et al., 2020, 'Effects of a language education intervention on social participation among emerging adults with autism', *Journal of International Medical Research* 48(1), 0300060519839510. <https://doi.org/10.1177/0300060519839510>
- Akinboro, A.O., Onayemi, O. & Mejiuni, A.D., 2014, 'Frequency, pattern, and extent of skin diseases in relation to CD4+ cell count among adults with human immunodeficiency virus infection or acquired immunodeficiency syndrome in Osogbo, southwestern Nigeria', *International Journal of Dermatology* 53(4), 416–424. <https://doi.org/10.1111/j.1365-4632.2012.05820.x>
- Akinpelu, A.O., Alonge, T.O., Adekanla, B.A. & Odole, A.C., 2009, 'Prevalence and pattern of symptomatic knee osteoarthritis in Nigeria: A community-based study', *The Internet Journal of Allied Health Sciences and Practice* 7(3), 10.
- Akinpelu, A.O., Osose, A.A., Odole, A.C. & Odunaiya, N.A., 2013, 'Sexual dysfunction in Nigerian stroke survivors', *African Health Sciences* 13(3), 639–645. <https://doi.org/10.4314/ahs.v13i3.17>
- Akinsulore, A., Aloba, O.O., Mapayi, B.M., Oloniniyi, I.O., Fatoye, F.O. & Makanjuola, R.O., 2014, 'Relationship between depressive symptoms and quality of life in Nigerian patients with schizophrenia', *Social Psychiatry and Psychiatric Epidemiology* 49(8), 1191–1198. <https://doi.org/10.1007/s00127-014-0838-8>
- Akintayo, R.O., Yerima, A., Olaosebikan, H.B., Uhumwangho, C. & Akpabio, A.A., 2019, 'How much gloom is in groans? Depression and its determinants in Nigerian patients with knee osteoarthritis: A multi-center cross-sectional study', *Clinical Rheumatology* 38(7), 1971–1978. <https://doi.org/10.1007/s10067-019-04497-2>
- Akinyemi, R.O., Allan, L., Owolabi, M.O., Akinyemi, J.O., Ogbale, G., Ajani, A. et al., 2014, 'Profile and determinants of vascular cognitive impairment in African stroke survivors: The CogFAST Nigeria study', *Journal of the Neurological Sciences* 346(1), 241–249. <https://doi.org/10.1016/j.jns.2014.08.042>
- Akinyemi, R.O., Firbank, M., Ogbale, G.I., Allan, L.M., Owolabi, M.O., Akinyemi, J.O. et al., 2015, 'Medial temporal lobe atrophy, white matter hyperintensities and cognitive impairment among Nigerian African stroke survivors', *BMC Research Notes* 8(1), 625. <https://doi.org/10.1186/s13104-015-1552-7>
- Akor, A., Adeniyi, B. & Erhabor, G., 2020, 'Predictors of Health-Related Quality of Life (HRQL) in patients with chronic obstructive pulmonary disease using the COPD Assessment Test (CAT)', *West African Journal of Medicine* 37, 275–280.
- Akosile, C., Nworah, C., Okoye, E., Adegoke, B., Umunnah, J. & Fabunmi, A., 2016, 'Community reintegration and related factors in a Nigerian stroke sample', *African Health Sciences* 16(3), 772–780. <https://doi.org/10.4314/ahs.v16i3.18>
- Akosile, C.O., Fabunmi, A.A., Umunnah, J.O. & Okoye, C.D.A., 2011, 'Relationships between fall indices and physical function of stroke survivors in Nigeria', *International Journal of Therapy and Rehabilitation* 18(9), 487–491. <https://doi.org/10.12968/ijtr.2011.18.9.487>
- Akpabio, A., Akintayo, R., Yerima, A., Olaosebikan, H., Akpan-Ekpo, E., Ekrikpo, U. et al., 2021, 'Frequency, pattern, and associations of generalized osteoarthritis among Nigerians with knee osteoarthritis', *Clinical Rheumatology* 40(8), 3135–3141. <https://doi.org/10.1007/s10067-021-05605-x>
- Angell, B., Sanuade, O., Adetifa, I.M.O., Okeke, I.N., Adamu, A.L., Aliyu, M.H. et al., 2022, 'Population health outcomes in Nigeria compared with other west African countries, 1998–2019: A systematic analysis for the Global Burden of Disease Study', *Lancet* 399(10330), 1117–1129. [https://doi.org/10.1016/S0140-6736\(21\)02722-7](https://doi.org/10.1016/S0140-6736(21)02722-7)
- Arksey, H. & O'Malley, L., 2005, 'Scoping studies: Towards a methodological framework', *International Journal of Social Research Methodology* 8(1), 19–32. <https://doi.org/10.1080/1364557032000119616>
- Audu, I.A., Idris, S.H., Olisah, V.O. & Sheikh, T.L., 2013, 'Stigmatization of people with mental illness among inhabitants of a rural community in northern Nigeria', *International Journal of Social Psychiatry* 59(1), 55–60. <https://doi.org/10.1177/0020764011423180>
- Ayeni, F., Esan, O., Ikem, I.C. & Adegbehingbe, O.O., 2019, 'Early outcome of platelet rich plasma and non-steroidal anti-inflammatory agent alone and in combination on primary knee osteoarthritis', *Journal of Clinical and Diagnostic Research* 13(11), RC06–RC08. <https://doi.org/10.7860/JCDR/2019/42135.13301>
- Baba, S.S. & Yarube, I.U., 2021, 'Raised high-sensitivity C-reactive protein and cognitive impairment among African stroke survivors within the first three months following stroke', *Journal of Clinical Neuroscience* 88, 191–196. <https://doi.org/10.1016/j.jocn.2021.03.018>
- Babalola, Y., Oluleye, T. & Ashaye, A., 2022, 'Vitreoretinal manifestations of human immunodeficiency virus infection and acquired immunodeficiency syndrome in patients attending an antiretroviral therapy clinic in Nigeria: A cross sectional study', *Journal of Clinical Sciences* 19(3), P191–P196. https://doi.org/10.4103/jcls.jcls_9_22
- Bashir, A.H., Abdullahi, A., Abba, M.A. & Mukhtar, N.B., 2017, 'Central poststroke pain: Its profile among stroke survivors in Kano, Nigeria', *Behavioural Neurology* 2017, 9318597. <https://doi.org/10.1155/2017/9318597>
- Bharti, A.R., McCutchan, J.A., Umlauf, A., Okwuegbuna, O.K., Letendre, S., Cherner, M. et al., 2021, 'Asymptomatic Malaria co-infection of HIV-infected adults in Nigeria: Prevalence of and impact on cognition, mood, and biomarkers of systemic inflammation', *JAIDS Journal of Acquired Immune Deficiency Syndromes* 86(1), 91–97. <https://doi.org/10.1097/QAI.0000000000002516>
- Boutayeb, A., 2010, *The impact of infectious diseases on the development of Africa*, Springer, New York, NY, pp. 1171–1188.
