


Review

Using the ICF to Guide Inclusion in the African Educational Context: A Scoping Review

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Abstract: While the International Classification of Functioning, Disability, and Health (ICF) has significantly contributed to educational research supporting inclusive initiatives worldwide, its application in special education contexts across the African continent remains unclear. This study aims to explore how the ICF is currently used in the field of education in Africa, with an emphasis on children with disabilities, although not restricted to this group. The Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) diagram shows that the 11 African-specific databases that were searched yielded 256 records. These records were uploaded to Rayyan, an online collaborative review platform. First, 158 duplicates were removed. Following title and abstract level screening, six records were eligible at full-text level, of which four were excluded, as they focused on the health context. The findings from the remaining two studies were compared and discussed in terms of similarities and differences. Both articles addressed the interactive nature between an individual's activities and participation and environmental factors, agreeing on the importance of addressing societal barriers to inclusion. The use of the ICF in educational settings across Africa is still scarce, thus requiring strategies that could drive inclusive education for children with disabilities on the African continent.

Keywords: Africa; barriers; disability; environment; facilitators; ICF; inclusion



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1. Introduction

Africa's child population will reach 1 billion by 2055, making it the largest child population among all continents [1]. Quality education plays a crucial role in enhancing individuals' overall quality of life and serves as a significant tool for breaking the cycle of poverty. By fostering educational opportunities, equality can be advanced across various dimensions: between genders, among children with and without disabilities, and between those from different socio-economic backgrounds [2]. Since the beginning of the 21st century, Africa has made notable gains in the number of children attending school.

It is therefore unsettling that according to a 2024 United Nations report, over 100 million children of school-going age remain outside the formal education system in Africa [3].

Goal 4 of the Sustainable Development Goals (SDGs) seeks to eliminate educational disparities by 2030, with a particular focus on addressing gender inequalities and ensuring equal access to education for vulnerable populations, including children with disabilities [4]. The first World Report on Disability noted a higher prevalence of severe and moderate disabilities in Africa compared to other regions [5]. Data from the African region also reveals that among children with developmental disorders, hearing and visual impairments, intellectual disabilities, and autism spectrum disorders are the most prevalent [6]. The SDGs also align with Article 24 of the Convention on the Rights of Persons with Disabilities (CRPD), to which most African countries are signatories, affirming the right of children with disabilities to education [7]. The CRPD underscores the necessity of an inclusive educational framework, and ensuring that children with disabilities are integrated into mainstream education systems is a fundamental step towards achieving a fair and equitable society. Schools, as key environments where early attitudes are formed, should be pivotal in fostering awareness and positive attitudes towards individuals with disabilities and their families [8], as attitudinal barriers have often been identified as one of the root causes hampering inclusion for children with disabilities, particularly on the African continent where disability stigma is widespread [9,10].

The SDGs establish global objectives for achieving inclusive education and addressing educational inequalities. These objectives are reinforced by the CRPD's legal and human rights standards, which advocate for inclusive education and the removal of barriers. The CRPD is partially based on the World Health Organization's International Classification of Functioning, Disability, and Health (ICF) [11], which employs a biopsychosocial model. This model emphasizes that disability is not a personal characteristic, but a condition resulting from interactions with various factors, including the environment [12]. The ICF thus provides a framework for evaluating the educational needs of children with disabilities and developing targeted interventions, and offers a comprehensive understanding of the impact of disability on educational experiences.

The impact of the ICF on how disability is perceived and monitored is undeniable [13]. In 2012, Moretti, Alves, and Maxwell conducted a seminal systematic review that elucidated the application of the ICF within the educational sector [14]. Since then, several review papers have been published with the ICF as the basis, focusing on autism and attention-hyperactivity deficit disorder [15], intellectual disability [16], physical disability [17], and multiple disabilities [18], as well as one on barriers and facilitators in education for children worldwide [19].

The World Health Organization originally introduced the ICF in 2001, aiming to create a universal language and framework for describing health and disability [11]. This was followed by the release of a specialized version for children and youth (ICF-CY) in 2007, which extended the framework's utility to younger populations [20]. The integration of ICF-CY into the broader ICF framework in 2012 marked a significant step in harmonizing health and educational assessments and interventions across age groups [21]. For the purpose of this review, references to "ICF" will encompass both the original framework and its child and youth adaptation. The WHO has recommended utilization of the ICF in many jurisdictions, and there is widespread acceptance of the ICF framework.

The ICF employs a biopsychosocial model that offers a holistic view of children with disabilities and a balanced interpretation of the person, as it integrates biological, psychological, and social dimensions to comprehensively understand how various impairments affect a child's functionality in both structured and natural environments, including educational settings. This model of disability therefore emphasizes that the needs of persons with disabilities are not just medical, but more broadly social, educational, and contextual. This approach used in the ICF diverges from traditional diagnostic-focused models, instead emphasizing overall health and functioning [22]. Additionally, the ICF supports cross-cultural research by accommodating diverse languages, beliefs, and environmental conditions—

elements that are particularly pertinent in a continent as linguistically and culturally varied as Africa, which encompasses 54 countries and hosts over 2100 spoken languages [23,24]. This capability is vital for conducting inclusive and comparative educational research across different African contexts.

