Evidence for the effectiveness of rehabilitation-in-the-community programmes

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Summary  The present literature review identified 29 reports from 22 countries in Asia, Africa and Central America reporting on the outcomes of rehabilitation-in-the-community programmes in low and middle income countries published between 1987 and 2007. Interventions included home visits by trained community workers who taught disabled persons skills to carry out activities of daily living, encouraged disabled children to go to school, helped find employment or an income generating activity, often involving vocational training and/or micro-credit. Many programmes had a component of influencing community attitudes towards disabled persons. The information collected shows that such programmes were effective in that they increased independence, mobility and communication skills of disabled persons, helped parents of disabled children cope better and increased the number of disabled children attending schools. Economic interventions effectively increased the income of disabled persons although they rarely made them financially independent. CBR activities result in social processes that change the way community members view persons with disabilities, increase their level of acceptance and social inclusion and mobilise resources to meet their needs.

In most countries, coverage of CBR programmes is inadequate. CBR initiatives appear most beneficial to those who have mild physical disability and can communicate verbally. There is a need to invest in the generation of quality evidence about the outcome and impact of rehabilitation-in-the-community programmes to ensure its continued support.

Introduction

The purpose of this paper is to bring together evidence from the literature for the effectiveness of rehabilitation in the community programmes, also known as community
based rehabilitation (CBR). The question ‘What is the effectiveness of CBR?’, however, is too broad to be answerable. In practice, we will want to specify a specific intervention within CBR and discuss its effectiveness within a specific target group, which can be defined by age, gender, type and severity of disability etc. Of course, the outcome measures used will reflect the goals defined by the interventions such as increased mobility as a result of providing aids and appliances, or increased income as a result of an income-generating activity. However, we should also allow for other changes – spin-offs – such as, for example, increased self-esteem or status in the community. Some interventions in CBR are not targeted at individuals but are designed to influence public opinion or government. The effects of such changes may be better captured by qualitative than by quantitative research.

Methods

We included in the present analysis published papers that were quoted in a review of the CBR literature by Mitchell, additional papers that Finkenflügel classified as intervention studies, and papers published in a special issue of the Leprosy Review on socio-economic rehabilitation.

Ten of these 15 papers and three additional ones were also identified through a search in the Pubmed database with the search terms ‘effectiveness of community based rehabilitation’, ‘impact of community rehabilitation’ and ‘rehabilitation in leprosy’. These search terms resulted in 424, 1276 and 460 hits, respectively, and identified partly overlapping sets of four, six, and five papers after restricting to findings reported from low and middle income countries, papers that reported outcomes of community-based interventions and discarding those that reported on community based interventions related to malnutrition, mental illness, cancer or substance abuse as well as those referring to animal or botanical studies. The search for articles in Portuguese or Spanish was done through the Bireme site (www.bireme.br) which researches various databases such as Lilacs, Scielo and others. Most of the articles found either discussed the principles or rationale of CBR or presented rehabilitation interventions in a community setting, but none of them presented information regarding the outcome of these interventions.

To this literature base, we then added eight papers that we identified through the reference lists of the papers already found or that we knew through personal contacts. Three unpublished reports were included because they added new information on the impact of CBR on community attitudes that was not available in the published literature, but we did not carry out a systematic search of web-based evaluation reports. All papers were published between 1987 and 2007.

Results

Some of the CBR programmes included in the present review covered only one village or involved only around 50 persons with disability while other programmes covered entire districts and had identified over a 1000 persons with disabilities. Countries in Asia, Africa and Latin America were represented.
A number of different types of interventions could be distinguished in the descriptions of the various CBR programmes.

1. CBR programmes targeted at persons with a variety of disabilities, which rely on local supervisors – usually community volunteers – who work with persons with a disability teaching them skills to carry out activities of daily living and increase their mobility and autonomy as a result, strengthening their confidence to function in society, teaching parents to exercise their disabled child to maximise its development. This might include provision of aids and appliances. The training for this was based on the manual developed by WHO34 or an adaptation of it which explains what can be done for persons with different types of disability, whether difficulty in hearing, seeing, moving, learning, or whether seizures or strange behaviour. In some countries, manuals and training curricula were locally developed (South Africa, Zimbabwe) or amalgamated from different sources (Guyana). The level of training of mid-level workers in such programmes varied.

2. Many programmes aimed to provide schooling to children with disabilities or to children of persons with disabilities. This may be through financial assistance or simply by encouraging the child, the parents and the schools to take the necessary measures to enable the child to enter an existing school. Often CBR workers can support the parents to overcome their hesitation and embarrassment and take the disabled child to school. In addition, CBR workers can speak to the school staff about how to handle a disabled child.

