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Implementation of Inclusive Education: A Systematic Review of Studies of Inclusive Education Interventions in Low- and Lower-Middle-Income Countries

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ABSTRACT

This review focuses on answering the research question: What can we learn from studies of interventions to address the implementation of inclusive education of students with disabilities in low- and lower middle-income countries? A systematic literature review was conducted to identify studies focused on interventions aiming to improve inclusive education in low- and lower-middle-income countries. The searches returned 1,266 studies for a title and abstract review. Only 31 studies evaluated interventions and included 20 or more respondents. Published between 2000 and 2019, these studies estimate the impact of a number of approaches that can be used to increase support for students with disabilities in general education settings including teacher trainings, improving facilities and educational materials, and forming partnerships within the community. Covering 19 of 84 low- and lower-middle-income countries, this systematic review underscores the limited amount of work on this critical topic and the need for further research.


KEYWORDS

Disability; effectiveness; implementation; inclusive education; intervention; low- and middle-income countries

Introduction

Few concepts have had the same influence on education in the last 30 years, as ‘inclusion’ of students with disabilities (Chong & Graham, 2017). The merits of inclusive education are no longer debated as they were previously (Artiles & Kozleski, 2016), but the theoretical and practical questions around its implementation persist (Amor et al., 2019; Schuelka & Engsig 2020; Reeves, Ng, Harris, & Phelan, 2020). The right to inclusive education is recognised by the Convention on the Rights of Persons with Disabilities (UN General Assembly, 2006) and the Sustainable Development Goals (UN General Assembly, 2015). As of 2020, 164 countries have signed the Convention on the Rights of Persons with Disabilities (CRPD). However, despite the support and the policies written to this end, the implementation of these goals has proven much more difficult in practice (Mittler, 2015). It is especially difficult to implement in resource constrained settings.

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This study focuses on answering the following research questions:

- What research is available on interventions to address the implementation of inclusive education of students with disabilities in low- and lower-middle-income countries?
- What can we learn about potential approaches for improving implementation in low- and lower-middle-income countries from studies of interventions?

As noted in previous work, research studies can support evidence-based disability and policy evaluation (Sherlaw, Lucas, Jourdain, & Monaghan, 2014). Furthermore, previous research has shown that policymakers can learn from the successes and challenges of the policies and practice of other countries (Kim & Fox, 2011). We recognise the inability to universalise the best solutions (Grech, 2009); however, we also seek to gain a deeper understanding of potential interventions and to provide policymakers and stakeholders with a survey of what is possible.

This research builds on other important literature reviews of inclusive practices. Previous research has focused on teaching practices (Lindner & Schwab, 2020), projects in primary schools (Srivastava, de Boer, & Pijl, 2015a), the scope of published articles (Amor et al., 2019), and interventions for keeping students with disabilities in general education in Western countries (Reichrath, de Witte, & Winkens, 2010). To be as comprehensive as possible, we used a broad definition of inclusive education (IE). Search criteria were designed to include any program where at least some students are with their peers in the general education classroom and where additional policies, services and practices are in place to support inclusion.

Methods

Focus on Interventions

This review specifically addresses interventions that are actively seeking to improve inclusion. It focuses on interventions, or practices, that are promoting both policy and programmatic changes to increase the full participation of students with disabilities in education.

Determination of Inclusion

For feasibility and to provide as comprehensive a review of the literature as possible, we use Griffiths' (2015) definition of inclusion which defines IE as any policy, strategy or practice that is intending for learners to participate fully in general education. This broad definition allows us to look at all types of interventions that are promoting elements of IE through policies and practices.

To apply this, we begin with the author definition of inclusion to get the broadest list of possible studies. This process can be seen in our search strategy. This initial large group of studies was analysed and in any case where authors used the term inclusion but students were in exclusive segregated settings, we did not include those studies. We include studies that may not have all the elements of inclusion and we review any program

that included elements of the inclusion described in the CRPD: content, teaching methods, approaches, structures, strategies or environment (United Nations General Assembly, 2006).

Search Procedure

From June to August 2019, a review was conducted of research in English focused on the implementation of IE in low- and lower-middle-income countries since 2000. This research focused on intervention studies after 2000 to look at a more current context of implementing these interventions. Literature was obtained by searches in scholarly databases, specifically Ebscohost, Education Source, ERIC, Academic Search Complete, Google Scholar, Web of Science, World Bank eLibrary, UNESCO digital library, Proquest and Oxford Handbooks Online. The main search terms used were 'inclusive education' and the names of low- and lower-middle income countries. The list of low- and lower-middle-income countries was retrieved from the *Atlas of sustainable development goals* issued by the World Bank (2018). In order to look for studies measuring the effect of this implementation, the additional terms such as 'disabil* or disabl* or special education' and 'implement* or interv* or pilot' and 'eval* or impact or effect* or outcome*' and 'inclusive education' were used. The references of relevant literature reviews and studies were used to find additional sources.

