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Employment Supports for Adults With Disabilities: A Campbell Systematic Review

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Abstract

Objective: To identify, appraise, and synthesize studies of interventions to improve labor market outcomes of adults in developing countries with physical and/or sensory disabilities. **Method:** Systematic review methods, following Campbell Collaboration guidelines, were utilized. A comprehensive search was used to identify relevant studies published between 1990 and 2013, which were graded for study quality and a narrative approach used to synthesize the research evidence. **Results:** Fourteen studies covering a wide range of interventions met the inclusion criteria. Although individual studies reported improvements in outcomes, heterogeneity was high and studies were generally of poor methodological quality. **Conclusions:** There is a lack of high-quality research evidence to inform decision-making in this area. Stakeholders should be cautious when interpreting the results of the current evidence base.

Keywords

systematic review, disability, employment, low- and middle-income countries

Introduction

Background

Recent estimates suggest that more than one billion people, or about 15% of the world's population, are living with some form of disability (World Health Organization [WHO], 2011). The costs of disability are particularly acute in low- and middle-income countries (LMICs), where 80% of working-age people with disabilities are unemployed, twice that for their counterparts in industrialized countries (Groce et al., 2011; Mitra, Posarac, & Vick, 2013; Organisation for Economic Co-operation and Development [OECD], 2010; Roulstone, 2012). Rates of employment vary widely from country to country, from lows of 30% in South Africa to highs of 92% in Malawi (Loeb & Eide, 2004; Mitra, 2008). When disabled people do work, they generally do so for longer hours and lower incomes, have fewer chances of promotion, and are at greater risk of becoming unemployed for longer periods (Houtenville, Stapleton, Weathers, & Burkhauser, 2009; Mitra & Sambamoorthi, 2006a; OECD, 2010). In many developing countries, a significant proportion of people with disabilities work in the informal economy and so are further disadvantaged; in India, for example, 87% work in the informal sector (Mitra & Sambamoorthi, 2006b). The multiple constraints that people with disabilities globally face in accessing and sustaining paid employment are then a major factor in maintaining the link between poverty and disability (Mitra, 2014).

Efforts to promote development and poverty reduction have not always adequately included disability; for example, people with disabilities were not explicitly included in any of the Millennium Development Goal (MDG) targets and indicators. Disability issues are, however, slowly being brought into the mainstream of development policy and practice (Department for International Development, 2000; WHO, 2004). A major catalyst has been the Convention on the Rights of Persons with Disabilities (CRPD) adopted by the United Nations in 2006, which marked a significant advance in the recognition of the rights of disabled persons, including the right to work on an equal basis with others (United Nations [UN], 2006). Since then, there has been a noticeable change in the legal and policy responses of many governments and bilateral and multilateral donor agencies (International Labour Organization, 2008; WHO, 2011), with significant financial investments in efforts to support persons with disabilities in LMICs in the labor market.

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Interventions to Improve Labor Market Outcomes of Disabled Adults

There is a large body of research on the numerous barriers to employment for people with disabilities, including lack of education, limited self-expectations about work ability and wider social attitudes, and employment-specific barriers such as physical inaccessibility of workplaces (e.g., Emmett, 2006; Goertz, van Lierop, Houkes, & Nijhuis, 2010; Mitra & Sambamoorthi, 2006a; OECD, 2010). Different interventions have been developed to tackle these barriers. They encompass complex, multidimensional programs as well as simple interventions based on a single strategy; include both routine and structured/tailored interventions; can be delivered at various stages of the employment process (pre-employment, transition to employment, and postemployment); and are implemented in different settings, including the workplace, health-care facility, and community (WHO, 2011). Yet, despite the role of interventions to improve labor market outcomes receiving increased international attention, translating policy commitments into better lives for people with disabilities remains a profound social challenge. Building a clearer understanding of which measures are effective at improving employment outcomes, and under which circumstances, can provide an evidence base for policy development and contribute to the development of practical suggestions for meeting this challenge.

Prior Reviews

Although prior reviews have synthesized knowledge in this area, there are a number of substantive and methodological limitations to these reviews. With the exception of a single review taking a broad definition of vocational rehabilitation and covering a wide range of intervention strategies (Waddell, Burton, & Kendall, 2008), existing reviews are relatively limited in scope, having focused on a specific subset of the literature. They examine literature from (a) high-income countries (e.g., Bambra, Whitehead, & Hamilton, 2004; Clayton et al., 2011); (b) single aspects of disability/illness, such as autism (e.g., Westbrook et al., 2012), mental illness (e.g., Crowther, Marshall, Bond, & Huxley, 2001; Underwood, Thomas, Williams, & Thieba, 2007), multiple sclerosis (e.g., Khan, Ng, & Turner-Stokes, 2009), traumatic brain injury, low back pain (e.g., Tveito, Hysing, & Eriksen, 2004), or spinal cord injury (e.g., Lidal, Huynh, & Biering-Sørensen, 2007); or (c) particular intervention types, such as interventions based on an empowerment perspective (e.g., Varekamp, Verbeek, & Dijk, 2006), workplace disability management programs (e.g., Gensby et al., 2012), or workplace-based return-to-work interventions (e.g., Franche et al., 2005). The majority of these reviews are not systematic and do not specify search strategies or selection criteria. In addition, although a small number used meta-analysis, most utilized a narrative or vote-counting approach to synthesize findings.