3. A number of programmes aimed to provide socio-economic support, usually in addition to other forms of physical rehabilitation. Clients were helped to find paid employment either by mediating with potential employers or offering vocational training. Where this was not feasible, some form of self-employment or income-generation was developed, often involving vocational training4,5,6,16,19,22,24,27 and/or the provision of micro-credit either in the form of money or in kind e.g. equipment, animals or plant materials. One report focussed exclusively on grants or loans for the construction or upgrading of a house.17 Six reports concerned persons with a variety of disabilities,3,4,14,19,22,24,27 six programmes targeted exclusively persons affected by leprosy4,5,15–17.

4. Programmes often involved a component of raising public awareness of disability issues28,31 and/or actions to encourage formation of self-help groups and/or disabled persons’ organisations (DPO).13,32

**IS CBR EFFECTIVE FOR THE INDIVIDUAL?**

The studies focussing on progress in the individual child or adult with a disability typically reported routine measures of progress on all clients and then carried out an in-depth study/assessment on a sample of clients.3,11–14,19,21,28 Programmes restricted to economic interventions often had baseline and follow-up information on socio-economic status of all their clients.4,5,15–17
Home-Based Training

The 12 studies summarised in Table 1 were carried out in 13 different countries in Africa and Asia, used different designs and different ways of measuring progress. Some researchers used self-perceived improvement (e.g. Finnstam12) as the principal outcome measure, some built entirely on the opinions of the CBR workers, some used standardised scales,2 some had a combination of record review, expert assessments and interviews.11 Jadin et al.19 had the interviewer facilitate a discussion between caregivers, CBR worker and client so that they reached a consensus on progress achieved which they indicated on a 6-point rating scale. All these studies consistently reported that through a programme of training, usually home-based, of the person with disability and a caregiver by a community volunteer trained during a limited amount of time, high percentages of clients improved their functioning – i.e. they learned new skills or were able to perform activities of daily living they had not been able to before, gained more mobility or autonomy and were better able to relate to the world around them. Typically, percentages of clients for which improvements were reported were 50% or higher and exceeded 75% in five of these 12 reports.

Schooling

Reports from seven countries showed that the attention of the CBR workers helped many children cross the boundary of going to school and joining in with other children their age (Table 2). In most countries, this concerned a mix of mainstream and special schools. In programmes in which this was given attention, the number of children that could be persuaded to go to school was 26% in the Philippines, 48% in Ghana and exceeded 50% in all other countries. The programme in Eritrea clearly contributed to improved access of disabled children to schools31 but no quantitative information was provided. Community volunteers, teachers and family members of persons with disability in Vietnam were targeted for training and became involved as CBR workers. This has facilitated acceptance of disabled children in the mainstream educational system.25,26

Socio-Economic Rehabilitation

Reports addressing socio-economic rehabilitation are summarised in Table 3. Lagerkvist3 reported 51% of 49 men with a disability aged 16–60 had found a job with the help of the CBR programme. Zhuo & Kun24 reported from China that many PWDs had been given a job in community-run factories; the figure calculated from the paper was 44%. In Benin, the proportion of clients that made progress in the areas of vocational training and income generation was on the order of 50%. The figures in Ghana were rather lower and it was concluded that the socio-economic interventions were not functioning well in the Ghana programme.