The ICF framework delineates two principal components essential for understanding functioning and disability. The first component, Functioning and Disability, is subdivided into Body Function and Structures—addressing physiological and anatomical aspects such as sensory, mental, and speech or voice functions—and Activities and Participation, which focuses on the child’s capability to engage in daily life tasks including mobility, communication, and self-care. The second component, Contextual Factors, comprises both environmental factors and personal factors. Environmental factors include the physical, social, and attitudinal environments that surround and interact with the individual, whereas personal factors encompass intrinsic attributes such as age, habits, lifestyle, and social background [21]. An individual’s disability is understood as the dynamic interaction between their health and contextual factors (i.e., environmental and personal factors) that hinder effective everyday participation, such as attending school. One of the most important environmental factors is the attitude towards disability [25]. In Africa, various assumptions, false perceptions, misconceptions, and traditional or religious beliefs about both the natural and supernatural worlds prevail. For example, in Tanzania, there is a misconception that children with albinism will die young; therefore, they are not sent to school, which prohibits their basic right to education [26]. In many African countries, such as Cameroon, Ethiopia, Senegal, Uganda, and Zambia, there is a belief that disability is an ancestral curse or the result of actions by the parents—typically the mothers—such as promiscuity or other sins [8]. The ICF’s comprehensive structure allows for a nuanced assessment of an individual’s functional status and their interaction with various contextual elements.

The adoption of the ICF as a conceptual framework offers significant advantages, particularly its “common language” (i.e., shared language), which facilitates improved communication across country borders, languages, and professions, thereby allowing data to be compared across disciplines, countries, services, and over time [21]. Globally, many universities have adopted the ICF framework in their curricula in health sciences (e.g., in physiotherapy) due to the positive impact on students’ clinical reasoning skills [12,27]. It has also been used effectively in the undergraduate clinical training of different health care providers (e.g., audiologists, physiotherapists, and speech-language therapists) to progressively increase their disability knowledge and awareness through theoretical tuition, practical skill application of these concepts, and clinical experience when senior students work in different healthcare sectors. This cross-disciplinary applicability underscores the ICF’s utility in integrating diverse research findings and operational practices globally. These benefits are extensively validated within the healthcare sector, as demonstrated in a recent systematic review by Leonardi et al. (2022) [12].

In addition to its prominence in healthcare, the ICF has gained increasing relevance in the field of education over the past decade [28] and has also become instrumental in providing a nuanced approach to approaching themes such as participation within inclusive education [29]. Central to the ICF framework is its emphasis on an individual’s capabilities, focusing on enhancing abilities to achieve full participation in daily activities, rather than merely cataloguing disabilities [30], all relevant constructs for inclusive education. This strengths-based approach promotes a more positive outlook on disability and facilitates the identification of both barriers and enablers that affect participation in various settings, including schools and other educational contexts. Furthermore, the ICF framework is instrumental in assessing the efficacy of intervention programs by evaluating their impact across its distinct components [31]. For example, the impact can be seen in (i) Body Function and Structure (improvements in reading ability and concentration); (ii) Activities and Participation (being included more frequently in other children’s games and joining classroom conversations more often); and (iii) Environmental factors (enjoying preschool

where the child feels at ease with teachers and peers). This is particularly important, as research has shown that the efficacy of reducing disability stigma increases when children with and without disabilities have contact with each other, in addition to receiving education about disability, which is possible in inclusive classrooms [8]. The ICF has also seen increased use and implementation across policy and statutory documents, such as seen in the development of education plans [32]. These examples underscore the ICF's utility in providing a comprehensive evaluation of how interventions affect all aspects of a child's life. While the use of the ICF is well documented in health professions, its uptake globally in the education domain has been slow.

Africa's largely young population offers a significant opportunity to boost economic productivity and improve the quality of life for its communities, including children with disabilities, through the adoption of inclusive education practices [33]. Education plays a crucial role in developing skills, fostering learning, and enhancing overall quality of life. Despite substantial efforts by many African countries to improve access to and quality of education, a significant number of children still face barriers to basic education. For instance, over one-fifth of primary-age children in sub-Saharan Africa are not in school, and nearly 60 percent of youths aged 15 to 17 are out of school [3]. These challenges are compounded by a range of factors including geographical location, gender, extreme poverty, disability, crises, conflict, displacement, political instability, cultural norms, biological factors, insecurity, and climate change. Consequently, children with disabilities face particular difficulties in enrolling and completing their education.

Aim

The overall aim of this study is to explore how the ICF is currently used in the field of education in Africa, with an emphasis on children with disabilities, although not restricted to this group.

2. Methodology

A scoping review research design was employed to scope the extant literature, as it enables the exploration of a broad topic rather than answering a specific question, helping to identify knowledge gaps and provide an overview of the area, in this case the extent, range, and characteristics of published research on the ICF and education on the African continent. As such, scoping reviews can be regarded as "exploratory projects" that chart the available literature, especially when not much is known about the extent of the specific phenomenon under investigation, and show where the research gaps are, which is critical for scholars in the field, in this case, education scholars [34]. As per the requirements of scoping reviews, the review protocol was not registered [35].