A small number of recently published reviews in this area focus exclusively on evidence from LMICs. Here too the majority use nonsystematic methods. The literature on assistive technology is examined in two reviews (Andrysek, 2010; Borg, Lindstrom, & Larsson, 2011). However, none of the impact evaluations identified in these reviews measured employment outcomes. Another recent LMIC-focused review (Velema, Ebenso, & Fuzikawa, 2008) examined evidence for the effectiveness of community-based rehabilitation (CBR) programs for people with disabilities on a range of outcomes, including employment. A descriptive overview of the literature is presented, with no pooling of data. The review by Mitra and Sambamoorthi (2006a) focused on impact evaluations conducted in India of the People with Disabilities (PWD) Act and government programs designed to promote employment among people with disabilities.

There is a recently published joint Campbell/Cochrane systematic review of CBR for people with physical and mental disabilities in LMICs (Iemmi et al., 2015). Between-study heterogeneity meant that the review relied on a narrative summary of the studies, and meta-analysis was only conducted with the three studies on dementia. All but one intervention focused on the health component of the CBR matrix. As a result, clinical and quality-of-life outcomes were most common and none of the included studies measured employment outcomes.

In sum, while prior reviews provide some evidence about the effectiveness of programs to support the inclusion of persons with disabilities in the labor market, there are several limitations to these reviews. Taking into account current policy maker priorities, this review seeks to improve on previous work by systematically identifying and synthesizing relevant intervention research to provide a comprehensive picture of the range of interventions used to improve labor market outcomes, to identify the effects of different intervention types, and to identify areas in which more research needs to be conducted.

Purpose of the Present Study

The objective of this review is to examine the effects of interventions on labor market outcomes of adults with physical and/or sensory disabilities. The specific questions guiding this review were as follows: (1) Do interventions for adults with physical and/or sensory disabilities in LMICs affect labor market outcomes? (2) What characteristics of studies, participants, and/or interventions appear to moderate effects? (3) What are participants' views about why the interventions did, or did not, work for them?

Method

Systematic review methodology was utilized for all aspects of the search, selection, and coding of studies. The review was conducted in accordance with Campbell Collaboration procedures and guidelines on systematic review methods, available at http://campbellcollaboration.org/. Full details on the review methods are reported in the protocol, which was published in the Campbell Library prior to carrying out any analyses (Tripney et al., 2013). All studies were managed in an

electronic database, EPPI-Reviewer 4 (Thomas, Brunton, & Graziosi, 2010).

Eligibility Criteria

Eligibility was restricted to primary research studies that satisfied the following criteria.

Types of studies. Studies must have utilized one of the following: (a) randomized experimental design, (b) rigorous quasi-experimental design employing robust methods for removing biases due to non-random assignment of treatment, or (c) quasi-experimental design employing less credible methods for constructing the counterfactual, including uncontrolled studies. Although studies using historical control and single-group pretest/posttest designs fail to protect against most threats to internal validity (Shadish, Cook, & Campbell, 2002), they were included in the review as our preliminary scoping exercise suggested a scarcity of experimental and robust quasi-experimental designs in this area. It was felt the inclusion of studies using weaker designs may help provide a fuller picture of strategies that are currently being utilized in the field and so determine whether the research base adequately represents the range of programs currently in operation.

Types of participants. Adults aged 16–65 years with physical and/or sensory impairments associated with disability. Definitions of disability were derived from those of the WHO and the International Classification of Functioning, Disability and Health, with disability understood as the outcome of the interaction between a person's health condition and the context in which they live. For the purpose of this review, the health condition may be acute, chronic, progressive, or intermittent; it may, or may not, need ongoing medical treatment; and it may, or may not, be work related. Physical disability included both acquired and congenital physical and/or motor impairments that interfere with the structure or function of the bones, muscles, joints, and/or central nervous system. Sensory disability was limited to full or partial loss of sight and/or hearing. Studies investigating outcomes solely for people with mental health conditions, intellectual impairments, HIV/AIDS, or chronic illnesses that predominate in later life (e.g., stroke) were not eligible for this review, on the grounds that these groups have different rehabilitation needs.

Types of interventions. The scope of the review extended to any intervention with the means to help disabled adults enter, reenter. or maintain employment. Interventions could be routine or tailored, and in the form of a device, policy, program, strategy, or other type of action. Single- and multicomponent interventions were eligible for inclusion, as were interventions implemented in any setting, for any length of time or frequency, and at any stage of the employment process (preemployment, transition to employment, and/or postemployment).

Types of outcome measures. Studies must have measured and reported at least one quantitative labor market outcome variable and were included whether or not they provided adequate data to calculate an effect size.

Geographical contexts. The review included studies conducted in low- or middle-income country, as defined by the World Bank for the fiscal year ending on June 30 2014.

Time frame. Studies published or reported within the period January 1, 1990, to December 31, 2013, were included, providing a 24-year time frame.

Language. No language or form of publication restrictions were applied.

Form of publication. All forms of publication were eligible, including gray literature such as working articles and dissertations.

Search Strategy

A comprehensive and diverse search strategy was used to locate all qualifying published and unpublished studies. Full details of the search sources and the terms used to drive searches are available in the protocol.

Electronic databases. Ten major bibliographic databases were electronically searched (including ASSIA, Econlit, ERIC, IBSS, Medline, PsycINFO, and SSCI) for the time period January 1, 1990, through December 31, 2013. Searches within each database combined controlled vocabulary and natural language terms, with appropriate wildcards modified as appropriate for each database searched. Search terms reflected the inclusion criteria and encompassed population characteristics and type of intervention. In addition, 32 specialist databases and library catalogues were searched, including gray literature, regional-, and topic-specific sources.

Website and Internet searches. In total, 59 websites of government agencies, research centers, and other relevant organizations were examined. Internet search engines (Google and Google Scholar) were also used.

Reference lists. The bibliographies of previous reviews and included studies were checked, with relevant references followed up until saturation had been reached.