The searches resulted in a total of 1,266 studies. From these searches, a title-abstract review was conducted to determine whether the study was focused on an intervention addressing the implementation of IE. Studies that were focused on an intervention for policy implementation were then pulled for further review. Throughout the focus and methodology review of the 120 pulled studies, an additional eight studies were found. Again, in the interest of being as comprehensive as possible, when one of the studies pulled referenced a study that was evaluating an intervention for implementation, that study was also pulled for further review. Clear exclusion criteria were used to eliminate articles not aligned with the focus of the review. Studies focused exclusively on attitudes towards IE (with no feedback on implementation), pre-service teachers (not yet working in classrooms), readiness of schools to implement IE, programs that maintained students with disabilities in separate settings, experiences of people with disabilities not specific to their education, studies detailing the state of inclusion, and outlines of programs offered were not included. Both quantitative and qualitative studies are included to learn from as many interventions as possible; however, studies that included a sample of less than 20 participants were eliminated from review.

Studies were included in this review if they were done in non-segregated settings in an area that is presently implementing elements of IE. The methods section must have clearly outlined sampling, data collection and analysis with either a description of the analysis or multiple data points to triangulate the findings. If studies did not include a description of the sampling, data collection and analysis – or if qualitative, multiple ways that data were collected to triangulate the findings – they were also excluded for methodological reasons. 31 articles met these criteria.

The reviewed studies used a number of different terms in discussing the implementation of IE. There are 20 studies that acknowledge the declarations and vision of the United Nations in the discussion and implementation of IE. They reference the CRPD, Salamanca,

Sustainable Development Goals, Millennium Development Goals, and the Convention on the Rights of the Child among others. These studies used a variety of terms in discussing students with disabilities. The terms used include children with disabilities (CWD), students with disabilities (SWD), people with disabilities (PWD), special educational needs (SEN), and learners with special educational needs (LSEN). Some studies did address the specific impairments of people included within the studies. These included physical, visual, hearing, and specific learning disabilities (SpLD). For the purpose of this review, students with disabilities will be used when discussing outcomes. When appropriate, more specific terms will be used.

Results

There were 31 studies found that met the criteria of a study of an intervention for the implementation of IE, with at least 20 respondents, conducted in a low or lower middle income country, and published between 2000 and 2019. These studies used a number of different methodologies but only six studies examined an intervention with a pre- and post-test assessment. One study completed a pre- and mid-point test for intervention effect and one study did conduct questionnaires pre- and post-intervention that were analysed qualitatively. Four studies used a control group to compare effect of an intervention. The 31 studies are focused on a range of school levels including preschool, primary, secondary, and technical and vocation education training (TVET). Several of these studies look at a mix of schooling levels while others focus specifically on one part of school. There are 10 studies looking at primary schools and two that are concerned with secondary schools. There is also one study focused on preschool and one focused on TVET.

The 31 studies examined programs in 19 low- or lower-middle-income countries. The countries with the most study representations are India with five, followed by Ghana with four. Out of the 84 low- and lower-middle-income countries searched for in this review, 65 had no research studies meeting inclusion criteria (see Map in [Figure 1](#)).

Study Outcomes

The 31 studies will be reported below in the following categories: teaching, school conditions, partnerships, programs to promote inclusion, and transition. For each type of intervention, tables have been created that provide information about the study, intervention and its outcomes. Tables that summarise the methods and findings for each study can be seen in [Tables 1–7](#). A more complete description of the research methodology, findings and limitations for each study can be found in the supplemental materials.

Teaching

There are two types of teaching interventions included within this study. These include those focused on curriculum and teaching practice and those focused on teacher training for inclusive practices.