This study forms part of a larger international study on the ICF and education, which included researchers with knowledge of and experience in using the ICF and education, and with command of the English language [28]. They were initially contacted by the project coordinator via an e-mail invitation letter, after which all of the invited researchers engaged with their respective networks on the topic, similar to a snowball sampling method. This ensured depth and breadth of skill, as various databases were searched in a variety of different languages, namely, English, German, Spanish, Afrikaans, Italian, Portuguese, and Chinese. The research group met remotely every month to discuss the project stages, using English as the lingua franca. The main aim of the larger project is to explore how the ICF is situated in the education field in global contexts.

This methodology follows Arksey and O'Malley's (2005) [36] seminal five-stage framework for scoping reviews: (i) identifying the research question; (ii) identifying relevant studies; (iii) selecting relevant studies; (iv) tabulating the data; and (v) accumulating, summarizing, and reporting the results.

1. Identifying the research question

For the purpose of the current review, a sub-group of researchers met and selected a specific geographical area, namely, Africa. As a result of the subgroup researcher meetings,

the final research question agreed upon for this study was articulated as “How is the ICF used in education in the respective African countries?”

2. *Identify the relevant studies*

To identify the relevant studies, a search strategy was developed, followed by an identification of search terms, and finally conducting the data searches. The PCC (Population/Concept/Context) framework, recommended by the Joanna Briggs Institute was employed to identify the main concepts and inform the search strategy [37]. To ensure a comprehensive search strategy, the search terms were developed in English and translated into two languages, namely, Afrikaans and Portuguese (as a pilot strategy), in an attempt to recognize the linguistic diversity within the African continent. Afrikaans remains a widely spoken language among researchers and practitioners in South Africa [38], and in Namibia [39], while Portuguese is spoken in Angola [40] and Mozambique [41]. The inclusion of more languages was done to ensure that studies conducted in or reported in these languages are not inadvertently excluded, providing a thorough examination of how the ICF is utilized across different linguistic contexts in African education. This multi-language approach aimed to capture relevant studies that may only be indexed or available in Afrikaans or Portuguese, thus broadening the scope of the English literature reviewed and ensuring a more inclusive representation of regional research outputs. However, a pilot search in Afrikaans and Portuguese yielded no studies that were relevant, and hence the multi-language strategy was aborted, continuing only in English, which is widely used as the medium of instruction and research in higher education on the African continent [42].

This scoping review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) [43] guidelines. A detailed PRISMA flow diagram, as presented in Figure 1, was used to illustrate the screening process of the studies included in this review. The complete PRISMA checklist is also provided as Supplementary Material to ensure transparency and replicability in the review process [43].

This compliance ensures a comprehensive and systematic approach to identifying, screening, and including studies relevant to using the ICF in African educational contexts.

Initially, search terms related to the participants (school-age children), concept (ICF), and context (education and Africa) were proposed, discussed, and finally selected with a focus on relevance to the ICF/ICF-CY (e.g., ICF, International Classification of Functioning, environment*, personal factors, participation) and to education (school, education*, inclusion/inclusive, eligibility, goals, identification) and various abbreviations and combinations related to the phrase special education needs (SNE, SEN, “special needs”, “Special Ed”, SpecEd, SPED). Furthermore, only studies that were conducted in one of the 51 African countries included in the World Bank list of African countries, as shown in Table 1, were included. For the 2025 fiscal year, the World Bank used the World Bank Atlas measure to calculate the GNI per capita and defined low-income economies as those with a GNI per capita of USD 1145 (US) or less in 2023; lower middle-income economies as those with a GNI per capita between USD 1146 and USD 4515 (US); upper middle-income economies as those with a GNI per capita between USD 4516 and USD 14,005 (US); and high-income economies as those with a GNI per capita of USD 14,005 (US) or higher [44].

An experienced librarian with expertise in scoping/systematic reviews provided crucial insights that enhanced the refinement of these search terms, thereby increasing the efficacy of electronic searches [45]. Preliminary searches were then conducted to assess the effectiveness of the search terms. After refining the search terms, they were combined using Boolean operators “AND” and “OR” to form a single search string, namely:

“ICF” OR “International Classification of functioning”) AND (school OR inclus* OR SNE OR SEN OR “special needs” OR “Special Ed” OR SpecEd OR SPED).