Citation searches. Citation searches of the included studies were conducted using Web of Science and Google Scholar.

Personal contacts. Information about additional relevant studies and unpublished or in-progress research was requested from key experts in the field.

Specialist journals. Specialist journals not covered by the general bibliographic databases were manually searched.

Retrieval and Selection of Studies

The search strategy and selection criteria were developed iteratively with the funder and piloted. The search was undertaken in two phases, and manual screening used to identify relevant primary studies. In the first phase, citations from the database search were imported into the EPPI-Reviewer database and duplicates removed. Titles/abstracts were screened for relevance by a single reviewer (single screening) and full articles obtained for those that appeared to meet the criteria or where we had insufficient information to be sure. The nonelectronic search was conducted by one member of the review team, and the full articles of all potentially relevant items were retrieved, with the reviewer again erring on the side of caution and obtaining copies in cases of any uncertainty. In the second phase, the inclusion criteria were reapplied to the full articles. Any disagreements as to study eligibility were resolved by joint reexamination of articles and consultation with a third reviewer, where necessary.

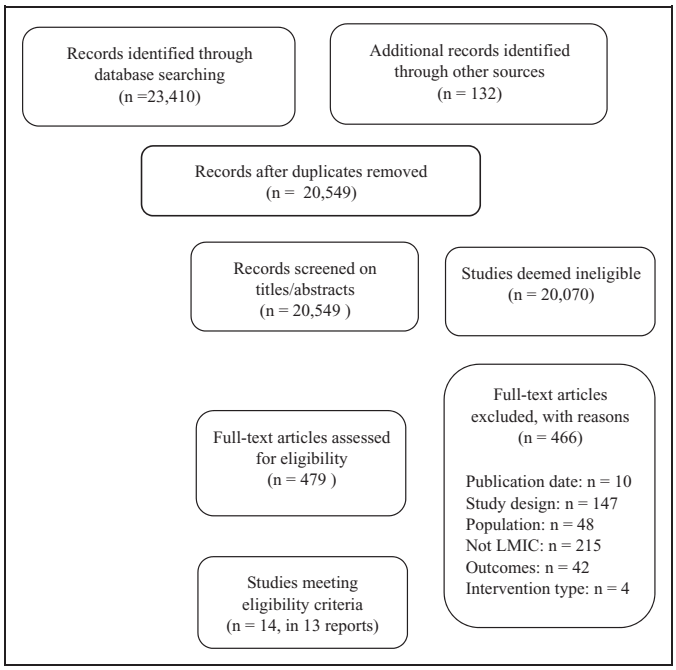

Figure 1. Flowchart of study search and selection process.

Coding of Studies

Data extraction. Studies that met the inclusion criteria were coded for relevant details about contexts, methods, and results/outcomes using a coding tool developed as part of this project.

Critical appraisal. The methodological quality of each included study was assessed, focusing on selection bias/confounding, attrition bias, performance bias, detection bias, and selective outcome and analysis reporting. For each study, we coded yes, no, or unclear as to whether the design or analysis was susceptive to biases in each of these domains and a summary assessment made.

Data extraction and quality assessment were conducted independently by two reviewers using coding tools specifically designed for this review. To supplement any incomplete reporting in the original articles, we contacted study authors. Any uncertainties and discrepancies in coding were resolved by discussion, further review of the study reports, and consultation with a third member of the team where necessary.

Synthesis

Descriptive analysis was undertaken to examine and describe data related to the characteristics of the included studies and interventions. Although we had hoped to combine study findings using statistical meta-analysis, data limitations meant it was neither possible nor appropriate to use this approach to detect program effects. In reviewing the available evidence, contextual, and outcome information from the individual studies was therefore combined descriptively using a narrative approach (Popay et al., 2006; Snilstveit, Oliver, & Vojtkova, 2012). The synthesis of intervention effects was structured by outcome variable. Finally, options for the subgroup analysis and investigation of heterogeneity were also limited to the use a nonstatistical approach.

Results

The search yielded over 23,500 hits. Of these, 23,410 citations were identified by electronically searching the major bibliographic databases. Searches of additional sources identified a further 132 potentially relevant studies. After removal of 2,993 duplicates, the remaining 20,417 items were manually screened against the eligibility criteria on title and abstract. This resulted in the exclusion of 20,070 studies, leaving 479 references as potentially relevant to the review. The full-length reports of these 479 studies were identified and read independently by two researchers. Upon careful examination against the selection criteria, 466 study reports did not meet the eligibility requirements. The most common reason for excluding studies at this stage was that they were not located in a LMIC. See Figure 1 for the flowchart detailing the search and selection process.

Descriptive Analysis

Fourteen studies described in 13 reports met the inclusion criteria for the full Campbell review.[1] Six of the included studies were identified through electronic searches of the major bibliographic databases and the remainder through other sources. Citations for the 14 students selected for analysis are listed in the bibliography. Summary details of each study are presented in Table 1.

Table 1. Overview of Included Studies.