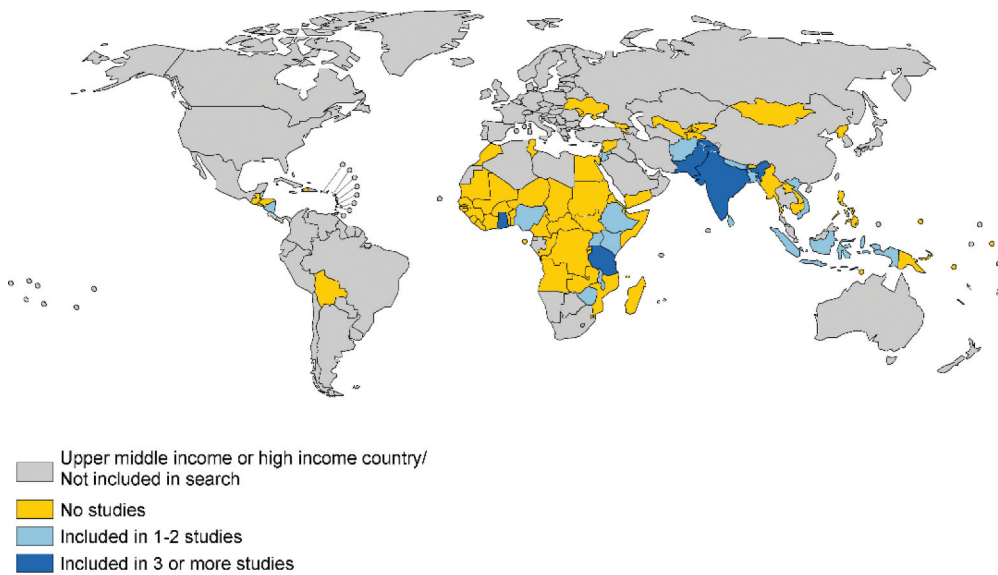


Figure 1. Low- and lower-middle-income countries where studies were conducted.

Teacher Training

Of the six teacher training programs implemented, five saw an improvement in their target elements of IE including teacher attitudes, concerns related to inclusion, self-efficacy, knowledge of disabilities and or teaching strategies. These studies employed lectures, PowerPoints, videos, handouts, discussions and projects (Carew, Deluca, Groce, & Kett, 2019; Delkamiller, Swain, Ritzman, & Leader-Janssen, 2016; Kurniawati, de Boer, Minnaert, & Mangunsong, 2017; Sibtain, 2013; Srivastava, de Boer, & Pijl, 2015b). The time spent in each training varied greatly, from a ten-hour workshop to a two-year training program. Four of the five positive training studies target teacher attitudes towards the inclusion of students with disabilities. Again, these studies do not point to one instructional method or length of time (Carew et al., 2019; Kurniawati et al., 2017; Sibtain, 2013; Srivastava et al., 2015b). These four studies did see an improvement in attitudes towards inclusion, but two of these studies note that this does not translate to change in measures of behaviour or intentions of adopting practices (Carew et al., 2019; Kurniawati et al., 2017).

Finally, a study in Zimbabwe interviewed teachers with extensive experience with IE including a bachelor's in a special education related field and at least 5 years of experience including children with disabilities in primary school classrooms. The study found that all 24 primary teachers interviewed describe four competencies necessary for teaching students with disabilities in general education settings. These include screening and assessment, differentiation of instruction, classroom and behaviour management, and collaboration; the study was designed with the intention of using these competencies as a baseline for future teacher training (Majoko, 2019). See Table 1.

Table 1. Teachers: Teacher Training.

Country	Intervention	Methods	Outcomes
India ¹	30-hour training	Mixed methods: questionnaire, open-ended questions and Likert scale with pre and post-test and control group	- The results of the ANCOVA showed a significant difference for the control and experimental group on knowledge of teaching methods and positive attitude towards IE.
Indonesia ²	32-hour training	Quantitative pre and post-test and control group	- Group that received training had higher scores in all variables (attitude, knowledge of disabilities and strategies) compared to control at post-test.
Kenya ³	Five-day training program	Quantitative pre and mid-test	- Survey scores for attitude: Mean scores of positive beliefs about inclusion improved from 3.26 (SD.67) to 3.66 (SD.48), significant at $p < .05$. - Survey scores for self-efficacy for teaching students with disabilities: Mean scores improved from 3.03 (SD .67) to 3.38 (SD .55), significant at $p < .05$.
Nicaragua ⁴	Two-year special education and inclusionary in-service training program	Mixed methods: pre and post-tests, open-ended questionnaires, Likert scale surveys	- Mean of pre-test total .392 (SD .119) increased to .718 (SD .135), with $p < .01$, for all areas targeted by intervention (knowledge of disabilities, differentiation and UDL, reading and writing, social/emotional development, behavior management and data collection).
Pakistan ⁵	10-hour workshop	Mixed methods: pre and post-surveys and case studies	- Mean survey scores show a significant difference for knowledge of disabilities from pre-test 7.95 (SD 2.78) to post-test 12.0 (SD 2.17).
Zimbabwe ⁶	University in-service and pre-service training	Qualitative interviews	- 100% of participants mentioned screening and assessment, behavior management, and collaboration as necessary for inclusion.