- Brathwaite, R., Rocha, T.B., Kieling, C., Kohrt, B.A., Mondelli, V., Adewuya, A.O. et al., 2020, 'Predicting the risk of future depression among school-attending adolescents in Nigeria using a model developed in Brazil', *Psychiatry Research* 294, 113511. <https://doi.org/10.1016/j.psychres.2020.113511>
- Charumbira, M.Y., Berner, K., Blaauw, D. & Louw, Q.A., 2022a, 'Development of an innovative strategy to determine functioning attributed to health conditions in low-resource settings', *Digital Health* 8, 20552076221144213. <https://doi.org/10.1177/20552076221144213>
- Charumbira, M.Y., Berner, K. & Louw, Q.A., 2022b, 'Functioning problems associated with health conditions with greatest disease burden in South Africa: A scoping review', *International Journal of Environmental Research and Public Health* 19(23), 15636. <https://doi.org/10.3390/ijerph192315636>
- Chikezie, U.E., Otakpor, A.N., Kuteyi, O.B. & James, B.O., 2012, 'Suicidality among individuals with HIV/AIDS in Benin City, Nigeria: A case-control study', *AIDS Care* 24(7), 843–845. <https://doi.org/10.1080/09540121.2011.645008>
- Chikezie, U.E., Otakpor, A.N., Kuteyi, O.B. & James, B.O., 2013, 'Depression among people living with human immunodeficiency virus infection/acquired immunodeficiency syndrome in Benin City, Nigeria: A comparative study', *Nigerian Journal of Clinical Practice* 16(2), 238–242. <https://doi.org/10.4103/1119-3077.110148>
- Chimbo, C., Orij, S.O., Erohubie, P.O., James, B.O. & Lawani, A.O., 2021, 'Pain and depression among adult outpatients with osteoarthritis in Nigeria: A cross-sectional study', *Asian Journal of Social Health and Behavior* 4(3), 116–121. https://doi.org/10.4103/shb.shb_15_21
- Cieza, A., Causey, K., Kamenov, K., Hanson, S.W., Chatterji, S. & Vos, T., 2020, 'Global estimates of the need for rehabilitation based on the Global Burden of Disease Study 2019: A systematic analysis for the Global Burden of Disease Study 2019', *The Lancet* 396(10267), 2006–2017. [https://doi.org/10.1016/S0140-6736\(20\)32340-0](https://doi.org/10.1016/S0140-6736(20)32340-0)
- Cokar, D., Celik, Y., Ayla, O.O., Kavadar, G., Murat, S. & Ozgonenel, L., 2024, 'Assessment of sexual dysfunction, the quality of life and difficulties in broaching sexual issues in patients with chronic low back pain by using cluster analysis', *Signa Vitae* 20(1), 127–132. <https://doi.org/10.22514/sv.2024.008>
- Desalu, O.O., Salami, K., Fawibe, A.E. & Oluboyo, P., 2014, 'The incidence and clinical pattern of chronic obstructive pulmonary disease (COPD) in Ilorin, Nigeria', *Nigerian Journal of Chest Diseases* 1, 12–18.
- Ebirim, L.N. & Otokwala, J.G., 2013, 'Inadequate pain relief in ambulatory patients with human immunodeficiency virus disease in Port Harcourt', *HIV AIDS (Auckland)* 5, 199–203. <https://doi.org/10.2147/HIV.S45150>

- Egbe, C.O., Dakum, P.S., Ekong, E., Kohrt, B.A., Minto, J.G. & Ticao, C.J., 2017, 'Depression, suicidality, and alcohol use disorder among people living with HIV/AIDS in Nigeria', *BMC Public Health* 17(1), 542. <https://doi.org/10.1186/s12889-017-4467-5>
- Ejikeme, U.A., Lilly-Tariah, O.B.D., Onotai, L.O. & Chinenye, S., 2023, 'Tympanometric findings among adult HIV patients undergoing a short-term treatment with high active antiretroviral therapy (HAART) in port harcourt', *Nigerian Journal of Clinical Practice* 26(5), 599–603. https://doi.org/10.4103/njcp.njcp_427_22
- Ekediegwu, E.C., Akpaenyi, C.E., Nwosu, I.B. & Onyeso, O.K., 2022, 'Demographic and disease characteristics associated with pain intensity, kinesiophobia, balance, and fall self-efficacy among people with osteoarthritis: A cross-sectional study', *BMC Musculoskeletal Disorders* 23(1), 544. <https://doi.org/10.1186/s12891-022-05486-4>
- Elliott, S., Hocaloski, S. & Carlson, M., 2017, 'A multidisciplinary approach to sexual and fertility rehabilitation: The sexual rehabilitation framework', *Topics in Spinal Cord Injury Rehabilitation* 23(1), 49–56. <https://doi.org/10.1310/sci2301-49>
- Emina, M.O. & Odjimogho, S.E., 2010, 'Ocular problems in HIV and AIDS patients in Nigeria', *Optometry and Vision Science* 87(12), 979–984. <https://doi.org/10.1097/OPX.0b013e3181fef198>
- Emorinken, A., Dic-Ijiwera, M.O., Erameh, C.O., Ugheoke, A.J., Agbebaku, F.O. & Agbadaola, O.R., 2021, 'Fibromyalgia in HIV-positive patients in Nigeria: A cross-sectional prospective study', *International Journal of Rheumatic Diseases* 24(10), 1273–1281. <https://doi.org/10.1111/1756-185X.14195>
- Esan, O. & Ephraim-Oluwanuga, O.T., 2021, 'Sleep quality and cognitive impairments in remitted patients with schizophrenia in Nigeria', *Encephale* 47(5), 401–405. <https://doi.org/10.1016/j.encep.2020.12.004>
- Esan, O. & Ephraim-Oluwanuga, O.T., 2022, 'Physical activity of patients with schizophrenia in Nigeria: Distribution and correlates', *Mental Health and Physical Activity* 22, 100445. <https://doi.org/10.1016/j.mhpa.2022.100445>
- Esan, O. & Esan, A., 2018, 'Sexual dysfunction among patients With schizophrenia in Southwest Nigeria', *Journal of Sex & Marital Therapy* 44(7), 657–666. <https://doi.org/10.1080/0092623X.2018.1447055>