Author (Year)	Design/Sample/Country	Description of Intervention	Main Findings
[1] Biggeri at al. (2012)	Design: QED (ex-post), propensity score matching techniques, cross-sectional analysis; Sample: PWD (any/multiple), 2-year evaluation: TG $n = 262$; CG $n = 61$, 4-year evaluation: TG $n = 112$; CG $n = 109$ Country: India (lower-middle income)	CBR (multicomponent); Funded by: NGO, Italian Association Amici di Raoul Follereau (AIFO); Overall duration (per cohort): Unclear (study evaluates program after 2 years and after 4 years); Intensity: Not stated; Dosage (hours per week): Not stated	Employment: Proportion in paid employment (2 years): ATT = 0.05, $SD = 0.014$, $t = 3.714$. Proportion in paid employment (4 years) ATT = 0.164, $SD = 0.035$, $t = 4.638$. Timing of outcome assessments: After 2 and 4 years program implementation
[2] Eniola & Adebiyi (2007)	Design: QED (ex-ante); Sample: PWD (visual), $n = 32$ (2 TGs, 16 in each group); Country: Nigeria (lower-middle income)	Two motivation skills interventions—emotional intelligence (EI) and goal-setting (GS) therapeutic techniques; Funded by: Not stated; Overall duration (per cohort): 6 weeks; Intensity: Twice weekly; Dosage (hours per week): Not stated	Motivation to work: EI: Pretest mean 7.7 (*SD* 2.3); Posttest mean 17.9 (*SD* 3.19). GS: Pretest: mean 11.1 (*SD* 0.81), Posttest: mean 14.0 (*SD* 0.61). Mean change scores 12.2 (EI) and 2.9 (GS), but significant interaction not found. Whole sample: Pretest mean 9.4 (*SD* 0.52), Post-test mean 15.9 (*SD* 1.86). Statistically significant increase (mean change score 6.5; $F = 7.98$; *df* 1.28; $p < .05$). Timing of outcome assessments: After 6 weeks' receipt of the intervention
[3] Finger et al. (2012)	Design: SGPPT (+ logistic regression); Sample: PWD (visual), $n = 294$; Country: India (lower-middle income)	Cataract outreach program (surgery, plus follow-up medical assessment); Funded by: Unclear (possibly German Ophthalmological Society, German Research Foundation and Indian Academy of Science); Overall duration (per cohort): 1 month; Intensity: Not applicable; Dosage (hours per week): Not applicable	Employment: Proportion in paid employment: Pretest: 43.5%, Posttest: 76.5%. Likelihood of being in paid employment: OR 3.28; 95% CI [1.40, 7.82]; $p = .006$. Income: Proportion reporting monthly household income of <1,000 Indian Rupees: Pretest: 48.7%, Post-test: 20.1%. Compared to the highest income category (>3,000 Rupees/month), participants were approx. five times less likely to report a monthly household income of 0–1,000 Rupees (OR 0.22, 95% CI [0.08, 0.62]; $p = .004$). Timing of outcome assessments: 12 months after treatment ended
[4] Gershon & Srinivasan (1992)	Design: SGPPT; Sample: PWD (physical), $n = 78$; Country: India (lower-middle income)	CBR (multicomponent, with emphasis on provision of interest-business free loans); Funded by: German Leprosy Relief Association (NGO); Overall duration (per cohort): Not stated; Intensity: Not stated; Dosage (hours per week): Not stated	Employment: Proportion in paid employment: Pretest: 64%, Posttest: 100%. Income: Proportion reporting monthly income <200 Indian Rupees: Pretest: 66.7%, Posttest: 23.1%. Timing of outcome assessments: Unclear/not stated.
[5] Guarino, Chamlian, and Masiero (2007)	Design: QED (ex-post); Sample: PWD (physical), $n = 78$ (TG: 50, CG: 28); Country: Brazil (upper-middle income)	Lower limb prostheses (not provided free of charge); Funded by: Unclear (possibly Lar Escola Sao Francisco Rehabilitation Centre, UNIFESP); Overall duration (per cohort): Not applicable; Intensity: Not applicable; Dosage (hours per week): Not applicable	Employment: Proportion in paid employment: TG: Pretest: 98%, Posttest: 16%; CG: Pretest: 98%, Posttest: 0%. Timing of outcome assessments: Unclear/not stated.
[6] Hansen, Mahmud, and Bhuiyan (2007)	Design: SGPPT; Sample: PWD (physical), $n = 46$; Country: Bangladesh (low income)	Occupational rehabilitation program (multicomponent); Funded by: United States Department of Labor; Overall duration (per cohort): Not stated; Intensity: Not stated; Dosage (hours per week): Not stated	Employment: Proportion in paid employment: Pretest: 0%, Posttest: 50%. Timing of outcome assessments: Unclear/not stated
[7] Lagerkvist (1992)	Design: SGPPT; Sample: PWD (any/multiple), $n = 106$ (male adults only in analytic sample: $n = 23$); Country: Philippines (lower-middle income)	CBR (multicomponent); Funded by: Not stated; Overall duration (per cohort): Not stated; Intensity: 1-2 days per week; Dosage (hours per week): Not stated	Employment: Proportion in paid employment: Pretest: 0%, Posttest: 61%. Timing of outcome assessments: Unclear (after at least 6 months duration of the program)

(continued)

Table 1. (continued)