Curriculum and Instruction

Studies examined possible choices for teaching strategies and curriculum. In considering teacher strategies for providing support and education to students with disabilities within the classroom, several approaches, including small group instruction, were highlighted. A study from Indonesia compared 'Cluster-Based Instruction (CBI)' (a mixture of whole group, small group and individualised instruction) to 'Full Inclusive Instruction (FII)' (whole group instruction) and found that CBI had a significant positive effect on achievement in mathematics when compared to FII (Gunarhadi, Anwar, Andayani, & Shaari, 2016). Another study implemented a program for first graders that provided small group and individualised instruction for one year to students who scored less than 70% on an initial assessment. Researchers saw improvements in mean differences of 27 percentage points or more from pre to post scores (Stone-Macdonald & Fettig, 2019).

Aside from teaching strategies, one study addressed choices made in the provision of curriculum. This study from India examined a policy of curriculum choices in junior colleges and the effects of these choices on students with disabilities entering collegiate maths classes (Eichhorn, 2016). The student and faculty participants reported that current practices are not developing students with disabilities' maths skills for post-secondary mathematics because the curricular choices do not ensure that students with disabilities take the maths classes they need to be prepared. See Table 2.

Table 2. Teachers: Curriculum and Instruction.

Country	Intervention	Methods	Outcome
India ⁷	Curricular provisions for students with disabilities in general education	Qualitative interviews and observation	- Researcher review found the current policies and practices in junior colleges are not preparing students with math learning disabilities for post-secondary mathematics.
Indonesia ⁸	Cluster-based instruction (CBI)	Quantitative post-test and control group	- CBI treatment had a significant positive effect at the $p < .05$ level on academic achievement in mathematics, when compared to Full Inclusive Instruction.
Tanzania ⁹	Culturally relevant Response to Intervention (RTI) Tier 2 interventions for first graders	Quantitative case study: pre and post-test	- Researchers saw improvements in mean differences of 27 percentage points or more from pre to post scores on curriculum-based tests.

School Conditions

There are two types of interventions focused on school conditions. These include studies focused on the facilities and resources and studies focused on pilot schools, programs and classrooms that are moving to increased integration and inclusion of students with disabilities.

Facilities and Resources

With regards to facilities and materials, researchers focused on classroom resources, school facilities, human resources and support for students with disabilities. From interviews with parents and teachers, participants reported a lack of teaching and learning resources for preschool teachers and 97% of the 334 participants agreed that resources influenced the implementation of IE (Okongo, Ngao, Rop, & Nyongesa, 2015). In a study of water and sanitation facilities for students with disabilities in Uganda and Malawi, researchers found that only seven of the 41 schools surveyed provided these facilities for students with disabilities (Erhard, Degabriele, Naughton, & Freeman, 2013). In another study, researchers find that facilities and materials are related to academic performance in public secondary schools in Nigeria. A chi-square analysis was used to understand the relationship between academic performance and facilities equipped for students with disabilities and included scores from school observation checklists and examination records of 910 students with hearing impairments, physical impairments and visual impairments. The analysis found a significant correlation between the academic performance on examination records and the facilities (Oluremi & Olubukola, 2013). Still, one more study focused on the relationship between successful IE practice and the amount of materials, mindset towards inclusion, and human resources (Adeniyi, Owolabi, & Olojede, 2015). This survey study of 227 teachers revealed a significant relationship in a multivariate regression between materials, human resources, mindset and IE practice. In fact, the highest relationship, significant at 0.05, was found between materials and successful IE practice. See Table 3.

Moving to Increased Integration and Inclusion

Ten studies focused on the varying degrees of integrating students within general education and the outcomes of those policies, programs and pilots. Three of those studies focused on degrees of integration for students with disabilities. They address integrated

Table 3. School Conditions: Facilities and Resources.

Country	Intervention	Methods	Outcomes
Kenya ¹⁰	Teaching materials	Quantitative scaled questionnaires and observation checklists	- 5% of 334 respondents agree or strongly agree that there are adequate learning materials and resources. - 97% of respondents believe that resources influence the implementation of IE.
Malawi, Uganda ¹¹	Water, sanitation, and hygiene (WASH) facilities	Qualitative program review: interviews and observation checklists	-In Uganda, four of 17 schools had accessible WASH facilities -In Malawi, three of 24 schools had facilities for people with disabilities, however they did not meet the needs of students.
Nigeria ¹²	Teaching materials and human resources	Quantitative survey	- The inter-correlation between IE practice and material is 0.998 (the highest and significant at .05) and between human resources and IE practice is -0.445 (significant at .05).
Nigeria ¹³	Conditions of facilities	Quantitative chi-square analysis: scales for observations, exam scores and interviews	- Chi-square analysis determined a 27.39 result significant at .05 suggesting a relationship between facilities and academic performance.