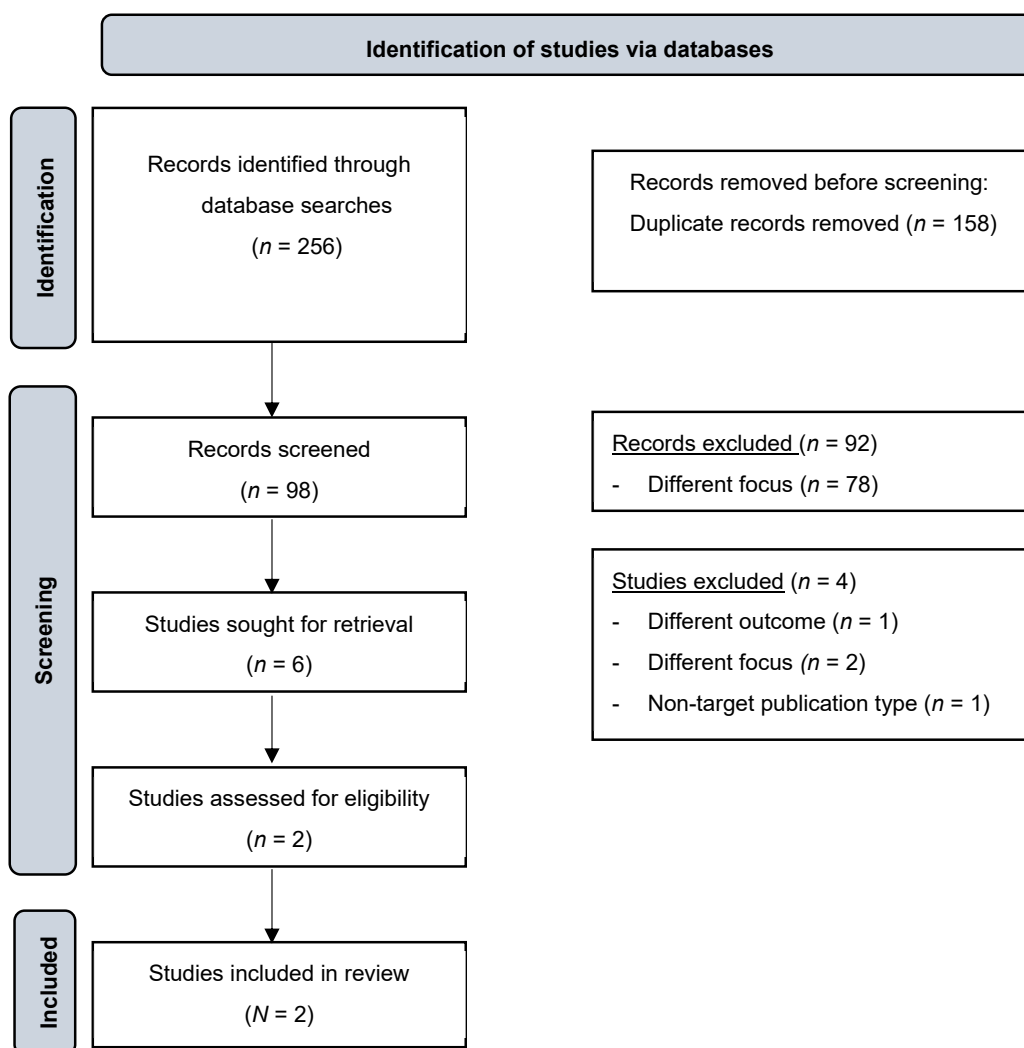


Figure 1. PRISMA diagram for scoping review process. Source: Page et al., 2021 [43].

Table 1. African country classification according to the World Bank list (2024) (N = 51).

Classification	Countries in Alphabetical Order
Low-income countries (n = 22)	Burkina Faso; Burundi; Central African Republic; Chad; Congo (Democratic Republic); Eritrea; Ethiopia; Gambia (The); Guinea-Bissau; Liberia; Madagascar; Malawi; Mali; Mozambique; Niger; Rwanda; Sierra Leone; Somalia; South Sudan; Sudan; Togo; Uganda. Angola; Benin; Cabo Verde; Cameroon; Comoros; Congo (Republic); Côte d’Ivoire;
Lower-middle income countries (n = 22)	Djibouti; Egypt; Eswatini; Ghana; Guinea; Kenya; Lesotho; Mauritania; Morocco; Nigeria; Senegal; Tanzania; Tunisia; Zambia; Zimbabwe.
Upper-middle income countries (n = 7)	Algeria; Botswana; Equatorial Guinea; Gabon; Mauritius; Namibia; South Africa.

In order to ensure that publications related to the African continent were included, an electronic search of specific African databases was conducted, namely, African Digital Research Repositories, Global Campaign for Education, Inclusive Education South Africa, Open Research Community, Edu-Links, Disability Africa, Thutong, Codesria.org, African

Union (<https://au.int/en/sa/acalan> (13 May 2024)), Association for the Development of Education in Africa (ADEA), and the African Journal of Disability. All searches were conducted between 1 and 31 May 2024.

Given that the ICF was published in 2001, this year was considered the earliest cut-off point.

3. *Selecting relevant studies*

The results from the databases (256 records) were exported to Rayyan, a complimentary web and mobile application designed to streamline the preliminary review of abstracts and titles by combining semi-automated processes with a user-friendly interface to enhance efficiency [46]. All records were sorted alphabetically by author and then duplicates were identified and removed.

The first and the last author screened the titles and abstracts separately for suitability, focusing on the inclusion and exclusion criteria using Rayyan in blind mode, as outlined in Table 2. Any abstracts the authors disagreed upon were included at this point in the review process.

Table 2. Criteria for the inclusion and exclusion of studies within this scoping review.