Author (Year)	Design/Sample/Country	Description of Intervention	Main Findings
[8] Lagerkvist (1992)	Design: SGPPT; Sample: PWD (any/multiple), $n = 100$ (male adults only in analytic sample: $n = 26$); Country: Zimbabwe (low income)	CBR (multicomponent); Funded by: Unclear (possibly Zimbabwean Red Cross); Overall duration (per cohort): Not stated; Intensity: Not stated; Dosage (hours per week): Not stated	Employment: Proportion in paid employment: Pretest: 0%, Posttest: 50%. Timing of outcome assessments: Unclear (after at least 6 months duration of the program)
[9] Metts and Oleson (1995)	Design: SGPPT; Sample: PWD (physical), $n = 55$; Country: Kenya (low income)	Disabled Persons Loan Scheme (loan scheme + business training); Funded by: United Nations Development Program (UNDP); Overall duration (per cohort): Not stated; Intensity: Not stated; Dosage (hours per week): Not stated	Employment: Number of workers employed (by businesses owned by loan recipients): Pretest: 22, Posttest: 41. Self-employment Income: Number of businesses owned (by loan recipients): Pretest: 55, Posttest: 60. Income: Net monthly business income (Kenyan Shilling): Pretest: 2,035, Posttest: 3,222. Hours worked: Number of monthly hours worked (by employees in businesses owned by loan recipients): Pretest: 660, Posttest: 1,700. Timing of outcome assessments: Unclear/not stated
[10] Momin (2004)	Design: QED (ex-post); Sample: PWD (physical), $n = 48$ (TG: 24, CG: 24); Country: Bangladesh (low income)	Occupational rehabilitation program (multicomponent); Funded by: Centre for the Rehabilitation of the Paralyzed (NGO); Overall duration (per cohort): Not stated; Intensity: Not stated; Dosage (hours per week): Not stated	Employment: Proportion in paid employment: Pretest: TG 6%, CG 9%; Posttest: TG 6%, CG 6% Self-employment: Proportion in self-employment and/or business: Pretest: TG 12%, CG 19%; Posttest: TG 19%, CG 12%. Timing of outcome assessments: Unclear/not stated
[11] Nuri, Hoque, Akand, & Waldron (2012)	Design: SGPPT; Sample: PWD (any/multiple), $n = 261$; Country: Bangladesh (low income)	Occupational rehabilitation program (multicomponent); Funded by: Madhab Memorial Vocational Training Institute (MMVTI), part of the Centre for the Rehabilitation of the Paralyzed (NGO); Overall duration (per cohort): 1, 2, 3 or 4 months; Intensity: Not stated; Dosage (hours per week): Not stated	Employment: Proportion in employment (formal or self-employment): Pretest: 0%, Post-test: 60%. Timing of outcome assessments: Unclear/not stated.
[12] Pereira-Guizzo, Del Prette, and Del Prette (2012)	Design: QED (ex-ante; multiprobe design); Sample: PWD (physical), $n = 16$ (2 TGs, 8 in each group); Country: Brazil (upper-middle income)	Program for the Development of Social Skills for the Work Environment (multicomponent); Funded by: Unclear (possibly Fundação de Amparo à Pesquisa do Estado de São Paulo—Foundation for the Support of Research, FAPESP); Overall duration (per cohort): 8 weeks; Intensity: Twice weekly; Dosage (hours per week): 90 min sessions (total 3 hr per week)	Social skills (professional): Results for Group 1 (at 2 months): "Facing a job interview" score: $U = 2.0$; $z = -3.3$; $p = .001$; 'Offering a colleague some help' score: $U = 13.0$; $z = -2.1$; $p = .032$; "Dealing with a superior's fair criticism" score: $U = 12.0$; $z = -2.2$; $p = .030$. Group 2 also benefited from the program. Plus, in further follow-up assessments both groups maintained the improvements that were obtained through the program Timing of outcome assessments: After 2, 4 and 6 months receipt of the intervention.
[13] Shore and Juillerat (2012)	Design: SGPPT; Population: PWD (physical); initial survey $n = 620$ (Vietnam 204, India 206, Chile 210), follow up survey $n = 519$ (Vietnam 189, India 201, Chile* 129); Country: India (lower-middle income), Vietnam (lower-middle income) *Chile reclassified as high-income country in July 2013	Wheelchair (manual wheelchair provided free of charge); Funded by: Free Wheelchair Mission (NGO); Overall duration (per cohort): Not applicable; Intensity: Not applicable; Dosage (hours per week): Not applicable	Employment: Proportion reporting some employment: Whole sample: Pretest: 3%, Posttest: 8%, $\chi^2 = 18.549$, $p = .000$. India only: Pretest: 7%, Posttest: 18.4% Income: Proportion reporting adequate income: Whole sample: Pretest: 42%, Post-test: 52%, $\chi^2 = 19.741$, $p = 0.000$. India only: Pretest: 12.6%, Posttest: 23.4%. Timing of outcome assessments: After 12 months' receipt of the intervention.

(continued)

Table 1. (continued)

Author (Year)	Design/Sample/Country	Description of Intervention	Main Findings
[14] Tang, Yu, Luo, Liang, and He (2011)	Design: SGPPT; Population: PWD physical), $n = 1$; Country: China (upper-middle income)	Occupational rehabilitation program (multicomponent); Funded by: Chinese government; Overall duration (per cohort): 3-month program + 6 months additional support; Intensity: Once or twice weekly; Dosage (hours per week): Not stated	Employment: Proportion in paid employment (formal): Pretest: 0%, Posttest: 100%. Timing of outcome assessments: 6 months after program completion.

Note. PWD = persons with disabilities; SGPPT = single-group pre-/post-test group; QED = quasi-experimental design; NGO = nongovernmental organization; TG = treatment group; CG = control/comparison group; CBR = community-based rehabilitation; SD = standard deviation; CI = confidence interval; ATT = average treatment on the treated; OR = odds ratios.

Publication date. Publication dates ranged between 1992 and 2012.

Funding. Funding for the studies came from a variety of sources, most commonly Nongovernmental organizations (NGOs; five studies) and academic/research institutions (three studies). The reports for five studies did not have explicit funding statements.

Geographical distribution. Studies were conducted in nine different countries across Asia, Africa, and Latin America. At the time of conducting this review, three counties were classified by the World Bank as low-income economies, four as lower-middle income, and two as upper-middle income.[2] The following counties were represented: Bangladesh (three studies), Brazil (two studies), China (one study), India (four studies), Kenya (one study), Nigeria (one study), Philippines (one study), Vietnam (one study), and Zimbabwe (one study).[3]

Sample. There was variation in sample sizes. A single study had a sample size greater than 500 participants, the sample size was between 250 and 500 in three studies, and the remaining 10 studies had sample sizes of less than 250. Sample sizes ranged from 1 to over 500. Research projects sampled people with disabilities either exclusively or along with other groups (e.g., carers). All study samples contained adults aged 16 years and over, with four also including children. With the exception of one study, samples were mixed sex. In 12 of the 14 studies, at least some participants had previous work experience. The study samples consisted of people with physical impairments in eight studies and the visually impaired in two studies. The remaining four study samples included persons with any/multiple type of disability.