and segregated settings and resource rooms. In both studies that compared integrated and segregated settings, neither study was conclusive in findings. In a study of parent satisfaction with programs in Jordan, about 50% of the 22 parents with children in segregated settings were most satisfied with educational services, while the 19 parents with children in integrated settings were mixed in their response to educational services. Several felt these services were suitable but others noted traditional teaching methods and lack of student progress as reasons for concern (Al-Dababneh, 2016). A study of integrated and segregated settings for students with visual impairments in Ghana, examined how students in both environments were progressing in mobility, social, and academic skills. Researchers interviewed six current students, four past students, eight teachers and nine parents from each program and the impact of the programs was not clear-cut. A majority of students from both programs reported ability to attend school independently, being active in school activities, and average performance in academics (Agbeke, 2005). A study from Jordan focused on another degree of integrated education, the resource room, which provides small group services to students in general education settings. These researchers found a high level of satisfaction for the 190 mothers of students and a medium to low level of satisfaction for teachers in resource rooms. The mothers who participated in the study were most satisfied with their children's improvement in academic performance. The 135 resource room teachers surveyed were most satisfied with their job and least satisfied with their salary (Alkhateeb & Hadidi, 2009).

Two studies noted positive outcomes through integration. A study of teachers in Ghana found that teachers in the Integrated Education Program are amenable to IE and informed about policy (Ocloo & Subbey, 2008). A study of 20 teachers from model inclusive schools in Pakistan, teachers noted positive changes academically for all students in the sample of model schools integrating students with disabilities (Uzair-ul-Hassan, Hussain, Parveen, & De Souza, 2015). Still, both studies included findings that showed a lack of training for teachers (Ocloo & Subbey, 2008; Uzair-ul-Hassan et al., 2015).

Multiple studies of integration found a lack of support to accessing education in integrated settings. In a study in Tanzania 10 out of 10 head teachers reported lack of trained teachers and a lack of learning facilities in inclusive schools. In fact, the majority of

teachers in focus groups reported they did not favour IE citing lack of needed materials or productivity and fear of disturbing the classroom (Tungaraza, 2014). Observations completed in Lesotho revealed a lack of inclusive practices in the classroom by teachers working in general and special education showed evidence of integrated education and not IE (Mosia, 2014). Furthermore, in another study within Lesotho, researchers examined pilot schools and newly registered 'Special Education Unit' schools that had been trained on IE approaches for students with disabilities in general education settings. The study provides an example of how the degree of inclusion is different in observation than in description. The 130 teachers surveyed rated themselves with a mean of 8.06, with 10 representing a high level of inclusion. However, researchers who completed observations of 20 teachers did not see instruction of students with disabilities as part of an approach to teaching but as something completed in teacher free time (Johnstone & Chapman, 2009). Finally, a study of 11 schools in India found that 40% of teachers did not change their teaching practices after the head of school implemented integrated education for students with disabilities. The students with disabilities were given access to but not fully included in general education classrooms (Singal, 2008). See Table 4.

Programs Focused on Inclusion within the Community and Schools

The programs included in this section include interventions focused on promoting inclusion through community and school reform. In a program in India to support students with disabilities in general education through community mobilisation, improved school infrastructure, and effective systems of response to students with disabilities, 98% of the 568 surveyed students with disabilities like attending schools and 97% of the 568 surveyed peers report being friends with a student with a disability (Chadha, 2007).

There are also multiple lessons that can be learned from these interventions about the needs for greater supports in providing education to students with disabilities in general education settings. In the study within India, 85% of the 419 teachers report they are not getting enough support. In Ghana, 'inclusive project' schools had focused on community awareness, teachers, facilities and materials in interest of providing access, retention and participation for students with disabilities in general education settings (Agbenyega, 2007). This included teacher training but the study found that a comparison of teacher attitudes in 'inclusive project' and non-project schools found no difference in scales focused on behavioural issues, student needs, resource issues and professional competency. Researchers hypothesised this finding may be due to lack of preparation, support and resources, and could also be due to a lack of involvement of teachers in designing the program. See Table 5.

Partnerships

Four studies focused on the partnerships created between stakeholders, or the people involved in the implementation of IE. These included studies focused on increasing social accountability (Trani et al., 2019), creating community support (Villa et al., 2003), development of plans for inclusion (Polat, 2011) and an increase in stakeholder technical skills (Beutel, Tangen, & Carrington, 2019). These studies show that programs can be implemented to create inclusion plans and measurement tools through community and stakeholder participation. These development plans and measurement tools can be created in different ways. In a study done with stakeholders (NGO and government

Table 4. School Conditions: Moving to Increased Integration and Inclusion.