Of the projects targeted at persons affected by leprosy, none made ‘getting a paid job’ their focus. Rather, clients were encouraged to become self-employed artisans in areas such as shoe making, catering, cycle repair, tailoring etc. Reports suggest that large percentages of
<table>
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<tr>
<th>Authors and year of publication/ country</th>
<th>Interventions</th>
<th>Target population / Sample</th>
<th>Evidence of impact or effectiveness of CBR</th>
<th>How Assessed?</th>
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<tr>
<td>Mariga &amp; McConkey (1987)11 4 areas in Zimbabwe</td>
<td>Home-based Learning programme Training manual developed for Zimbabwe</td>
<td>297 Mentally handicapped people, 78% &lt; 16 yrs / 41 randomly selected children from 2 areas</td>
<td>CBR improved self-care/survival skills in 63% of 41 children.</td>
<td>3 external assessors observed child &amp; interviewed care-givers and staff</td>
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<td>O’Toole (1988)2 Guyana</td>
<td>Training local supervisors to train parents/caregivers in the home using WHO manual and other materials.</td>
<td>53 CWDs Pre-school age. 57% had mental handicaps / N = 53 (100% sample)</td>
<td>Statistically significant improvements on Griffiths development test and portage checklists. 25/53 CWDs improved according to independent evaluators</td>
<td>Griffiths test at end of training programme &amp; 6 months later. Portage checklist at every visit by local supervisor. Independence evaluators examined each child and reviewed evidence.</td>
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<tr>
<td>Finnstam (1988)12 Pakistan</td>
<td>Survey to identify PWDs- Local supervisors train PWDs or caregivers based on WHO manual.</td>
<td>262 Disabled persons / N = 82</td>
<td>PWDs reported improved mobility (15/19), self-care ability (12/16), work activities (29/34), communication skills (14/14) and social integration (29/32).</td>
<td>23 questions by local supervisors at baseline and by occupational therapist at follow-up, 3 yrs after start of project.</td>
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<td>Lagerkvist (1992)3 Philippines &amp; Zimbabwe</td>
<td>Local supervisors train family trainers with WHO manual (Phil) or implement rehabilitation plan designed by rehab. assistants based on locally developed manual (Zim).</td>
<td>573 PWDs in Philippines, 1775 PWDs in Zimbabwe / N = 106 in Philippines, N = 100 in Zimbabwe. In CBR programme at least 6 months. 53% male in both samples. 40% aged &lt; 20.</td>
<td>176/206 individuals improved in ADL, communication, social integration.</td>
<td>2 evaluators examined PWD and compared to status at baseline as per records &amp; verbal history.</td>
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<td>Dolan et al. (1995)13 South Africa</td>
<td>2 yrs training curriculum for CRWs based on occupational therapy, speech, hearing, physiotherapy. Home visits by CRWs.</td>
<td>383 Disabled persons / 4 current clients plus one ex-client of each of 8 CRWs – Total 40.</td>
<td>Significant impact on ADL &amp; mobility and helped clients achieve integration 33/40 felt more independent 38/40 learned new skills 24/40 participated in organizations</td>
<td>1 external assessor interviewed clients or their caregivers Evaluation 6 months after CRW workers completed training.</td>
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<td>Lundgren-Lindquist &amp; Nordholm (1996) Botswana</td>
<td>Improving ADL</td>
<td>Disabled people / N = 132 of which 77 could be interviewed.</td>
<td>CBR led to high levels of independence (70%, n = 77) but the elderly disabled perception of life was negative.</td>
<td>2 external and 2 internal assessors interviewed clients or their caregivers</td>
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<td>Jitapunkul (1998) Bangkok, Thailand &amp;</td>
<td>Non-professional staff trained and supervised by physiotherapist to provide physical therapy in a community centre or at home.</td>
<td>Disabled people with mild or moderately severe conditions / 78/178 walking velocity test 124/178 scored pain levels 178/178 self-reported improvement</td>
<td>1. Walking velocity from 0.38 to 0.59 m/sec. 2. Pain scores (0–10) reduced from 7.2 to 3.7 3. 154/178 reported improvement</td>
<td>1. Walking 10 meters 2. in 105 who completed rehabilitation treatment 3. home interview by research worker after discontinuation</td>
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<td>Zhuo, D. and Kun, N.D. (1999) Guangzhou City, China</td>
<td>Physical, mental and psychological rehabilitation Integration with non-disabled members of the community Self awareness and self esteem</td>
<td>105 disabled people (first 5 years) physically mentally handicapped / NA</td>
<td>93% improvement in function of 125 who attend the mini-station for treatment / exercises More positive outlook on life by disabled people, more motivation and confidence.</td>
<td>Reported by CBR workers Questionnaire survey</td>
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<td>WHO &amp; SHIA (2002) Ghana, Guyana &amp; Nepal</td>
<td>Details varied by country People with moderate physical disabilities (Ghana, Nepal), children with intellectual disabilities and hearing impairments (Guyana) / 33 PWDs and 12 parents of CWDs. 9 inquiry groups included interviewees, other PWDs, relatives and DPO leaders.</td>
<td></td>
<td>CBR was judged to have impacted positively on self-reliance – ADL, mobility, social skills. Impact on physical well-being limited.</td>
<td>In-depth interviews of CBR beneficiaries, or their parents and interviews with 9 inquiry groups to assess impact of CBR.</td>
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<td><strong>Powell et al. (2002)14 Cambodia</strong></td>
<td>Interventions: 1. physical rehabilitation 2. self-help initiatives 3. employment services</td>
<td>Disabled persons / Disabled persons &gt; 15 yrs (n = 164)</td>
<td>Objective indicators and subjective perception of Quality of Life: Scores were 44.9 (obj) &amp; 63.2 (subj) without but 52.3 (obj) &amp; 69.6 (subj) with either one of three interventions. Those using &gt; 1 service had scores 53.9 (obj) and 70.2 (subj)</td>
<td>ComQol 5 adapted to local context (higher score = better QoL)</td>
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<tr>
<td><strong>Jadin et al. (2005)19 Ghana &amp; Benin</strong></td>
<td>Home visits by community volunteers using WHO manual. Referral services.</td>
<td>Disabled children and adults / Randomly selected from 8/20 CBR districts in Ghana (N = 236) and 7/15 CBR districts in Benin (N = 289) aged up to 30 yrs.</td>
<td>Progress observed in: Ghana Benin 54/98 69/114 ADL 74/182 134/237 Med. Rehab</td>
<td>Progress on a scale 0·5 as agreed by PWD, parents and staff.</td>
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<td><strong>Eide AH (2006)28 Palestine</strong></td>
<td>Community Mobilization Working with individuals &amp; families (WHO Manual).</td>
<td>Disabled people / 1. Random sample from all registered users (N = 1075 = 5·5%) 2. Selected individuals (n = 57)</td>
<td>1. Progress reported for 51% of individuals 2. 72% made much/major progress</td>
<td>1. Follow-up by CBR worker filling out each of 20 items as appropriate (N = 580) 2. Researcher interviewed CBR worker about each case &amp; compared to standardised records (N = 57).</td>
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those who go through the entire process of selection, choosing a trade, completing vocational training and obtaining a micro-credit do in fact become self-employed,\textsuperscript{5,27} improve their material well-being\textsuperscript{15,16} and even may become self-supporting.\textsuperscript{29} Gershon & Srinivasan\textsuperscript{4} report more modest successes, but this was partly due to the fact that they used an objective criterion of success: not just improvement of income but gaining at least 400 Rupees per month. Only 14\% of their clients were able to achieve that goal within the observation period, while 18\% who already earned that much were able to maintain or improve their standard of living.