Impairment categories. Populations with all impairment types were represented in the impact assessments, although most were focused on persons with physical disabilities. People with sensory disabilities were substantially underrepresented in the review.

Study design and methods. Different designs and analytic approaches were employed to construct the counterfactual and evaluate the impacts of the interventions. Five quasi-experimental design (QED) and nine single-group pre-/posttest (SGPPT) studies met the inclusion criteria.

Risk of bias. All 14 studies were assessed as high risk of bias, primarily due to the weak evaluation designs that were used but poor reporting was also a contributing factor. Other methodological weaknesses include the use of convenience sampling and self-report data.

Interventions. The 14 studies examined 15 different interventions.

- A limited range of intervention types was identified, of which 13 were multicomponent programs (see Table 2).
- The main aim of eight interventions was to improve labor market outcomes for people with disabilities. The other interventions sought to improve a wider range of outcomes.
- Various barriers to employment were targeted by the interventions, most commonly functional limitations.
- Nongovernmental organizations (NGOs) were the most common source of funding. For many interventions, however, this information was not disclosed or not clearly reported.
- The availability of the interventions varied, with many relatively small scales. One intervention was available internationally and another nationally. Nine were available over a large geographical area, such as one or more districts, provinces, or regions. Four were limited to one or two institutions (e.g., hospital or training facility) serving a local population, in some cases involving less than 20 persons with disability.
- All 15 interventions were targeted to people with disabilities, including some designed for people with a specific impairment or diagnosis. Some stipulated additional criteria, such as participants having a certain level of income or education. Six interventions targeted persons with specific types of physical impairment. Of these, one focused on occupational injuries, two were designed for people with spinal cord injuries, two were

Table 2. Intervention Types.

Intervention Type and Brief Definition	Interventions Identified
Occupational rehabilitation: Multidimensional programs encompassing multiple services designed to facilitate and support entry or reentry to work	Four interventions (four studies): Bangladesh [6], Bangladesh [10], Bangladesh [11], China [14]
Community-based rehabilitation (CBR): Multidimensional programs aimed at strengthening social capacities of the target group through the combined efforts of people with disabilities, their families and communities, and relevant government and non-government services	Four interventions (four studies): India [1], India [4], Philippines [7], Zimbabwe [8]
Treatment & therapy: Treatment, management, and/or care of a patient to alleviate or prevent a worsening of disease or disorder, or one or more of its symptoms or manifestations	Four interventions (three studies): Nigeria* [2], India [3], Brazil [12] *Two interventions
Assistive devices & accommodations: Devices and accommodations that target different types of accessibility issues	Two interventions (two studies): Brazil [5], India &Vietnam [13]
Education: Skills development and training strategies, projects, and initiatives aimed at addressing educational deficits and developing human resources	None identified
Regulations, legislation & policies: Initiatives aimed at enforcing behavior change	None identified
Financial: Different forms of financial incentive	One intervention (one study): Kenya [9]
Awareness campaigns: Different approaches for changing perceptions of disability within the workplace and broader community	None identified

Notes. Numbers in closed brackets [] correspond to study reports listed in Table 1.

for persons with specific mobility impairments, and one was for people affected by leprosy. A further two interventions were available to adults with any type of physical impairment. Three interventions (evaluated in two studies) were targeted to persons with visual impairments. The remaining four interventions were available to persons with any/multiple impairments.

- Many of the interventions were delivered for a short time- span (less than 6 months). For seven interventions, however, this information was not disclosed or not clearly reported.

Table 3. Interventions Targeted to Different Groups/by Outcomes.

Outcomes	For Adults With Physical Impairments	For Adults With Visual Impairments	For Adults With Any Type of Impairment
Motivation to work		One study [2]	
Professional social skills	One study [12]		
Paid employment	Seven studies [4, 5, 6, 9, 10, 13, 14]	One study [3]	Four studies [1, 7, 8, 11]
Self-employment	Two studies [9, 10]		
Hours worked	One study [9]		
Income	Three studies [4, 9, 13]	One study [3]	

Note. Numbers in closed brackets [] correspond to study reports listed in Table 1.

Outcome measures. Included studies measured a range of labor market outcomes, most commonly engagement in paid employment. Five studies also measured health, social, and/or empowerment-related outcomes. Timing of outcome measurement varied between studies. The most commonly measured outcome was engagement in paid employment (see Table 3).

Evidence Synthesis

Do interventions for adults with physical and/or sensory disabilities in LMICs affect labor market outcomes?. The synthesis of intervention effects is structured by outcome variable, with the results also separated by impairment category (see Table 3 for list of studies in each category). As all studies were judged to be high risk of bias, there was no scope to report and analyze results separately by risk of bias status. The critical appraisal criteria results were used for descriptive purposes only, to highlight variations in the quality of studies. Although we had intended to analyze studies utilizing weaker designs separately from RCTs and quasi-experimental designs, the use of a nonstatistical approach to synthesis rendered this unnecessary.

In all 14 studies, the direction of effect was positive for the outcome variables measured.

Effects on motivation to work. One study ($n = 16$) measured this outcome, and the direction of effect was positive and statistically significant.