- Esan, O. & Fawole, O., 2013, 'Comparison of the profile of patients with acute and transient psychotic disorder and schizophrenia in a Nigerian teaching hospital', *The Journal of Neuropsychiatry and Clinical Neurosciences* 25(4), 327–334. <https://doi.org/10.1176/appi.neuropsych.12120397>
- Ezema, C.I., Akusoba, P.C., Nweke, M.C., Uchewoke, C.U., Agono, J. & Usoro, G., 2018, 'Influence of post-stroke depression on functional independence in activities of daily living', *Ethiopian Journal of Health Sciences* 29(1), 841. <https://doi.org/10.4314/ejhs.v29i1.5>
- Ezeugwu, V.E., Olaogun, M., Mbada, C.E. & Adedoyin, R., 2013, 'Comparative lung function performance of stroke survivors and age-matched and sex-matched controls', *Physiotherapy Research International* 18(4), 212–219. <https://doi.org/10.1002/pri.1547>
- Fakorede, O.O., Ogunwale, A. & Akinhanmi, A.O., 2020, 'Disability among patients with schizophrenia: A hospital-based study', *International Journal of Social Psychiatry* 66(2), 179–187. <https://doi.org/10.1177/0020764019894608>
- Farley, J., Miller, E., Zamani, A., Tepper, V., Morris, C., Oyegunle, M. et al., 2010, 'Screening for hazardous alcohol use and depressive symptomatology among HIV-infected patients in Nigeria: Prevalence, predictors, and association with adherence', *Journal of the International Association of Providers of AIDS Care (Chicago)* 9(4), 218–226. <https://doi.org/10.1177/1545109710371133>
- Fatoye, F., Gebrye, T., Mbada, C.E. & Useh, U., 2023, 'Clinical and economic burden of low back pain in low- and middle-income countries: A systematic review', *BMJ Open* 13(4), e064119. <https://doi.org/10.1136/bmjopen-2022-064119>
- Fatoye, F.O., Mosaku, S.K., Komolafe, M.A., Egunranti, B.A., Adebayo, R.A., Komolafe, E.O. et al., 2009, 'Depressive symptoms and associated factors following cerebrovascular accident among Nigerians', *Journal of Mental Health* 18(3), 224–232. <https://doi.org/10.1080/09638230701879094>
- Fink, D., Oladele, D., Etomi, O., Wapmuk, A., Musari-Martins, T., Agahowa, E. et al., 2019, 'Musculoskeletal symptoms and non-prescribed treatments are common in an urban African population of people living with HIV', *Rheumatology International* 39(2), 285–291. <https://doi.org/10.1007/s00296-018-4188-9>
- Geberemichael, S.G., Tannor, A.Y., Asegahegn, T.B., Christian, A.B., Vergara-Diaz, G. & Haig, A.J., 2019, 'Rehabilitation in Africa', *Physical Medicine and Rehabilitation Clinics of North America* 30(4), 757–768. <https://doi.org/10.1016/j.pmr.2019.07.002>
- Gureje, O., Akinpelu, A.O., Uwakwe, R., Udofia, O. & Wakil, A., 2007, 'Comorbidity and impact of chronic spinal pain in Nigeria', *Spine* 32(17), E495–E500. <https://doi.org/10.1097/BRS.0b013e31810768fc>
- Ibeneme, S.C., Nwosu, A., Anyachukwu, C.C., Ibeneme, G.C., Bakare, M.O., Fortwengel, G. et al., 2017, 'Burden and factors associated with post-stroke depression in East central Nigeria', *African Health Sciences* 17(3), 859–867. <https://doi.org/10.4314/ahs.v17i3.29>
- Imarhiagbe, F., 2014, 'Functional motor recovery in stroke survivors – Determinants in a stroke unit in Sub-Saharan Africa. (P3.045)', *Neurology* 82(suppl 10), P3.045. https://doi.org/10.1212/WNL.82.10_supplement.P3.045
- Imarhiagbe, F. & Abidakun, O.A., 2018, 'Poststroke emotionalism with dacrystic (Crying) episodes – making a case for risperidone', *Annals of African Medicine* 17(3), 156–158. https://doi.org/10.4103/aam.aam_24_17
- Iwuozo, E.U., Enyikwola, J.O., Asor, P.M., Onyia, U.I., Nwazor, E.O. & Obiako, R.O., 2023, 'Sleep disturbances and associated factors amongst stroke survivors in North Central, Nigeria', *Nigerian Postgraduate Medical Journal* 30(3), 193–199. https://doi.org/10.4103/npjm.npmj_56_23
- Joe-Ikechebelu, N.N., Azuike, E.C., Nwankwo, B.E., Ezebialu, I.U., Ngene, W.O. & Eleje, G.U., 2019, 'HIV prevention cascade theory and its relation to social dimensions of failure: A case for Nigeria', *HIV AIDS (Auckland)* 11, 193–200. <https://doi.org/10.2147/HIV.S210190>
- Jumare, J., Akolo, C., Ndemi, N., Bwala, S., Alabi, P., Okwuasaba, K. et al., 2020, 'Elevated plasma levels of sCD14 and MCP-1 are associated with HIV associated neurocognitive disorders among antiretroviral-naïve individuals in Nigeria', *Journal of Acquired Immune Deficiency Syndrome* 84(2), 196–202. <https://doi.org/10.1097/QAI.0000000000002320>
- Jumare, J., Ndemi, N., El-Kamary, S.S., Magder, L., Hungerford, L., Burdo, T. et al., 2018, 'Cognitive function among antiretroviral treatment-naïve individuals infected with human immunodeficiency virus type 1 subtype G versus CRF02_AG in Nigeria', *Clinical Infectious Diseases* 66(9), 1448–1453. <https://doi.org/10.1093/cid/cix1019>
- Kawu, A., 2010, 'Cobb angle changes in thoracic and lumbar spine fractures following road traffic injuries in Gwagwalada, Abuja', *Nigerian Journal of Medicine: Journal of the National Association of Resident Doctors of Nigeria* 19(2), 199–202. <https://doi.org/10.4314/njm.v19i2.56520>
- Kawu, A.A., 2012, 'Pattern and presentation of spine trauma in Gwagwalada-Abuja, Nigeria', *Nigerian Journal of Clinical Practice* 15(1), 38–41. <https://doi.org/10.4103/1119-3077.94095>