Country	Intervention	Methods	Outcome
India ¹⁴	Inclusion and full participation of students with disabilities in general education	Quantitative survey: questionnaires and Likert scales	- Both primary and secondary teachers rated themselves with all mean competency ratings below 3.0 (3.0 is level of competency). Therefore, all mean competency scores fell below competent.
India ¹⁵	Education of students with disabilities in general education	Qualitative descriptive: interviews, observations in one school, and collection of school documents	- Researchers found schools do provide access to mainstream schools for people with disabilities but these children are not fully included within the classroom.
Ghana ¹⁶	Integrated Education Program	Quantitative descriptive: scaled surveys	- Surveys showed teachers are informed about the policy for IE but 65% of respondents reported inadequate resources
Ghana ¹⁷	Integrated education for students with disabilities	Mixed methods comparative: interviews and questionnaires	- Researchers found no clear-cut difference between integrated and segregated programs.
Jordan ¹⁸	Services for students with disabilities included in general education full or part-time	Qualitative comparative study: interviews	- In integrated settings, more than half of parents note a high level of satisfaction with special education teachers but some note inexperience of regular class teachers.
Jordan ¹⁹	Resource rooms providing small group services for students in general education	Mixed methods: interviews, observations, and questionnaires	- Teachers reported medium level of satisfaction on 12/18 items and low on 4/18. - Mothers were highly satisfied with resource rooms.
Lesotho ²⁰	Education of students with disabilities in general and special education	Qualitative descriptive study: interviews and observations	- Researcher observations of the schools participating found they are providing integrated, not IE.
Lesotho ²¹	Schools trained to provide education to students with disabilities in general education	Mixed methods three-phase case study: interviews and Likert scale surveys	- Teacher surveys resulted in mean scores of 8.06 (SD 1.22) on the 10-point Likert scale - an indication that they felt they are implementing IE at a high level. - Observations showed instruction of students with disabilities were in teachers' spare time not as part of approach to teaching.
Pakistan ²²	16 model schools integrating students with disabilities	Qualitative descriptive study: open-ended interviews	- Teachers note positive changes academically for all students through inclusion.
Tanzania ²³	Education of primary students with disabilities in general education settings	Qualitative interviews and observations	- All head teachers (10) reported that there are hinderances to implementation of inclusive practices in their schools including lack of trained teachers and lack of teaching and learning facilities.

Table 5. Programs focused on Inclusion within the Community and Schools.

Country	Intervention	Methods	Outcome
India ²⁴	Pilot program to support primary students with disabilities in general education through community mobilization, infrastructure, and systems of response to students with disabilities	Mixed methods program evaluation: questionnaires and focus groups	- 98% of students with disabilities said they liked attending school. However, 28.2% report experiencing difficulty in what was taught.
Ghana ²⁵	Multi-step plan targeting community awareness, teachers, facilities, and materials in project schools	Mixed methods comparative: interviews and surveys	- The results indicate no statistical difference between the project and non-project schools for the four factors: behavioral issues, student needs, resource issues, and professional competency

workers) from Nepal, Sri Lanka and Bangladesh, a training held in Australia focused on return to work plans (Beutel et al., 2019). The training created a change in the way these stakeholders viewed inclusion as a systemic issue and allowed for continued partnerships after training as stakeholders continued implementing their plans. One study in Pakistan and Afghanistan sought to develop mechanisms for monitoring school implementation of services for students with disabilities and found group workshops were a method for creating action items and training community members (Trani et al., 2019). Finally, a study in Tanzania encouraged schools to create teams of teachers and parents interested in making Whole School Development Plans for the implementation of integration of students with disabilities in primary schools. The researchers found trends in the teams' priorities for improvement including need for improved teaching and environment, academic performance, enrolment of students with disabilities, and stronger community campaigns against HIV (Polat, 2011). Additionally, community engagement can impact different areas of community inclusion. In an expansion of a Community Support program for students with disabilities in Viet Nam, researchers reported six areas of impact including improvements in community awareness, development of local infrastructure, quality of teaching and family support (Villa et al., 2003). These programs provide opportunities for multiple stakeholders to be involved and for goals to be context-specific. They show that through programs aimed at greater community engagement goals can be created and improvements in integration of students with disabilities can be accomplished. See Table 6.

Table 6. Partnerships.