A ‘side-effect’ of these socio-economic interventions is the enormous boost in self-esteem that many clients get out of it. The fact that persons with a disability are active in the market place changes the dynamic of their interaction with the community around them so that people see them in a new light.\textsuperscript{15,22,29}

Quality of Life

Powell\textsuperscript{14} defined seven life domains: material well-being, health, productivity, intimacy, safety, place in the community and emotional well-being, and asked both subjective questions (e.g. how would you rate your own health?) and objective questions (e.g. how often did you see a doctor in the last month?) about each domain. He combined the answers into an overall quality of life score and compared this to the intensity of use of CBR services whether physical rehabilitation, community-based activities or economic interventions. As shown in Table 1, those who used the rehabilitation services enjoyed a better quality of life than those who did not, and that the difference was even greater for those who used a combination of services.

\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|}
\hline
Authors (year of publication) & Country & Nr. Of children in school / Nr. of children assessed & Percentage of children in School through support CBR programme \\
\hline
Mariga & McConkey (1987)\textsuperscript{11} & South Africa & 8 / 50 & 15 \\
Finnstam (1988)\textsuperscript{12} & Pakistan & 16 / 19 & 56 \\
Lagerkvist (1992)\textsuperscript{1} & Philippines & 13 / 50 & 26 \\
Lagerkvist (1992)\textsuperscript{1} & Zimbabwe & 25 / 36 & 69 \\
Lundgren-Lindquist & Nordholm (1996)\textsuperscript{2} & Botswana & 10 / 14 & 71 \\
Jadin et al. (2005)\textsuperscript{19} & Ghana & 40 / 84 & 48 \\
Jadin et al. (2005)\textsuperscript{19} & Benin & 78 / 118 & 66 \\
\hline
\end{tabular}
\caption{Children attending school as a result of the CBR programme}
\end{table}