- Kietrys, D., Myezwa, H., Galantino, M.L., Parrott, J.S., Davis, T., Levin, T. et al., 2019, 'Functional limitations and disability in persons living with HIV in South Africa and United States: Similarities and differences', *Journal of International Association of Providers of AIDS Care* 18, 2325958219850558. <https://doi.org/10.1177/2325958219850558>
- Kolawole Wasiu, W. & Alakija Kazeem, S., 2010, 'Pain as a symptom in patients living with HIV/AIDS seen at the outpatient clinic of a Nigerian tertiary hospital', *Journal of the International Association of Physicians in AIDS Care* 10(1), 35–39. <https://doi.org/10.1177/1545109710368863>
- Korchia, T., Achour, V., Faugere, M., Albeash, A., Yon, D.K., Boyer, L. et al., 2023, 'Sexual dysfunction in schizophrenia: A systematic review and meta-analysis', *JAMA Psychiatry* 80(11), 1110–1120. <https://doi.org/10.1001/jamapsychiatry.2023.2696>
- Kossi, O., Agbetou, M., Noukpo, S.I., Triccas, L.T., Dossou-Yovo, D.-E., Amanzonwe, E.R. et al., 2021, 'Factors associated with balance impairments amongst stroke survivors in northern Benin: A cross-sectional study', *South African Journal of Physiotherapy* 77(1), a1559. <https://doi.org/10.4102/sajp.v77i1.1559>
- Louw, Q.A., Conradie, T., Xuma-Soyizwapi, N., Davis-Ferguson, M., White, J., Stols, M. et al., 2023, 'Rehabilitation capacity in South Africa-A situational analysis', *International Journal of Environmental Research and Public Health* 20(4), 3579. <https://doi.org/10.3390/ijerph20043579>
- Maart, S. & Sykes, C., 2022, 'Expanding on the use of the international classification of functioning, disability and health: Examples and resources', *South African Journal of Physiotherapy* 78(1), 1614. <https://doi.org/10.4102/sajp.v78i1.1614>
- Mbada, C.E., Olaoye, M.I., Dada, O.O., Ayanniyi, O., Johnson, O.E., Odole, A.C. et al., 2019, 'Comparative efficacy of clinic-based and telerehabilitation application of Mckenzie therapy in chronic low-back pain', *International Journal of Telerehabilitation* 11(1), 41–58. <https://doi.org/10.5195/ijt.2019.6260>
- McCabe, M.P., Sharlip, I.D., Lewis, R., Atalla, E., Balon, R., Fisher, A.D. et al., 2016, 'Incidence and prevalence of sexual dysfunction in women and men: A consensus statement from the Fourth International Consultation on sexual medicine 2015', *Journal of Sexual Medicine* 13(2), 144–152. <https://doi.org/10.1016/j.jsxm.2015.12.034>
- McGrath, M. & Lynch, E., 2014, 'Occupational therapists' perspectives on addressing sexual concerns of older adults in the context of rehabilitation', *Disability and Rehabilitation* 36(8), 651–657. <https://doi.org/10.3109/09638288.2013.805823>
- Nicholas, A., Joshua, O. & Elizabeth, O., 2022, 'Accessing mental health services in Africa: Current state, efforts, challenges and recommendation', *Annals of Medicine Surgery (London)* 81, 104421. <https://doi.org/10.1016/j.amsu.2022.104421>
- Njoku, P.O., Ejim, E.C., Anisiuba, B.C., Ike, S.O. & Onwubere, B.J., 2021, 'Clinical and echocardiographic findings in a cross-sectional study of HIV-infected adults in Enugu, Nigeria', *Cardiovascular Journal of Africa* 32(6), 320–326. <https://doi.org/10.5830/CVJA-2020-065>
- Nottidge, B.A., Akpa, M.O., Oduyaiya, N.A., Odole, A.C., Fawole, O.I. & Akinpelu, A.O., 2020, 'Psychometric testing of Ibadan low back pain disability questionnaire', *Ghana Medical Journal* 54(2), 110–113. <https://doi.org/10.4314/gmj.v54i2.9>
- Nweke, M., Nombeko, M., Govender, N., Akinpelu, A., Ukwuoma, M. & Ogunniyi, A., 2022, 'Aerobic exercise for HIV-associated neurocognitive disorders in individuals on antiretroviral therapy: A randomised controlled trial', *Clinical Rehabilitation* 36(12), 1601–1612. <https://doi.org/10.1177/0269215221114587>
- Obanife, O.H., Ismail, N.J., Shehu, B.B., Lagbo, J., Otokpa, E.J. & Akaba, K., 2021, 'Management outcomes of lumbar spine degenerative diseases: Comparing operative versus non-operative treatments using Swiss spine stenosis scoring', *Interdisciplinary Neurosurgery* 23, 100894. <https://doi.org/10.1016/j.inat.2020.100894>
- Obaseki, D.O., Erhabor, G.E., Gnatiuc, L., Adewole, O.O., Buist, S.A. & Burney, P.G., 2016, 'Chronic airflow obstruction in a Black African population: Results of BOLD Study, Ile-Ife, Nigeria', *Chronic Obstructive Pulmonary Disease* 13(1), 42–49. <https://doi.org/10.3109/15412555.2015.1041102>
- Obasikene, G., Adobamen, P., Okundia, P. & Ogusi, F.O., 2012, 'Prevalence of ototoxicity in University of Benin Teaching Hospital, Benin city: A 5-year review', *Nigerian Journal of Clinical Practice* 15(4), 453–457. <https://doi.org/10.4103/1119-3077.104527>
- Obembe, A., Mapayi, B., Johnson, O., Agunbiade, T. & Emechete, A., 2013, 'Community reintegration in stroke survivors: Relationship with motor function and depression', *Hong Kong Physiotherapy Journal* 31(2), 69–74. <https://doi.org/10.1016/j.hkjp.2013.04.001>
- Obembe, A.O., Olaogun, M.M. & Olalemi, A.E., 2014a, 'Functional limitations because of fatigue among independently ambulant stroke survivors in Osun, South-Western Nigeria', *Physiotherapy Research International* 20(1), 54–59. <https://doi.org/10.1002/pri.1596>