Country	Intervention	Methods	Outcome
Nepal, Sri Lanka, Bangladesh ²⁶	Two-week course for stakeholders	Qualitative program evaluation: participant interest forms, surveys, interviews, focus groups, and return to work plans.	- Before training, participants identified few IE teaching strategies and after participants could identify several.
Pakistan and Afghanistan ²⁷	Group Model Building (GMB) pilot with teachers and students	Qualitative program evaluation: workshops and co-constructed diagrams	- Group diagrams of factors affecting IE implementation included resources, parent interest, treatment of children, awareness of disabilities, teacher training, economics, poverty, security, labor, environment, higher education, studying, and teacher's skills.
Tanzania ²⁸	Whole School Development Planning (WSDP) for teachers and parents	Qualitative participatory action research: constructed timeline of policy change, team plan and objectives for action	- Four priorities for improvement include: teaching/learning environment; academic performance, pupil attendance and pass rates; stronger campaigns against HIV/AIDS; and community campaigns to increase enrollment of students with disabilities.
Viet Nam ²⁹	Community Support for Children with Disabilities program expanding support of IE	Mixed methods program evaluation: group interviews, individual interviews, questionnaires, and class observations	- Six areas of impact include: community awareness and support for children with disabilities; development of infrastructures for IE; inclusive, age-appropriate placement in natural proportions; improved quality of teaching and attitudes toward children with disabilities; and increased family support.

Table 7. Transition.

Country	Intervention	Methods	Outcome
Ethiopia ³⁰	Technical and vocational education and training (TVET) programs	Qualitative program evaluation: interviews and observation checklists	- 87.2% of trainers reported that adaptive training and educational materials were not available to them. 68% of students reported adaptive materials are not available to them.
Ghana ³¹	Education of students with disabilities ages 15-23 for transition to employment	Qualitative: interviews and observations	- Participants note schooling is a way to gain employment skills. - Participants see benefits of education as both academic and social.

Transition

Two studies focus on transition to higher education and employment and address the educational experiences of youth and adults with disabilities. In the study focused on students with disabilities in Ethiopia, researchers found several limiting factors for inclusion in vocational education including lack of preparedness, lack of accessibility, and need for adapted facilities and pedagogies (Malle, Pirttimaa, & Saloviita, 2015). In reflecting on employment in Ghana, people with disabilities with varying levels of education noted the importance of school in gaining skills for employment. The youth and adult participants saw the benefits of education as both social and academic (Singal, Salifu, Iddrisu, Casely-Hayford, & Lundebye, 2015). See [Table 7](#).

Study Implications

The studies in this review provide an opportunity to learn from those who are currently implementing IE. There are seven implications repeated throughout these studies that provide key points for implementation of IE in the future: stronger and more explicit policy and legislation (6), resources and funding provided to schools (22), reformed teacher education pre-service and in-service trainings (17), expanded collaboration and voice to local stakeholders (11), goals and indicators for inclusion that are specific to the local context (4), incentives as a motivation for implementing IE (3), and more research (8).

Discussion

The 31 studies within this review, published between 2000 and 2019, also demonstrated a number of interventions that can be used for increased support for students with disabilities in general education settings including training for teachers, facilities and materials, and partnerships within the community. Five of the studies with pre and mid, or post design assessments evaluated teacher trainings. Those five teacher training programs saw an improvement in their target elements of IE including teacher attitudes, concerns related to inclusion, self-efficacy, knowledge of disabilities and/or teaching strategies. These studies employed lectures, PowerPoints, videos, handouts, discussions, and projects (Carew et al., 2019; Delkamiller et al., 2016; Kurniawati et al., 2017; Sibtain,

2013; Srivastava et al., 2015b). The evaluations of these interventions show the effect that a number of different forms of teacher trainings can have on teacher attitudes and knowledge and the positive effect of tailored instruction.

Furthermore, studies focused on instruction interventions found positive effects on achievement. 'Cluster-Based Instruction (CBI)' (a mixture of whole group, small group and individualised instruction) had a significant positive effect on achievement in mathematics when compared to 'Full Inclusive Instruction (FII)' (whole group instruction) (Gunarhadi et al., 2016). Also, a study focused on small group and individualised instruction for first graders, saw improvements in mean differences of 27 points or more from pre to post scores over the three year project (Stone-Macdonald & Fetting, 2019). These studies demonstrated the benefit of including small groups and individualised instruction as part of IE in low- and lower-middle income countries.

This study presents the first systematic review of interventions to improve IE for students with disabilities in low- and lower-middle income countries. The research revealed limitations of the education for students with disabilities in multiple geographies. Two studies found integrated education but not IE was being provided (Johnstone & Chapman, 2009; Mosia, 2014); students with disabilities had access to classrooms with their peers but their needs were not being met (Bowen & Ellis, 2009). In another study, Singal (2008) found that although students with disabilities were given access to general education settings, they were not always fully included within the classroom. This review found barriers to IE that include need for increased funding and lack of specific policies and definition of inclusion, teacher training, resources, materials and/or access to buildings.