Criterion	Inclusion	Exclusion	Justification
ICF	Studies focused on the ICF or ICF-CY.	Studies focused on other ICD-10 codes or unrelated frameworks.	Ensures the relevance to the specific framework of study.
Education	Studies related to pre-school, primary school, high school, special needs school.	Health as well as studies focused solely on higher education or non-educational settings.	Focuses on the educational stages most impacted by ICF application.
Africa	Studies conducted in countries listed on the World Bank list of African countries.	Studies conducted outside of these countries.	Maintains geographic relevance to the African continent.
Type of publication	Peer-reviewed academic works: journal articles, research reports, books, book chapters, dissertations.	Grey literature and non-peer-reviewed sources (e.g., newspaper articles, blog posts).	Ensures methodological quality and scientific rigor.
Date of publication	Published between January 2001 and December 2023.	Studies published before 2001.	Aligns with the publication year of the ICF and captures contemporary research trends. Matches the linguistic capabilities of the research team and the significant languages of publication within the African research community.
Language	Studies published in English or Afrikaans.	Studies published in language other than English or Afrikaans.	

Following the identification phase using the PRISMA framework, the next step was to read the entire study, focusing primarily on the Section 2. Again, the first and the last author evaluated the records separately, using the same criteria. A 100% inter-rater agreement was achieved. As shown in Table 3, four studies, two from Rwanda (a low-income country) and two from South Africa (an upper-middle income country) were excluded. All four of these studies focused on the health care context, with both Rwandan studies focusing on physiotherapists, and both South African studies focusing on students in health sciences, which also included physiotherapists.

The remaining two studies were then included for data extraction. As scoping reviews are aimed at offering a broad overview of the existing evidence, rather than delivering a critically appraised and synthesized response to a specific question, the methodological limitations or risk of bias in the evidence is typically not evaluated, and hence both remaining studies were included in this study [35].

4. *Tabulating the data*

Data were extracted using a standardized form to collect specific information on the descriptive information of the studies, as well as data on the PCC (Population/Concept/Context) framework. The synthesis involved combining qualitative and quantitative data to provide a comprehensive overview of the findings.

Table 3. Studies excluded at full-text level with justification.

Author and Year	Country	Aim	Justification for Exclusion
Rhoda, Laattoe, et al., 2016 [47]	South Africa	To explore the experiences and perceptions of health sciences students of an interprofessional education collaborative education intervention they had engaged in.	Did not focus on the educational context.
Rhoda, Waggie et al., 2016 [48]	South Africa	To present the use of the ICF and the community-based rehabilitation (CBR) matrix for identifying and addressing the health care needs of the community.	Did not focus on the educational context.
Sagahutu et al., 2020 [49]	Rwanda	To determine if an ICF-based training framework resulted in improved interprofessional behaviour among healthcare practitioners in Rwanda.	Did not focus on the educational context.
Sander et al., 2015 [50]	Rwanda	To present a framework to upgrade clinical reasoning skills of practicing physiotherapists in Rwanda.	Did not focus on the education context.

3. Results

The two studies that met the eligibility criteria are summarized and tabulated according to a range of characteristics. Table 4 includes a description of the studies, as this information assists with reference tracking as well as ease of comparison of sources. Table 5 focuses on the population included.

Table 4. Descriptive information ($N = 2$).

Description	Study 1 [51]	Study 2 [52]
Authors	Sagahutu, Malachie, Struthers	Okyere, Donnelly & Aldersey
Publication year	2013	2019
Identifying database	African Journals Online	African Journals Online
Country in which research was conducted	Rwanda	Ghana
Main research aim	To identify the physical environmental barriers to school attendance by children with disability in two CBR-centres in Rwanda.	To demonstrate the ICF-CYs potential to inform and support Ghana's education system and to improve the implementation of education for children with disabilities, particularly in inclusive education in Ghana.
Type of study	Quantitative cross-sectional descriptive study using surveys.	Descriptive theoretical study.

Table 4 shows that both studies were identified through the African Journals Online platform and were conducted within the same decade (2010–2020). A cross-sectional study using surveys describes the low-income country (Rwanda), while a descriptive theoretical study was used in the lower-middle income country (Ghana). The main aims of the studies differed substantially—the Rwandan study aimed at using the ICF to identify physical environmental barriers that negatively influence school attendance of children with physical disability. In contrast, the Ghanaian study attempted to demonstrate the potential of the ICF in facilitating inclusive education for children with disability. Table 5 includes a description of the population described in the studies.

Table 5. Description of population included in the studies ($N = 2$).