- Obembe, A.O., Olaogun, M.O. & Adedoyin, R., 2014b, 'Gait and balance performance of stroke survivors in South-Western Nigeria – A cross-sectional study', *Pan African Medical Journal* 17(suppl 1), 6. <https://doi.org/10.11604/pamj.supp.2014.17.1.3001>
- Obimakinde, A.M., Achenbach, C. & Ogunniyi, A., 2021, 'Neurocognitive impairment in aging people living with HIV; a comparative study of elderly patients attending the University College Hospital Ibadan, Nigeria', *African Journal of Neurological Sciences* 40(2), 110–119.
- Odafé, S., Idoko, O., Badru, T., Aiyenigba, B., Suzuki, C., Khamofu, H. et al., 2012, 'Patients' demographic and clinical characteristics and level of care associated with lost to follow-up and mortality in adult patients on first-line ART in Nigerian hospitals', *Journal of the International AIDS Society* 15(2), 17424. <https://doi.org/10.7448/IAS.15.2.17424>
- Odole, A., Ogunlana, M., Adegoke, B., Bsc, F. & Useh, U., 2015, 'Depression, pain and physical function in patients with osteoarthritis of the knee: Implications for interprofessional care', *Nigerian Journal of Medical Rehabilitation* 18(1), 1–16. <https://doi.org/10.34058/njmr.v18i1.120>
- Odole, A.C. & Olugbenga-Alfred, A.A., 2018, 'Sexual functioning and selected clinical and psychosocial factors among individuals with chronic non-specific low back pain in Ibadan, Nigeria', *Sexuality and Disability* 36(2), 185–194. <https://doi.org/10.1007/s11195-018-9522-3>
- Ogba, O.M., Abia-Bassey, L.N. & Epoke, J., 2013, 'The relationship between opportunistic pulmonary fungal infections and CD4 count levels among HIV-seropositive patients in Calabar, Nigeria', *Transactions of the Royal Society of Tropical Medicine and Hygiene* 107(3), 170–175. <https://doi.org/10.1093/trstmh/trs025>
- Ogundunmade, B.G., Alonge, I.A., Chigbo, N.N. & Obi, F., 2022, 'Health system strengthening rehabilitation framework in developing and emerging Economies', *Tropical Journal of Medical Research* 21(1), 1–9. <https://doi.org/10.5281/zenodo.7106126>
- Ogunkeyede, S.A., Adebola, S.O., Daniel, A. & Adeyemo, A.A., 2019, 'Burden of hearing loss in Sub-Saharan Africa: Snapshot from an ENT clinic in Nigeria', *Heighpubs Otolaryngology and Rhinology* 3(1), 1–5. <https://doi.org/10.29328/journal.hor.1001016>
- Ogunnubi, O.P., Aina, F.O., Busari, C.O., Fatiregun, O., Fadipe, B., Adegbohun, A.A. et al., 2022, 'From ideation to attempt: A study of suicidality and its correlates amongst patients with schizophrenia in a resource-poor country', *South African Journal of Psychiatry* 28, 1547. <https://doi.org/10.4102/sajpspsychiatry.v28i0.1547>
- Ojagbemi, A., Akinyemi, J., Owolabi, M., Akinyemi, R., Arulogun, O., Gebregziabher, M. et al., 2020a, 'Predictors and prognoses of new onset post-stroke anxiety at one year in black Africans', *Journal of Stroke and Cerebrovascular Diseases* 29(9), 105082. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2020.105082>
- Ojagbemi, A., Akinyemi, R. & Baiyewu, O., 2014, 'Cognitive dysfunction and functional limitations are associated with major depression in stroke survivors attending rehabilitation in Nigeria', *NeuroRehabilitation* 34(3), 455–461. <https://doi.org/10.3233/NRE-141061>
- Ojagbemi, A., Bello, T. & Elugbadebo, F., 2019, 'Suicidal thoughts and contexts in Black African stroke survivors', *Journal of Geriatric Psychiatry and Neurology* 32(2), 74–80. <https://doi.org/10.1177/0891988718824035>
- Ojagbemi, A., Bello, T., Elugbadebo, O., Owolabi, M. & Baiyewu, O., 2020b, 'Different cognitive and functional outcomes in attenuated and full delirium syndromes among recent stroke survivors', *Journal of Stroke and Cerebrovascular Diseases* 29(11), 105251. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2020.105251>
- Ojagbemi, A., Bello, T., Owolabi, M. & Baiyewu, O., 2020c, 'Prevalence, predictors, and prognoses of prestroke neuropsychiatric symptoms at 3 months poststroke', *International Psychogeriatrics* 33(8), 827–834. <https://doi.org/10.1017/S1041610220003816>
- Ojagbemi, A., Bello, T., Owolabi, M. & Baiyewu, O., 2021a, 'New onset poststroke dementia at one year in Africans', *Journal of Geriatric Psychiatry and Neurology* 35(4), 565–573. <https://doi.org/10.1177/089198872111036190>
- Ojagbemi, A., Bello, T., Owolabi, M. & Baiyewu, O., 2021b, 'Prestroke cognitive decline in africans: Prevalence, predictors and association with poststroke dementia', *Journal of the Neurological Sciences* 429, 117619. <https://doi.org/10.1016/j.jns.2021.117619>
- Ojagbemi, A. & Owolabi, M., 2013, 'Predictors of functional dependency after stroke in Nigeria', *Journal of Stroke and Cerebrovascular Diseases* 22(8), e381–e387. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2013.04.015>
- Ojagbemi, A., Owolabi, M., Akinyemi, R., Arulogun, O., Akinyemi, J., Akpa, O. et al., 2017a, 'Prevalence and predictors of anxiety in an African sample of recent stroke survivors', *Acta Neurologica Scandinavica* 136(6), 617–623. <https://doi.org/10.1111/ane.12766>
- Ojagbemi, A., Owolabi, M., Atalabi, M. & Baiyewu, O., 2013, 'Stroke lesions and post-stroke depression among survivors in Ibadan', *African Journal of Medicine and Medical Sciences* 42, 245–251.