\textbf{DOES CBR CHANGE ATTITUDES OF PARENTS, CAREGIVERS AND RELATIVES?}

The current review found consistent evidence that parents’ perception of their disabled children changes and that family members’ perception of their adult disabled relatives changes as a result of CBR. CBR initiatives help family members develop greater understanding of the causes of disability and what they can do to improve mobility and autonomy. Thus Mariga \textit{et al.}\textsuperscript{11} reported that parents/caregivers in their home-based training
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<tr>
<td>Gershon &amp; Srinivasan (1992)⁴</td>
<td>Socio-economic rehabilitation: loans and employment services incl. vocational training.</td>
<td>972 persons affected by leprosy rehabilitated 1974–1983 / N = 78, 100% &gt; 20 yrs, 41% &gt; 40 yrs, 22% women</td>
<td>1. % earning &gt; 400 INR /month went from 18 to 32</td>
<td>Interviews with clients, staff. Records &amp; books. (n = 78)</td>
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<td>2. % with assets &gt; 20,000 INR went from 10 to 33</td>
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<td>3. % with own house went from 29 to 40</td>
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<td>4. 85% found service helpful &amp; effective</td>
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<tr>
<td>Lagerkvist (1992)³</td>
<td>Job-placement</td>
<td>573 PWDs in Philippines, 1775 PWDs in Zimbabwe / N = 106 in Philippines, N = 100 in Zimbabwe. In CBR programme at least 6 months. 53% male in both samples. 40% aged &lt; 20.</td>
<td>25/49 men with disabilities started occupation.</td>
<td>2 evaluators examined PWD and compared to status at baseline as per records &amp; verbal history.</td>
</tr>
<tr>
<td>Jagannathan et al. (1993)³</td>
<td>Vocational Training</td>
<td>People affected by leprosy / N = 20</td>
<td>Vocational training led to self-employment &amp; income generation for 17/20 trainees.</td>
<td>6 months after initiating trade.</td>
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<tr>
<td>Togonu-Bickersteth (1996)²²</td>
<td>Community based vocational training</td>
<td>(not stated)</td>
<td>There is improvement in self-perception of beneficiaries. CBR enhanced feelings of self-worth &amp; more social / independence skills in participants.</td>
<td>Interviews with trainers, trainees and parents of trainees.</td>
</tr>
<tr>
<td>Zhuo, D. and Kan, N.D. (1999)²⁴</td>
<td>Vocational and social rehabilitation</td>
<td>105 disabled people (first 5 years) physically mentally handicapped / NA</td>
<td>152/344 physically disabled people given job placement in community-run factories</td>
<td>Reported by CBR workers</td>
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<tr>
<td>Abera &amp; Shanko (2000) Ethiopia</td>
<td>Interest free loans to help set up new self-identified income generation (self-employment) facility or to maintain and improve existing ones.</td>
<td>People affected by leprosy / 22 men &amp; 14 women randomly selected from 168 users of the service. 78% had grade II disability.</td>
<td>Savings, income, food intake, clothing and housing had improved for most clients</td>
<td>Structured interview with open &amp; closed questions, case studies, participation observation, quantitative notes and reports documented by the program were used to generate both quantitative and qualitative data.</td>
</tr>
<tr>
<td>Prabhakara Rao et al. (2000) India</td>
<td>Loans, pensions, vocational training, support for education &amp; housing</td>
<td>People affected by leprosy / 120 of 635 beneficiaries of SER interventions</td>
<td>SER restored 53/120 clients to initial economic status &amp; gave 58/120 clients marginal improvement.</td>
<td>Semi-structured questionnaire used to assess impact of SER in improving quality of life</td>
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<td>Kumar (2000) 8 states in India</td>
<td>Socio-economic rehabilitation: Housing scheme</td>
<td>People affected by leprosy / (n = 68) from 704 housing beneficiaries across India</td>
<td>1. % owning house went from 76 to 100 (n = 68) 2. 78% have tiled roof 71% have electricity 38% have piped water into the house 3. 17% rented out part of their house</td>
<td>Interviews with beneficiaries, project heads and officials of donor agency (GLRA) in Madras</td>
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<td>Powell et al. (2002) Cambodia</td>
<td>Interventions: 1. physical rehabilitation 2. self-help initiatives 3. employment services</td>
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<td>Scores were 44.9 (obj) &amp; 63.2 (subj) without but 52.3 (obj) &amp; 69.6 (subj) with either one of three interventions Those using &gt; 1 service had scores 53.9 (obj) and 70.2 (subj)</td>
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<tr>
<td>Jayadevan &amp; Balakrishnan (2003)²⁰ Kerala, India</td>
<td>Goat breeding</td>
<td>Poor, leprosy-affected and disabled</td>
<td>87 goats were given out to 48 individuals; these goats multiplied to 287 goats 1.5 years later.</td>
<td>Follow-up</td>
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<td>Alade (2004)²⁷ Nigeria</td>
<td>Community based vocational training</td>
<td>Disabled people / 155 ( = 100%) beneficiaries of vocational training</td>
<td>90% of 155 beneficiaries were gainfully employed. CBR thus facilitated inclusion into society</td>
<td>Interviews with chairperson and the coordinator of project and Review of records and reports of social workers</td>
</tr>
<tr>
<td>Jadin et al. (2005)¹⁹ Benin &amp; Ghana</td>
<td>Vocational Training &amp; Income generating activities</td>
<td>Disabled children and adults / Randomly selected from 8/20 CBR districts in Ghana (N = 236) and 7/15 CBR districts in Benin (N = 289) aged up to 30 yrs.</td>
<td>Progress observed in: Ghana 23/86 Benin 5/66</td>
<td>Progress on a scale 0–5 as agreed by PWD, parents and staff.</td>
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<td>Ebenso et al. (2007)²⁹ Nigeria</td>
<td>Micro-credit loan, housing, Vocational Training, Adult Education.</td>
<td>People affected by leprosy / 20 randomly selected participants in SER programmes in five states</td>
<td>Participants reported increased dignity (17/20), becoming self-supporting (14/20), gaining skills to manage their income (11/20), more access to hospitals, schools, places of worship (12/20), contributing to family needs (14/20).</td>
<td>1. In-depth interviews with clients.</td>
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programme said they understood better what was happening to their child and that they were less worried and more confident one year after the start of the programme. Interviews with 375 parents of children with disabilities in two parishes in Jamaica showed that 92% of parents were able to state the diagnosis of their child, that two-thirds said their attitude to their disabled child had changed and in one parish 72% of parents, 4 years after the start of the home-based training programme, had changed their practice so that they could give more time and attention to the child. Similarly, O’Toole showed through interviews before and after the interventions that mothers of disabled children in Guyana were less depressed and less worried about the future of their children.