Description	Study 1 [51]	Study 2 [52]
Study population in terms of size, age, and gender	Size = 94 3 different age cohorts: <ul style="list-style-type: none"> ■ 7–10-year-olds ■ 11–14-year-olds ■ 15–18-year-olds Sex: <ul style="list-style-type: none"> ■ 49 boys ■ 45 girls 	Size not mentioned. No specific ages or sex were mentioned, but the study focused on all children (including children with disability) that are of school-going age, but does not state the exact age brackets.
Type of educational setting	Mainstream/local school.	Mainstream/local school.
Level of education focused on	<ul style="list-style-type: none"> ■ 57% never attended ■ 22% attended 1 year ■ 8.5% attended 2 years ■ 7% attended 3 years ■ 2% attended 4 years ■ 2% attended 5 years 	Study does not specify.
Type of disability/impairment focused on	<ul style="list-style-type: none"> ■ 53% mobility ■ 30% epilepsy ■ 30% speaking ■ 22% learning ■ 12% behaviour ■ 11% hearing ■ 11% visual ■ 1% “feeling” 	Focuses on intellectual and developmental delay (IDD).
Stakeholders mentioned	Surveys were completed by: <ul style="list-style-type: none"> ■ 66% mothers ■ 16% fathers ■ 19% unspecified caregivers 	Focuses on children’s right to attend school by mentioning the national Ghanaian policies.

From Table 5, it is clear that both studies held an inclusive education focus by mentioning local mainstream schools. Study 1 included three age cohorts including children from 7 to 18-year-olds, while Study 2 simply mentioned children of school-going age, without mentioning the specific ages that are included in this description in Ghana. The Rwandan study shows that the children’s level of education differed greatly, with more than half never having attended school (57%), while the rest varied between 1 and 5 years. It is noticeable that the percentage of children who had attended school decreases as the number of years increases. The type of disability that was focused on in the study was slightly different, with Study 2 focusing on children with intellectual and developmental disability, while Study 1 focused on children with physical disability (described as “mobility impaired”). This study described the children’s co-morbid disabilities as well, and from Table 5 it is evident that many children had multiple disabilities. Table 6 shows how the ICF was used in the two studies.

From Table 6, environmental barriers that impact school participation are the common focus of these two studies.

These two articles addressed the interactive nature between an individual’s activities and participation and environmental factors, an essence of the ICF. Sagahutu et al. [51] (2013) provided empirical data on the barriers specific to the physical environment in Rwanda. Examples are the lack of medical care facilities and barrier-free facilities at school, long school distances, poor road construction, and limited transportation. Okyere et al. [52] (2019) used the ICF as a theoretical framework to comment on the comprehensive

need for inclusive education in Ghana. Both environmental facilitators and barriers were discussed in the aspects of physical, social, attitudinal, and institutional environments. Most challenges of children with IDD can be related to environmental barriers (i.e., education policies and legislation embedded in medical model and society that discriminates against children with IDD). The ICF provides a holistic framework for accessing children with IDD, developing appropriate individualized educational plans, supporting teachers in creating and implementing teaching strategies, and fostering collaboration across disciplines in Ghana through a common language. The two studies recognize the applicability of the ICF in educational contexts for supporting the attendance and engagement of children with disabilities.

Table 6. Description of the concept: use of the ICF (N = 2).

Description	Study 1 [51]	Study 2 [52]
Level	Macro: influencing policy, e.g., what is needed for inclusive education in Rwanda.	Macro: influencing policy, e.g., what is needed for inclusive education in Ghana.
How the ICF is used	Identifying the physical environmental barriers to school attendance by children in two community-based rehabilitation centres (one urban and one rural).	Describes ICF as a theoretical framework.
ICF COMPONENTS	Body function and structure	Focuses on different types of disability.
	Activities	Focuses on intellectual and developmental disability (IDD). Discusses activities and participation together. Focuses on learning and applying knowledge to areas such as interpersonal interactions, relationships, community, and social and civic life. Then, expands on what it means in educational setting: ability or difficulties in executing school tasks, activities, and daily routines, e.g., d1, d2, d3, d5, and d7.
	Participation	Linked to activities. Affirms that the significance of the ICF-CY lies in its role as an important guide on how teachers might remove physical barriers to accommodate activity limitations and encourage opportunities for interaction and cooperation.
	Environmental factors: Facilitators	Highlights e1, e2, e3, e4, and e5. How educational policies can become supports that reflect access, equity, and support.
	Environmental factors: Barriers	Highlights e1, e2, e3, e4, and e5. Current beliefs and practices have an individual-deficit-based focus, as seen in negative teacher attitudes towards IDD; isolation of children with IDD in segregated schools, feelings that children with IDD are underachievers. Highlights inadequate resources, overcrowded classrooms; lack of teacher training.
	Personal factors: Facilitators	Identify positive personal factors such as motivation, intellectual capacity temperament—and matched with instructional strategies to support functioning and inclusion, e.g., IEPs, curriculum modifications, adapted instructional policies, using child-centred approaches.
	Personal factors: Barriers	Many children with IDD exhibit destructive behaviours, negative dispositions, poorer self-regulation, temper tantrums.
Issues/critical points	Used ICF to advocate for inclusive education, mapped the environmental barriers, and showed what is needed to create an adaptive learning environment.	ICF-CY framework can play important role in supporting inclusive education and developing policies.