- Ojagbemi, A., Owolabi, M., Bello, T. & Baiyewu, O., 2017b, 'Stroke severity predicts poststroke delirium and its association with dementia: Longitudinal observation from a low income setting', *Journal of the Neurological Sciences* 375, 376–381. <https://doi.org/10.1016/j.jns.2017.02.039>
- Ojuawo, O.B., Aladesanmi, A.O., Opeyemi, C.M., Desalu, O.O., Fawibe, A.E. & Salami, A.K., 2019, 'Profile of patients with chronic obstructive pulmonary disease in Ilorin who were never-smokers', *Nigerian Journal of Clinical Practice* 22(2), 221–226. https://doi.org/10.4103/njcp.njcp_344_18
- Okonji, P.E. & Kanu, L.T., 2019, 'An insight into the explored and the unexplored aspects of vision rehabilitation in Nigeria: A systematic review of literature', *Journal of the Nigerian Optometric Association* 21(1), 19–25.
- Okwara, C.C., Ozoh, G. & Nwatu, B.C., 2015, 'Clinical and laboratory predictors of articular disorders among HIV-infected patients seen at teaching hospital Southeast Nigeria', *Annals of Medical and Health Science Research* 5(6), 447–453. <https://doi.org/10.4103/2141-9248.177985>
- Oladeji, B.D., Taiwo, B., Mosuro, O., Fayemiwo, S.A., Abiona, T., Fought, A.J. et al., 2017, 'Suicidal behavior and associations with quality of life among HIV-infected patients in Ibadan, Nigeria', *Journal of International Association of Providers of AIDS Care* 16(4), 376–382. <https://doi.org/10.1177/2325957415617829>
- Oladiji, J., Akinbo, S., Aina, O. & Aiyejusunle, C., 2009, 'Risk factors of post-stroke depression among stroke survivors in Lagos, Nigeria', *African Journal of Psychiatry* 12(1), 47–51. <https://doi.org/10.4314/ajpsy.v12i1.30278>
- Olagunju, A.T., Adeyemi, J.D., Erinfolami, A.R. & Ogundipe, O.A., 2012a, 'Factors associated with anxiety disorders among HIV-positive attendees of an HIV clinic in Lagos, Nigeria', *International Journal of STD & AIDS* 23(6), 389–393. <https://doi.org/10.1258/ijsa.2011.011200>
- Olagunju, A.T., Adeyemi, J.D., Ogbolu, R.E. & Campbell, E.A., 2012b, 'A study on epidemiological profile of anxiety disorders among people living with HIV/AIDS in a sub-Saharan Africa HIV clinic', *AIDS Behaviour* 16(8), 2192–2197. <https://doi.org/10.1007/s10461-012-0250-x>
- Olaoye, O.A., Soeker, S.M. & Anthea, R., 2021, 'Predictors of return to work among stroke survivors in south-west Nigeria', *Hong Kong Journal of Occupational Therapy* 34(1), 13–22. <https://doi.org/10.1177/1569186120926614>
- Olatubi, M.I., Alabi, B.D., Ademuyiwa, G.O. & Ojo, I.O., 2022, 'Prevalence and management of low back pain among health workers in a privately owned teaching Hospital in Nigeria', *The Open Public Health Journal* 15(1), e187494452211230. <https://doi.org/10.2174/18749445-v15-e221125-2022-103>
- Olibamoyo, O., Adewuya, A., Ola, B., Coker, O. & Atilola, O., 2019, 'Prevalence and correlates of depression among Nigerian stroke survivors', *South African Journal of Psychiatry* 25, a1252. <https://doi.org/10.4102/sajpspsychiatry.v25i0.1252>
- Olisah, V.O., Baiyewu, O. & Sheikh, T.L., 2010, 'Adherence to highly active antiretroviral therapy in depressed patients with HIV/AIDS attending a Nigerian university teaching hospital clinic', *African Journal of Psychiatry (Johannesburg)* 13(4), 275–279. <https://doi.org/10.4314/ajpsy.v13i4.61876>
- Olisah, V.O., Baiyewu, O. & Sheikh, T.L., 2011, 'Depression underdiagnosis and the effects on quality of life in outpatients with HIV at a Nigerian university teaching hospital', *African Journal of AIDS Research* 10(3), 247–254. <https://doi.org/10.2989/16085906.2011.626294>
- Olley, B.O., Adebayo, K.O., Ogunde, M.J., Ishola, A. & Ogar, A.P., 2017, 'Psychosocial factors predicting severity of depression among treatment-seeking HIV/AIDS patients: A multi-site Nigerian study', *Nigerian Journal of Clinical Practice* 20(3), 296–302. <https://doi.org/10.4103/1119-3077.201432>
- Olubor, O.J., Uhumwangho, O.M. & Omoti, A.E., 2016, 'Ocular disorders in stroke patients in a tertiary hospital in Nigeria', *Nigerian Journal of Clinical Practice* 19(3), 397–400. <https://doi.org/10.4103/1119-3077.179290>
- Oni, O.D., Olagunju, A.T., Olisah, V.O., Aina, O.F. & Ojini, F.I., 2018, 'Post-stroke depression: Prevalence, associated factors and impact on quality of life among outpatients in a Nigerian hospital', *South African Journal of Psychiatry* 24, a1058. <https://doi.org/10.4102/sajpspsychiatry.v24i0.1058>
- Onovo, A.A., Adeyemi, A., Onime, D., Kalnoky, M., Kagniniwa, B., Dessie, M. et al., 2023, 'Estimation of HIV prevalence and burden in Nigeria: A Bayesian predictive modelling study', *EclinicalMedicine* 62, 102098. <https://doi.org/10.1016/j.eclinm.2023.102098>
- Onuigbo, L.N., Eseadi, C., Ebifa, S., Ugwu, U.C., Onyishi, C.N. & Oyeoku, E.K., 2018, 'Effect of rational emotive behavior therapy program on depressive symptoms among university students with blindness in Nigeria', *Journal of Rational-Emotive & Cognitive-Behavior Therapy* 37(1), 17–38. <https://doi.org/10.1007/s10942-018-0297-3>
- Onyedum, C.C., Chukwuka, J.C., Onwubere, B.J., Ulasi, I.I. & Onwuekwe, I.O., 2010, 'Respiratory symptoms and ventilatory function tests in Nigerians with HIV infection', *African Health Sciences* 10(2), 130–137.