Parents of young persons with disabilities who enrolled in a community-based vocational training programme reported that their children became more outgoing and gained more autonomy. Leprosy-affected participants in micro-credit programmes in Nigeria were able to generate income and contribute financially to family needs and thereby saw a vast change in their status in the family. By contrast, findings in South Africa suggested that disabled persons were assisted by their relatives but that relations were sometimes strained. Where family members were able to meet other parents/relatives who struggled with the same issues, they dropped some of their embarrassment and were better able to see their disabled child or relative as a human being they do not need to fear, and who has potential to contribute to family life. Findings in Vietnam showed that family members of disabled persons could be very successful CBR workers.

IS CBR EFFECTIVE IN CHANGING COMMUNITY ATTITUDES?

There were 12 reports from 11 countries presenting evidence that community attitudes changed as a result of CBR, partly as a ‘spin-off’ of working with the disabled and their families, partly as a result of working consciously with community leaders and others to promote a more positive view of the disabled and of disability.

Mitchell et al. did a survey in two neighbourhoods in Guangzhou city in China, one where a pilot CBR programme was enthusiastically implemented and one where no special effort was made to work with the disabled. They interviewed 250 persons in each community using standardised scales. The results showed that the attitude in the intervention community was significantly more favourable towards persons with disabilities than in the control community, approximately 3 years after the start of the CBR programme.

Most of the evidence presented in this section is more qualitative in nature. There are four reports of changes observed by CBR workers, four reports where clients of CBR programmes themselves report changes in the attitude of community members towards them and three reports of participation of disabled persons in community organisations. Four reports presented examples of how communities mobilise resources to meet specific needs of the disabled.

Changes Observed by Staff of CBR Programmes

The staff of CBR programmes often mention the changes they see happening in the community in which they work. Against a background of very negative community attitudes towards the disabled, one CBR worker in South Africa said: ‘People begin to realise that disabled persons are just like them’ – thus showing that disability was gradually demystified.
and fears were dispelled. Similarly, an evaluation\(^{26}\) of a CBR programme in five Northern provinces of Vietnam suggested that it contributed to a reduction of stigma and greater equality of disabled persons.

Group interviews in Botswana\(^{23}\) with two full-time staff of the CBR programme and 15 community volunteers, eight of whom worked directly with disabled clients, identified as a strength of the programme that community awareness of disability issues had increased so that ‘disabled persons are no longer hidden’ and were more integrated in the community than before.

In Eritrea, the information gathered\(^{31}\) pointed very clearly to a change in attitudes manifested through inclusion of persons with disabilities into the local communities where previously they were isolated. Some of the elderly informants told how their childhood had been completely different from the childhood of the disabled children of today because of the CBR Programme. They had not been permitted at school, they were not permitted to participate at communal gatherings, but had to stay at home hidden away from others. Now these elderly disabled persons had themselves become Local Supervisors and thus supported other community members.