4. Discussion

The current scoping review aimed to explore how the ICF is presently used in the field of education in Africa, with an emphasis on children with disabilities. The application of the ICF in African educational contexts remains nascent, with limited research exploring its integration and impact, despite widespread global interest [15–19]. The studies by Sagahutu et al. (2013) [51] and Okyere et al. (2019) [52] provide valuable insights into the challenges faced by children with disabilities in accessing education in two African countries, namely, Rwanda and Ghana. Despite their different methodologies and focuses, both these studies underscore the multifaceted barriers that children with disabilities encounter and highlight the potential of the ICF framework to facilitate inclusive education, in line with Goal 4 of the SDGs, and affirming education as a fundamental human right for all learners [7].

4.1. Environmental Barriers and Facilitators

Environmental barriers were the focus in both studies. Sagahutu et al. (2013) [51] emphasize the physical environmental barriers to school attendance among children with disabilities in Rwanda. Their study identifies specific challenges such as long distances to schools, poor road conditions, lack of transportation, and inadequate school infrastructure, including inaccessible toilets and classrooms. These barriers significantly hinder the participation of children with mobility impairments and other disabilities in educational activities. Similar barriers have been reported in, amongst others, Ethiopia [53], South Africa [54], and more broadly in sub-Saharan Africa [55]. The findings emphasize the critical need for infrastructural improvements to support the educational inclusion of children with disabilities, suggesting that without such changes, the broader goal of inclusion remains unattainable. Inclusive education should be seen as “the glue binding societies” together [55]. Sagahutu et al. (2013) [51] report that these physical obstacles not only prevent school attendance, but also contribute to a sense of isolation and marginalization among these children. This lack of access to education limits their opportunities for social interaction, skill development, and future employment, perpetuating a cycle of poverty and exclusion.

In contrast, Okyere et al. (2019) [52] adopt a theoretical approach to explore how the ICF can support inclusive education in Ghana. Their study discusses the broader environmental factors, including societal attitudes, educational policies, and teacher training, that impact the implementation of inclusive education. These findings are similar to those of Bani Odeh and Lach (2024), who used the ICF’s environmental domain to investigate barriers and facilitators in education for children with disabilities worldwide. They reported negative attitudes and limited access to services as the biggest barriers to education for these children, while effective communication with school staff was identified as the most effective facilitator.

Okyere et al. (2019) also highlight the importance of shifting from a medical model of disability, which views disability as an individual deficit, to a biopsychosocial model, in line with the ICF [11], which considers the interaction between an individual’s impairments, activities, and environmental factors. This shift is essential for creating a supportive and inclusive educational environment. Okyere et al. (2019) [52] emphasize the importance of a systematic approach to assess individual capabilities and environmental factors, and the potential of ICF to provide a structured and comprehensive method for developing inclusive educational policies and practices in Ghana, advocating for tailored interventions that enhance educational accessibility and participation.

4.2. Direct and Proximal Environments in the Educational Context

As explained earlier, the ICF promotes a biopsychosocial model of disability, which focuses on the impact of the environment and contextual factors on the functioning of the individual. Disability is complex, dynamic, multidimensional, and contested [11,20]. The individual’s context (i.e., the different layers of the environment) has a reciprocal influence on the experience of disability by creating barriers or facilitators to participation. The ICF promotes a situational understanding of disability, supporting the deconstruction of

labels like ‘developmental disabilities’, and contextualizing them within the situations they create [56]. The educational context, which is the focus of the current study, is vitally important, just as the ICF highlights that participation in a variety of activities (such as learning and acquiring literacy and mathematical skills) also brings environment to the classification of functioning. Thus, we must consider both the direct environment (i.e., the classroom) and the more proximal environment (i.e., policies and attitudes) [54,57]. Castro et al. (2020) [32] succinctly point out that “No policy is an island”, particularly when considering how the ICF can be used and transferred from one education system to another. Changes in the environment, both the direct and proximal environments, can therefore be correlated with changes in functioning, even if the underlying health condition, such as an intellectual disability, does not change. Due to the interplay between the body function and structure domain and the environmental domains of the ICF, this also implies that the same impairment has a different impact and meaning in different activities and environments. For example, one learner with a physical disability might not be able to access public transport to attend school, while another with the same disability might be able to navigate life situations.

A relevant question to address in education is: which information and knowledge related to disability guide the practices of policymakers? Used across time, the ICF can help understand the impact that different interventions and settings have on individuals and groups. If adequate operationalization is used, information can be aggregated to inform policymakers on the performance of education systems in educating children with disabilities [57]. The ICF as a common framework provides a language to describe disability and needs in the context of environmental facilitators and barriers, describing situations of people rather than the people themselves.

4.3. Addressing Barriers to Inclusive Education Through the ICF Framework in Africa

Both Sagahutu et al. (2013) [51] and Okyere et al. (2019) [52] agree on the importance of addressing environmental and societal barriers to facilitate the inclusion of children with disabilities in mainstream education. They argue that the ICF framework provides a comprehensive method for identifying and addressing these barriers, thereby enhancing educational accessibility and participation. Similarly, in a 2020 scoping review that focused on the participation of young people with disabilities and/or chronic conditions across various LMICs, Schlebusch reported a wide range of barriers [58]. Although the challenges were perceived differently in LMICs, all reported physical, attitudinal, policy-related, and socio-economic challenges.