- Eniola and Adebiyi (2007) investigated two motivation skills interventions—emotional intelligence (EI) and goal-setting (GS) therapeutic techniques—for visually impaired students in Nigeria.

Effects on professional social skills. One study ($n = 32$) measured this outcome, and the direction of effect was positive and statistically significant.

- Pereira-Guizzo, Del Prette, and Del Prette (2012) assessed the impact of the Program for the Development of Social Skills for the Work Environment on persons with any type of physical impairment in Brazil.

Effects on paid employment. Twelve studies measured this outcome, and the direction of effect was positive in all 12 studies. Three study reports presented results of tests for statistical significance and indicated study findings were significant.

- Seven studies ($n = 926$) evaluated different types of support for persons with physical disabilities, with five of the seven interventions designed for people with a specific impairment. These included provision of prostheses to lower limb amputees in Brazil (Guarino, Chamlian, & Masiero, 2007); manual wheelchair provision for persons with limited mobility in India, Vietnam, and Chile (Shore & Juillerat, 2012); an occupational rehabilitation program for spinal cord patients in Bangladesh (Hansen, Mahmud, & Bhuiyan, 2007); a CBR program for people affected by leprosy in India (Gershon & Srinivasan, 1992); and an occupational rehabilitation program for persons with work injuries in China (Tang, Yu, Luo, Liang, & He, 2011). Two programs were available to persons with any type of physical impairment: the Disabled Persons Loan Scheme in Kenya (Metts & Oleson, 1995) and an occupational rehabilitation program in Bangladesh (Momin, 2004).
- One study ($n = 294$) focused on an intervention for the visually impaired (Finger et al., 2012). It evaluated a cataract outreach program in India.
- Four studies, reported in three articles, ($n = 633$) evaluated four interventions that were open to individuals with any/multiple types of impairments. These included CBR programs in India (Biggeri et al., 2012), Zimbabwe (Lagerkvist, 1992), and the Philippines (Lagerkvist, 1992), and an occupational rehabilitation program in Bangladesh (Nuri, Hoque, Akand, & Waldron, 2012).

Effects on self-employment. Two studies ($n = 103$) measured this outcome, and the direction of effect in both studies was positive. Neither study reported results of tests for statistical significance.

- Both studies evaluated interventions open to persons with any type of physical impairment. These included the Disabled Persons Loan Scheme in Kenya (Metts & Oleson, 1995) and an occupational rehabilitation program in Bangladesh (Momin, 2004).

Effects on income. Four studies measured this outcome, and the direction of effect in all four studies was positive. Two study reports presented results of tests for statistical significance and indicated study findings were significant.

- Three studies ($n = 753$) evaluated interventions designed for persons with physical disabilities. Of these, two evaluations focused on efforts to assist people with specific impairments: a CBR program for people affect by leprosy in India (Gershon & Srinivasan, 1992) and manual wheelchair provision for persons with mobility impairments in India and Vietnam (Shore & Juillerat, 2012). One program was available to persons with any type of physical impairment: The Disabled Persons Loan Scheme in Kenya (Metts & Oleson, 1995).
- One study ($n = 294$) focused on an intervention for the visually impaired (Finger et al., 2012). It evaluated a cataract outreach program in India.

Effects on hours worked. One study ($n = 55$) measured this outcome, and the direction of effect was positive. The study did not report results of tests for statistical significance.

- Metts and Oleson (1995) evaluated the Disabled Persons Loan Scheme for persons in Kenya with any type of physical impairment.

What characteristics of participants, interventions, and/or settings appear to moderate effects?. Of the seven studies that explored variation in treatment effects across interventions and subgroups, the association of gender with labor market outcomes was examined in three studies (Eniola & Adebiyi, 2007; Metts & Oleson, 1995; Nuri et al., 2012) and duration of follow-up in two studies (Biggeri et al., 2012; Pereira-Guizzo et al., 2012). The following variables were each considered in one study: participants' size of business (Metts & Oleson, 1995), impairment severity (Hansen et al., 2007), and type of intervention (Eniola & Adebiyi, 2007). Overall, four studies tested whether results were statistically significant.

What are participants' views about why the interventions did, or did not, work for them?. In total, 3 of the 14 included studies used qualitative research methods to try to understand why the interventions achieved, or fail to achieve, an impact on labor market outcomes (Hansen et al., 2007; Nuri et al., 2012; Shore & Juillerat, 2012). Two studies reported participants' views about why they had worked, and all three studies reported on why they had not worked. The following factors were cited: health and well-being, cooperation in the family and/or wider community, motivation, attitudes in the workplace, attitudes in the community, attitudes of prospective employers, attitudes of family members and/or wider community, physical inaccessibility of workplace and/or broader environment, lack of "start-up" funds for self-employment, appropriateness of the training, shortcomings of the training, and lack of education and skills. In each study, the data collected were inadequate to capture the richness and fullness of participants' experiences.

Discussion

Drawing on a broader range of evidence than previous reviews, this systematic review assessed the effectiveness of different interventions to improve the labor market participation of adults with physical and sensory disabilities in LMICs. Steps were taken to avoid an empty, or near-empty, review. First, the review was intentionally broad in scope and covered a wide range of intervention strategies, populations, geographical settings, and evaluation designs. Second, we set the quality threshold bar low a priori and included uncontrolled before-and-after studies. Yet, despite an extensive search for both published and unpublished studies, only 14 eligible impact evaluations published across the 20-year period 1992–2012 were identified.