**From the Clients’ Point of View**

When researchers asked the clients for their experience of community attitudes towards them, CBR was noted as an important cause for improvement in Ethiopia, where 31 of 36 leprosy-affected clients reported that community attitudes towards them had improved considerably after they began to be involved in income-generating activities.\(^{15}\) Leprosy-affected participants in a socio-economic rehabilitation programme in Nigeria\(^{29}\) reported more access to hospitals, schools and places of worship (12/20) and improved community attitude (13/20). Togonu\(^{22}\) interviewed local artisans who had included disabled persons in their work as apprentices as well as the apprentices themselves. Both testified to changes in the attitudes of customers who gradually began to respect disabled persons as they proved themselves in their work.

A study commissioned by WHO and the Swedish Organisations of Disabled Persons International Aid Association (SHIA)\(^{30}\) specifically aimed to present the disabled person’s point of view. Disabled persons were interviewed in Ghana, Guyana and Nepal. Based on this material, the authors concluded that CBR has contributed substantially to social inclusion of disabled persons. Not only did CBR increase self-reliance and self-esteem, it also attracted the attention of community leaders and community organisations to persons with a disability and a social change process was started which redefines the role of disabled persons in society.

**Participation in Community Groups**

Dolan\(^{13}\) reported that 60% of 40 disabled clients of the CBR programme participated in some form of community organisation. Many of them took part in groups started by the CBR workers where they shared experiences. Others sat on the school committee or belonged to a church. Abera\(^{15}\) in Ethiopia reported that some of their clients were members of local funeral societies. In Uganda, participation of disabled persons on all levels in Local Councils is a
legal requirement. Thus disabled persons fulfilled roles in the Tororo district and sub-district
government structures. All of these examples show how disabled persons are able to join
social networks which help them to break out of their isolation. CBR plays a role in enabling
and encouraging disabled persons to do this.

Resource Mobilisation

The community-based vocational training programme in Nigeria successfully mobilised
community resources for the disabled. Once the success of the programme was established,
local artisans were encouraged to take on disabled apprentices at no cost, as they would
do with able-bodied apprentices. Parents and community members were increasingly
mobilised to visit these apprentices regularly and supervise progress. Philanthropic
organisations and local government gradually began sponsoring participants in the
 programme. In Guyana, a village health committee was formed as a result of the CBR programme.
This committee then took it upon itself to advocate with the Ministry of Education for more
support for disabled children in their area.

Claussen concluded in the Tororo district in Uganda that ‘Consultations with various
stakeholders, disabled persons and their family members confirmed a change in perception of
CBR from a programme to deliver services to a programme in which disabled persons and
communities identify themselves as partners in mobilisation of assistance, not only as
receivers of services.’ Mobilisation of community resources has given disabled persons in Eritrea access to land,
to improved housing, and to primary education. Again, these are direct results of CBR
activities and of the influence exerted by Local Supervisors in their communities and in
particular village administrations.

Discussion

CONCLUSIONS

The present review has surveyed 29 reports from 22 countries in Asia, Africa and Central
America. The following conclusions can be drawn.

1. Provision of home-based training by community volunteers (a key feature of community
based rehabilitation) resulted in increased independence, mobility, communication skills
and social integration in at least 50% of clients (and often many more!)
2. Through the efforts of CBR programmes, roughly half the disabled children identified
were enabled to attend school.
3. Published evidence indicates that income of disabled persons improved through economic
interventions and it was clear that this improved their self-esteem and their status in the
family and community. It is much less clear, however, whether persons with disabilities
can achieve financial independence as a result of these interventions.
4. Through home visits by CBR workers, knowledge about disabilities is transferred to
parents, caregivers and other family members. This helps them to communicate better
with the disabled child, have more hope for its future and generally cope better.
5. Reports reflected that CBR activities result in social processes that change the way community members view persons with disabilities, increase the level of acceptance and social inclusion of the disabled and mobilise resources to meet their needs.

WHO BENEFIT FROM CBR?

This evidence thus demonstrates that with relatively simple means impacts can be achieved which substantially improve the quality of life of persons with a disability and of parents of disabled children. At the same time, it would be unrealistic to think that all the needs of all disabled persons have been or can be met through existing programmes. A few researchers have tried to put what was done in the context of what was needed. The WHO/SHIA report concluded that in the three countries evaluated, coverage is low, implying that many disabled are deprived of even these basic rehabilitation services. Furthermore, the authors felt that the greatest benefit of CBR interventions was limited to persons with moderate physical disability who can communicate. The more severely disabled were often left out, as well as those who could not communicate verbally, who had mental illness or epilepsy. They estimated that on average, 45% of clients in CBR programmes have difficulties moving and 25% have difficulty seeing while all other types of disability together make up the remaining 25% of participants in CBR.