- Osahan, A.I. & Onunu, A.N., 2007, 'Ocular disorders in patients infected with the human immunodeficiency virus at the University of Benin Teaching Hospital, Benin City, Nigeria', *Nigerian Journal of Clinical Practice* 10(4), 283–286.
- Oyedokun, A., Odeigah, L.O., Alabi, K.M., Adegunloye, O.A. & Akujobi, H.C., 2014, 'Sexual dysfunction in HIV-positive women attending a tertiary health facility in North Central Nigeria', *Journal of AIDS & Clinical Research* 5(12), 1000398. <https://doi.org/10.4172/2155-6113.1000398>
- Oyedun, A.R. & Oluwatoyin, G.O., 2023, 'HIV associated psychiatric comorbidity among attendees at a tertiary hospital, North-Eastern Nigeria', *South African Journal of Psychiatry* 29, a2022. <https://doi.org/10.4102/sajpspsychiatry.v29i0.2022>
- Oyewole, O.O., Ogunlana, M.O., Gbiri, C.A.O. & Oritogun, K.S., 2017, 'Sexual dysfunction in a Nigerian stroke cohort: A comparative cross-sectional study', *Sexuality and Disability* 35(3), 341–351. <https://doi.org/10.1007/s11195-017-9488-6>
- Oyewole, O.O., Ogunlana, M.O., Oritogun, K.S. & Gbiri, C.A., 2016, 'Post-stroke disability and its predictors among Nigerian stroke survivors', *Disability and Health Journal* 9(4), 616–623. <https://doi.org/10.1016/j.dhjo.2016.05.011>
- Park, J.J., Doo, S.W., Kwon, A., Kim, D.K., Yang, W.J., Song, Y.S. et al., 2023, 'Effects of sexual rehabilitation on sexual dysfunction in patients with cardiovascular disease: A systematic review and meta-analysis', *World Journal of Men's Health* 41(2), 330–341. <https://doi.org/10.5534/wjmh.220124>
- Pascual, A., Wighman, A., Littooi, E.C. & Janssen, T.W.J., 2021, 'Sexuality as part of rehabilitation? A qualitative study on the perceptions of rehabilitation nurses on discussing patient sexuality during clinical rehabilitation', *Disability and Rehabilitation* 43(11), 1550–1557. <https://doi.org/10.1080/09638288.2019.1670271>
- Peters, G.O., Buni, S.G., Oyejemi, A.Y. & Hamzat, T.K., 2012, 'Determinants of return to work among Nigerian stroke survivors', *Disability and Rehabilitation* 35(6), 455–459. <https://doi.org/10.3109/09638288.2012.697251>

- Peters, M.D.J., Marnie, C., Tricco, A.C., Pollock, D., Munn, Z., Alexander, L. et al., 2020, 'Updated methodological guidance for the conduct of scoping reviews', *JBI Evidence Synthesis* 18(10), 2119–2126. <https://doi.org/10.11124/JBIES-20-00167>
- Phillips, C.J., 2009, 'The cost and burden of chronic pain', *Reviews in Pain* 3(1), 2–5. <https://doi.org/10.1177/204946370900300102>
- Ramlachan, P. & Naidoo, K., 2024, 'Enhancing sexual health in primary care: Guidance for practitioners', *South African Family Practice* 66(1), e1–e5. <https://doi.org/10.4102/safp.v66i1.5822>
- Royal, 3rd, W., Cherner, M., Burdo, T.H., Umlauf, A., Letendre, S.L., Jumare, J. et al., 2016, 'Associations between cognition, gender and monocyte activation among HIV infected individuals in Nigeria', *PLoS One* 11(2), e0147182. <https://doi.org/10.1371/journal.pone.0147182>
- Seb-Akahomen, O., Lawani, A. & James, B., 2018, 'Mood and anxiety disorders adversely influence medication adherence to antiretroviral therapy among people living with HIV/AIDS in Nigeria', *HIV & AIDS Review* 17(2), 91–97. <https://doi.org/10.5114/hivar.2018.76368>
- Seb-Akahomen, O.J., Lawani, A.O. & James, B.O., 2019, 'Stigma and suicidality among people living with HIV attending a secondary healthcare facility in Nigeria', *Perspectives in Psychiatric Care* 55(4), 538–545. <https://doi.org/10.1111/ppc.12321>
- Segebi, O.A., Olusoga-Peters, O.O. & Oluwapelumi, O., 2013, 'Clinical and audiometric features of presbycusis in Nigerians', *African Health Sciences* 13(4), 886–892. <https://doi.org/10.4314/ahs.v13i4.4>
- Song, H., Oh, H., Kim, H. & Seo, W., 2011, 'Effects of a sexual rehabilitation intervention program on stroke patients and their spouses', *NeuroRehabilitation* 28(2), 143–150. <https://doi.org/10.3233/NRE-2011-0642>
- Soroye, M.O., Oleribe, O.O. & Taylor-Robinson, S.D., 2021, 'Community psychiatric care: An urgent need in Nigeria', *Journal of Multidisciplinary Healthcare* 14, 1145–1148. <https://doi.org/10.2147/JMDH.S309517>
- Stucki, G. & Bickenbach, J., 2017, 'Functioning: The third health indicator in the health system and the key indicator for rehabilitation', *European Journal of Physical and Rehabilitation Medicine* 53(1), 134–138. <https://doi.org/10.23736/S1973-9087.17.04565-8>