Although improvements in labor market outcomes were observed in many of the individual studies, it was extremely difficult to assess the extent to which these were directly attributable to the interventions, as all studies contained sources of bias that may invalidate the results. Multiple sources of heterogeneity and specific knowledge gaps also made it difficult to compare the actual results and generalize the findings. Heterogeneity was high in terms of interventions, study contexts, and outcomes. The review included eight different types of intervention, undertaken in nine different countries on three continents. The majority of the reports analyze paid employment, with few investigating income or other longer term outcomes

The review identified specific knowledge gaps. First, limited evidence was found for specific population subgroups. Of particular note was a lack of any impact evaluations measuring outcomes specifically for people with hearing impairments. In addition, although disabled women are particularly disadvantaged in the labor market, experiencing exclusion on account of both their gender and their disability, no evaluations of interventions specifically targeting women were identified. Also important is the distinction between those who are disabled during childhood and those who are disabled later in life, after entering work. These groups face very different labor market issues; the first may face discrimination in education and upon entry to work, whereas the second can be affected by discrimination when returning to work after illness (Baldwin & Johnson, 2006). Only one of the reviewed interventions, a program aimed at returning injured workers to employment, took timing of disability onset into consideration. Second, there was a lack of evaluation research on some types of intervention, in particular programs exclusively focused on addressing education deficits; policies and other initiatives aimed at enforcing changes to employers' discriminatory behaviors; and initiatives tackling discriminatory attitudes within the workplace and broader community. Finally, data limitations meant the use of a nonstatistical approach for the subgroup analysis and investigation of heterogeneity, limiting our ability to assess which population groups are most likely to benefit, or whether context, design features or other factors contribute to program effectiveness.

Potential Biases in the Review Process and Limitations of the Review

This systematic review had limitations as was to be expected when examining such a wide field. Although steps were taken to minimize publication and study selection bias, there may be some relevant studies missing from the review. First, language bias was not fully avoided, since the literature search involved searching only a limited range of non-English language databases, and we did not include search terms in other languages. Second, the broad scope of this review may have resulted in missing studies. Although broad reviews have advantages in allowing policy makers to select the most effective intervention relative to their context, and enabling generalizability to be assessed across a wider range of contexts, study populations, and behaviors, they often place severe demands on the search process (Shadish et al., 2002; Waddington et al., 2012). In this review, the question was not set around a single type of intervention, nor impairment category, and so a large number of terms were required for the search query, making the search cumbersome and time consuming. Particular problems arose in relation to the diverse nature of health conditions leading to disability. Despite our best efforts, it is possible that the full coverage of relevant search terms were not identified and/or used. A further limitation of this review is its use of a nonstatistical approach to synthesis. Data limitations meant it was not possible to compute effect sizes. Meta-analysis was also not warranted on the grounds that the studies identified for the review were too few in number plus not sufficiently similar. It was therefore difficult to judge and compare program effects with any level of certainty.

Implications for Practice and Policy

The overarching aim of this systematic review was to provide an evidence base for policy development. Unfortunately, due to the small number of studies included in this synthesis, and the highly heterogeneous nature of the included studies, we are unable to recommend for or against the use of any of the interventions included in this analysis.

Implications for Research

The overall paucity of research in this area, together with specific gaps and methodological limitations, affirm the need for strengthening the evidence base.

- Future impact evaluations should utilize a comparison group design, preferably with random assignment
- Additional studies are needed to evaluate outcomes of a broader range of interventions, in particular specific legislations and policies, a spectrum of educational and skills development programs, and employer sensitization and awareness raising campaigns.
- Improvements in the quality of study reporting are needed.

- Future research should examine interventions from a broader range of LMICs and settings.
- Additional studies on working-age adults with a broad range of disabilities are needed, particularly those with hearing impairments.
- Reviews of the effectiveness of interventions are available for high-income countries, and more analytical work is needed to examine both the extent to which these interventions are transferrable to LMICs and the characteristics of the labor markets that determine the differences between high-income countries and LMICs.
- Reviews of the effectiveness of interventions are available for high-income countries (HICs). Analytical work is needed to examine both the extent to which these interventions are transferrable to LMICs and the characteristics of labor markets that differentiate countries in different stages of development.
- There is a need to develop scales to measure the effects that are appropriate for LMICs.
- Studies need to examine longer-term outcomes.
- All outcome data should be reported, and regardless of whether the results of statistical tests were significant.
- Future analyses should include issues of impairment type and severity, otherwise they risk underestimating the complexity of factors that contribute to program effectiveness.
- Finally, future studies in this area should include a rigorous assessment of costs.

Acting on these suggestions will require stakeholders, including national governments, academic institutions, development donors, and implementing NGOs, to take a critical look at the opportunities and barriers affecting research production and dissemination in this area.

Conclusion

This is an area of study where rigorous impact evaluation is scarce. Our overall conclusion is that the existing body of evidence about the impact of labor markets supports for people with disabilities in LMICs is inconclusive. The available evidence comes from a small number of studies implemented in a few settings, at a small scale, over a relatively short period of time, and from evaluations using methods open to a high degree of bias. Based on this evidence, we cannot say with any certainly whether adults with disabilities in LMICs can improve their labor market situation as a result of the interventions reviewed, whether context or other factors contribute to program effectiveness, nor who is most likely to benefit and who will not. This supports earlier claims about the dearth of literature in this area (Andrysek, 2010; Borg et al., 2011; Mitra & Sambamoorthi, 2006b; Velema et al., 2008).

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Notes

1. The study report authored by Lagerkvist (1992) describes two separate evaluations conducted in different countries, using different datasets, and is treated as two studies in this review.
2. World Bank classifications for the fiscal year starting 1 July 2013.
3. The study reported in Shore and Juillerat (2012) collected data from a total of three countries: India and Vietnam, both lower-middle income countries, and Chile, which was reclassified as a high-income country in the fiscal year starting 1 July 2013.

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