Still, it was striking that despite a broad search that used wide ranging terms to find all studies on implementation that were published in English since 2000, only 31 studies carried out in low- and lower-middle income countries were found. Given the importance of IE in the fight for equitable education, the agreement of 164 countries to the CRPD, and the challenges of IE in practice, this underscores the need for more research. Moreover, of these 31 studies, only six had a pre and post design to evaluate the intervention, two used some version of a pre-test with analysis following part of the intervention, and four studies used a match group. While each of these studies raised important questions around implementation, the paucity of evaluations of interventions that include data from before and after, or control groups, contributes to our limited knowledge of what is most effective. Nonetheless, these studies do provide important insights into areas that are worthy of further research. The limited number of studies underscores a larger issue of funding for research in low and lower-middle income countries. It is important that research moves beyond high-income countries to include a variety of contexts (Grech, 2009).

There are limitations of this review. Resource constraints limited the reviews to English language literature. The criteria for inclusion in the review required studies to detail rigorous study methods, and be focused on students with disabilities being educated in the general education system. These criteria ensured minimum standards but may have excluded some studies providing insights and generating hypotheses. Despite the limitations of our criteria, we specifically chose broad search terms and a definition of IE that allowed for any research applying elements of IE with the purpose of conducting a more extensive review.

There are also several limitations to the research studies themselves. Although these studies focus on the implementation of IE, not every study is conducting an experiment with an intervention and measured outcomes. Of the studies that did assess or evaluate programs or interventions, four used a control group and 10 did not. There were also a few limitations related to sampling, including a lack of clarity related to the sample (3). These limitations have been included within the tables in supplemental materials so that the limits of each intervention and its accompanying study are clear. From a critical perspective, these studies were also limited by their lack of input from students with disabilities. Only 11 studies provided opportunity for their participation in this research. Finally, these studies do raise questions regarding replicability. In a review of this literature, there were no replication studies, although many were piloting programs with the intent of growing the intervention. Without a clear understanding of the ability to replicate these, the context and sample have been included in the very first column of the tables in supplemental materials. This is to ensure that the tables capture the salient characteristics of the research and it can be placed within its specific context.

Conclusion and Recommendations

This review focused on interventions in low- and lower-middle-income countries to understand the possible effective interventions for contexts with limited resources. The studies included in this review provide several possible ways for moving the IE agenda forward: teacher training, small group and individual instruction in addition to large group, funding to improve facilities and building stakeholder partnerships. First, the more rigorous studies demonstrated teacher training can positively impact teachers' attitudes towards inclusion, teaching strategies and knowledge of disabilities in as little as ten hours. Over 50% of the 31 studies advocate for improved pre-service and in-service trainings for teachers. Second, similarly strong evaluations revealed that adding small groups and individual instruction to inclusive large group instruction improved outcomes in low resource settings. Third, there are positive relationships between both accessible facilities and academic performance and materials and inclusive practice. Of the 31 studies currently reviewed, 70% of studies advocate for an increase of resources and funding to provide the necessary materials. Finally, interventions for developing action items for IE can involve different groups of government workers, community members, teachers and parents with measurable positive outcomes for inclusion.

Given the nascent findings, more research focused on interventions and their outcomes should be developed to assist policymakers and practitioners in continuing to improve IE. Future research should include the voices of students with disabilities (Cluley et al., 2020). The commitment to IE as a right for all people expressed in the widely ratified CRPD, necessitates that we take these interventions seriously when developing policies, strategies and practice so that all learners can participate fully in general education.

Notes

1. (Srivastava et al., 2015b)
2. (Kurniawati et al., 2017)
3. (Carew et al., 2019)

4. (Delkamiller et al., 2016)
5. (Sibtain, 2013)
6. (Majoko, 2019)
7. (Eichhorn, 2016)
8. (Gunarhadi et al., 2016)
9. (Stone-Macdonald & Fettig, 2019)
10. (Okongo et al., 2015)
11. (Erhard et al., 2013)
12. (Adeniyi et al., 2015)
13. (Oluremi & Olubukola, 2013)
14. (Das, Kuyini, & Desai, 2013)
15. (Singal, 2008)
16. (Ocloo & Subbey, 2008)
17. (Agbeke, 2005)
18. (Al-Dababneh, 2016)
19. (Al Khateeb & Hadidi, 2009)
20. (Mosia, 2014)
21. (Johnstone & Chapman, 2009)
22. (Uzair-ul-Hassan et al., 2015)
23. (Tungaraza, 2014)
24. (Chadha, 2007)
25. (Agbenyega, 2007)
26. (Beutel et al., 2019)
27. (Trani et al., 2019)
28. (Polat, 2011)
29. (Villa et al., 2003)
30. (Malle et al., 2015)
31. (Singal et al., 2015)

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