- Sunmonu, T.A., Sellner, J., Ogunrin, O.A., Imarhiagbe, F.A., Komolafe, M.A., Afolabi, O.T. et al., 2015, 'Intellectual impairment in patients with newly diagnosed HIV infection in Southwestern Nigeria', *BioMed Research International* 2015, 185891. <https://doi.org/10.1155/2015/185891>
- Terrill, A.L., Schwartz, J.K. & Belagaje, S.R., 2018, 'Best practices for the interdisciplinary rehabilitation team: A review of mental health issues in mild stroke survivors', *Stroke Research and Treatment* 2018, 6187328. <https://doi.org/10.1155/2018/6187328>
- Tricco, A.C., Lillie, E., Zarin, W., O'Brien, K.K., Colquhoun, H., Levac, D. et al., 2018, 'PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and explanation', *Annals of Internal Medicine* 169(7), 467–473. <https://doi.org/10.7326/M18-0850>
- Vardeh, D., Mannion, R.J. & Woolf, C.J., 2016, 'Toward a mechanism-based approach to pain diagnosis', *Journal of Pain* 17(suppl 9), T50–T69. <https://doi.org/10.1016/j.jpain.2016.03.001>
- Vincent-Onabajo, G. & Blasu, C., 2016, 'Participation in leisure activities after stroke: A survey of community-residing stroke survivors in Nigeria', *NeuroRehabilitation* 38(1), 45–52. <https://doi.org/10.3233/NRE-151294>
- Vincent-Onabajo, G., Gamawa, A.U., Ali, M.U., Gujba, F.K. & Masta, M.A., 2016, 'Stroke survivors who fall: An exploratory cross-sectional survey in Nigeria', *Brain Impairment* 17(2), 143–150. <https://doi.org/10.1017/Brimp.2016.11>
- Vincent-Onabajo, G., Musa, H.Y. & Joseph, E., 2018, 'Prevalence of balance impairment among stroke survivors undergoing neurorehabilitation in Nigeria', *Journal of Stroke and Cerebrovascular Diseases* 27(12), 3487–3492. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2018.08.024>
- Vincent-Onabajo, G.O., Hamzat, T.K. & Owolabi, M.O., 2014, 'Trajectory of motor performance over twelve months in Nigerian stroke survivors', *Brain Impairment* 15(1), 43–50. <https://doi.org/10.1017/Brimp.2014.3>
- Vos, T., Lim, S.S., Abbafati, C., Abbas, K.M., Abbasi, M., Abbasifard, M. et al., 2020, 'Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: A systematic analysis for the global burden of disease study 2019', *The Lancet* 396(10258), 1204–1222. [https://doi.org/10.1016/s0140-6736\(20\)30925-9](https://doi.org/10.1016/s0140-6736(20)30925-9)
- WHO, 2001, *International classification of functioning, disability and health*, ICF, Geneva.
- WHO, 2018, *Access to rehabilitation in primary health care: An ongoing challenge*, IGO, Geneva.
- WHO, 2019, *Rehabilitation in health systems: Guide for action*, IGO, Geneva
- WHO, 2023, *Basic rehabilitation package clinical resource – A resource for primary health care & low-resource settings*, Information Sheet. In, Geneva.
- WHO, 2024, *Social determinants of health*, viewed 27 May 2024, from https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1.
- Wiech, K., Ploner, M. & Tracey, I., 2008, 'Neurocognitive aspects of pain perception', *Trends in Cognitive Sciences* 12(8), 306–313. <https://doi.org/10.1016/j.tics.2008.05.005>
- Wouters, N.L., Kaanen, C.I., Den Ouden, P.J., Schilthuis, H., Bohringer, S., Sorgdrager, B. et al., 2020, 'Noise exposure and hearing loss among Brewery Workers in Lagos, Nigeria', *International Journal of Environmental Research and Public Health* 17(8), 2880. <https://doi.org/10.3390/ijerph17082880>
- Yakasai, A.M., Gudaji, M.I., Muhammad, H., Ibrahim, A., Owolabi, L.F., Ibrahim, D.A. et al., 2015, 'Prevalence and correlates of HIV-Associated Neurocognitive Disorders (HAND) in Northwestern Nigeria', *Neurology Research International*, 2015, 486960. <https://doi.org/10.1155/2015/486960>
- Yerima, A. & Adelowo, O., 2017, 'Knee osteoarthritis and associated cardio-metabolic clusters in a tertiary hospital in Nigeria', *Clinical Rheumatology* 36(11), 2541–2548. <https://doi.org/10.1007/s10067-017-3816-1>
- Yusuf, A.J., Hassan, A., Mamman, A.I., Muktar, H.M., Suleiman, A.M. & Baiyewu, O., 2017, 'Prevalence of HIV-Associated Neurocognitive Disorder (HAND) among patients attending a tertiary health facility in Northern Nigeria', *Journal International Association of Providers of AIDS Care* 16(1), 48–55. <https://doi.org/10.1177/2325957414553839>