This is confirmed by scattered observations in the field. Claussen observed that the programme staff did not know how to work with the hearing impaired and expressed frustration and helplessness about this. He also estimated that the programme reached only 50% of the disabled persons residing in the district. Grut et al. similarly signalled a lack of coverage of the CBR programme in Eritrea and noted that while some CBR workers needed to improve their basic rehabilitation skills, others were ready to learn more advanced skills which would permit them to deal with more severely disabled clients. Dolan et al. concluded that persons with hearing, sight, speech and psychological disabilities were under-represented in their project.

Mental health care is obviously a very important area which we were unable to adequately address here. An excellent review of community-based mental health programmes in low and middle income countries has been published recently.

Measurement Problems

A number of measurement problems become apparent when reviewing the evidence for the effectiveness of CBR, ably summarised by Evans et al. First of the 12 studies presenting data on the individual progress of persons with disability (Table 1), only four based their conclusions on repeated, before and after assessments with standardised scales. Most studies ask the staff or the clients for their perception of improvements since the start of the programme and the biases in this are obvious. Some studies verify retrospective information in records but in many programmes the quality of individual records is inadequate. Evidence for the progress of disabled persons after economic interventions can be based on recorded data concerning socio-economic status, income etc. but this is not always practiced. Velema et al. have argued previously that the credibility of CBR can be substantially improved if CBR programmes maintain information systems which record simple data for each client throughout their involvement with the programme as this will,
besides the benefits of this for programme management, permit the conduct of retrospective studies based on valid data.

Evans et al.\textsuperscript{36} argue that particularly \textit{children} with disabilities will mature and develop new functional skills even if no intervention takes place. Thus the use of a control group would be indicated but this is difficult to realise for ethical reasons. None of the studies in Table 1 worked with a control group, though one study included both ex-users and current users.\textsuperscript{13} Powell\textsuperscript{14} used a standardised measure of quality of life and compared the scores of users and non-users of three CBR interventions.

\textbf{SCANTY EVIDENCE}

The number of papers we could find reporting data on the impact of CBR in low and middle income countries over a 20 year period was small. Eight of them had been reviewed in 1999 by Mitchell.\textsuperscript{1} Only four additional papers were identified by Finkenflugel\textsuperscript{10} in 2005 who did not, however, draw any conclusions about the effectiveness of CBR. Eight of the 26 published papers we included here were not published in journals which were referenced in the Pubmed database, did not carry the right keywords or were too recent to be identified through systematic searches in databases. Although some discussion about the in- or exclusion of papers in a review is inevitable, we are confident that a different approach would not have resulted in a more meaningful body of evidence.

Most CBR programmes are putting all their resources into implementation and research is not planned for from the beginning. Given the small number of papers, we decided to include in the present review any evidence we could find, even if some papers only reported summaries of otherwise unpublished evaluation findings.\textsuperscript{24,25} However, we stated as clearly as possible how evidence was obtained so that readers can make their own critical appraisal of what they wish to consider acceptable evidence. For a number of reasons, the field of CBR as a whole is not ready to generate research of the quality needed for a Cochrane review. In addition, those who consider rehabilitation as a social rather than a medical issue are more interested in describing the social process of CBR in qualitative terms rather than to generate quantitative evidence which they would consider as devaluing persons with a disability into mere ‘study subjects’. This is one reason why the evidence for the effect of CBR on community attitudes is dominated by qualitative information.

With few exceptions, we did not include evidence that is available, often through the internet, in unpublished reports. Such reports have not been submitted to a process of peer-review and are likely to be highly variable in quality. Often, the organisations commissioning the evaluations described in these reports do not feel comfortable spending resources to make sure the findings are properly published. Kuipers \textit{et al.}\textsuperscript{38} therefore collected unpublished evaluation reports of CBR programmes and applied formal methods to extract the common themes from the recommendations made in a set of 37 reports from 22 different countries on the assumption that if a theme comes up frequently, it is likely to be something of wider relevance and not just a local detail. Velema\textsuperscript{39} similarly summarised nine evaluation reports though not with the same formal methods. This approach yielded much useful information on the process of implementing CBR but very little information on its impact.

Although the present review shows that CBR is an important factor in the advancement of persons with a disability in society, much could be done to better and more convincingly document its effectiveness. This would primarily appear to be a matter of the priority assigned to CBR and the resources available to make this happen.
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