The ICF implementation in educational contexts varies widely due to factors such as lack of awareness, insufficient training for teachers, and limited integration into existing educational policies and practices [14,54]. Advances have occurred, and the use of the ICF biopsychosocial conceptual model in education has helped teachers and health practitioners to understand the interaction between impairments, activities, and environmental factors, supporting continuity of information about functioning from school entry through transitions from one educational level to another [12]. Although Sagahutu et al. (2013) [51] and Okyere et al. (2019) [52] differ in methods and populations, their results argue for more robust training programs and systemic integration of the ICF framework to increase its usefulness in promoting inclusive education. Similarly, after conducting a narrative review and content analysis, Zickafoose et al. (2024) [55] reported that teacher education is one of the three main barriers to enacting SDG 4 in sub-Saharan Africa. Both studies stress the potential of the ICF to provide a structured and comprehensive method for developing inclusive education policies and practices in Rwanda and Ghana.

The original review by Maxwell et al. (2012) [59] indicates that barriers to education for children with disabilities are multifaceted, encompassing not only physical obstacles, but also social attitudes, policy frameworks, and institutional practices. Their ICF-based analysis revealed a need for considering a wide range of environmental aspects, from societal attitudes and teacher preparedness to policy implementation and resource alloca-

tion. These aspects represent an ongoing challenge for African countries, as public policies and education systems may vary greatly within the continent, even though the lack of accessibility in urban and rural areas is an issue shared by African nations. The scarcity of assistive devices, and the lack of appropriate transportation and road infrastructure, are concerns that continue to receive attention in the literature [51–53,55] as barriers to inclusive education for children with disabilities. Although progress is being made in the education of children with disabilities in Africa, barriers related to all five environmental chapters described in the ICF were mentioned in the two studies included in this review. These include: (e1) products and technology, such as limited assistive devices; (e2) natural environments and man-made changes, such as climate change resulting in flooding or droughts and poor transport infrastructure; (e3) limited support and relationships, such as insufficient teacher–parent contact; (e4) negative attitudes, including disability stigma, misconceptions, and false beliefs; and (e5) limited services, systems, and policies, such as inadequate teacher training and too few teachers to meet the increasing needs on the African continent. As long as these environmental barriers are maintained, children’s access to and participation in education will remain restricted.

4.4. Limitations

This study acknowledges several limitations, such as the small number of included papers, which questions the applicability of the scoping review methodology, potential publication bias, and the exclusion of non-English studies, which may impact the generalizability of the findings. Although these findings might represent the use of the ICF in Rwanda and Ghana, they may not accurately reflect the situation across the rest of the African continent. Furthermore, a small sample size does not yield comprehensive data, and thus limits the robustness of the evidence base. This also makes it challenging to identify specific research gaps related to particular components of the ICF, thereby rendering comparisons with the global perspective on the use of the ICF in education impossible.

4.5. Recommendations for Future Research and Practice

The findings from this scoping review suggest five recommendations for future research and practice, in line with the five environmental chapters of the ICF:

1. **Infrastructural Improvements:** There is a critical need for infrastructural improvements in schools to accommodate children with disabilities. This includes ensuring accessible transportation, barrier-free facilities, and appropriate classroom designs (e2: human made changes to the environment).
2. **Policy and Societal Attitudes:** Policymakers should adopt the ICF framework to guide the development and implementation of inclusive education policies. This includes shifting from a medical model to a biopsychosocial model of disability, and addressing negative societal attitudes toward children with disabilities (e5: services, systems, and policies).
3. **Teacher Training:** Comprehensive training programs for teachers on the ICF framework and inclusive education practices are essential. This training should focus on identifying and addressing environmental and personal barriers to participation.
4. **The ICF can support in building a situational understanding of disability due to its “common language” and focus on both barriers and facilitators that include contextual factors.** When teachers assess children’s challenges, the underlying risk is that they follow a child-centred rather than situational approach. The ICF supports teachers to deconstruct labels like “IDD”, and to contextualize them within the situations created by them [40]. Changes in the environment can therefore be correlated to changes in functioning, even if the underlying health condition did not change (e 4; attitudes and e5: services, systems, and policies).
5. **Holistic Assessments:** The ICF framework and the assessment tools based on the ICF should be used to conduct holistic assessments of children’s needs, considering both their impairments and the environmental factors that affect their participation in

- educational activities, and ensuring access to the necessary devices needed, such as wheelchairs, communication devices, walkers, etc. (e1: products and technology).
6. Cross-Disciplinary Collaboration: There should be increased collaboration between teachers, health care practitioners, policymakers, and researchers to ensure a co-ordinated approach to inclusive education. The ICF framework can facilitate this collaboration by providing a common language and conceptual model (e3: support and relationships).

5. Conclusions

The application of the ICF in African educational contexts has the potential to significantly enhance the inclusion and participation of children with disabilities. While the studies by Sagahutu et al. (2013) [51] and Okyere et al. (2019) [52] provide important insights, there is a need for further research to explore the practical implementation of the ICF framework in educational settings. By addressing barriers related to both the direct and proximal environments, policymakers and teachers can create a more inclusive and supportive educational environment for all children.

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