

Do overlapping identities matter for development programs? The case of Community-Based Rehabilitation Program in Karnataka*

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Abstract

Development programs rarely engage with social identities, although their importance in influencing behaviours and wellbeing is well acknowledged in the literature. The objective of this paper is to investigate the role of overlapping identities in influencing the impact of a development program through the case study of the Community-Based Rehabilitation (CBR) in Karnataka (India). CBR programs have been promoted as the most viable and practical solution for the improvement of the well-being and empowerment of persons with disabilities, especially in middle and low income countries like India. While the evidence on the general effectiveness of these programs are widespread, there is limited knowledge on the impact of CBR on the well-being of children and the youth disaggregated by gender and caste. This paper attempts to bring new knowledge by investigating through a multilevel analysis whether the CBR program that is implemented in two districts of Karnataka State has increased the well-being of children and youth with disabilities and whether the program is inclusive in terms of the severity of disability, gender and caste. The analysis shows that the program has a positive and significant impact for all the dimensions in the medium and long term. It also shows that the program is inclusive with respect to gender, and severity of disability. Overall, this paper produces evidence over the importance of accounting for the intersectional nature of identity in development programs.

Keywords: Development Programs; Impact Evaluation; Intersectionality; Community-Based Rehabilitation; Multilevel Analysis

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I Introduction

The notion that identities and their overlap matter for individuals' access to opportunities and behaviours has been extensively studied in the literature (see for example, Deshpande 2007a; Akerlof and Kranton 2000). However, despite the recognition that "identities matter for development", there are only few studies that attempt to understand the implications of overlapping identities for the design and the impact of development programs.

This paper departs from the idea that an inquiry over the impact of a development program is not complete without considering the role played by identities and their overlap, especially in a country such as India where caste, religion, and gender are key axis of social stratification (Deshpande 2001, 2007a 2007b; Kijima 2006; Siddique 2007; Zacharias and Vakulabharanam 2011; Deshpande and Spears 2016).

Among the children and the youth worldwide, children and youth with disabilities in developing countries are the most disadvantaged facing poor access to resources and services and societal and self-stigma (WHO and WB 2011). Due to intersection between physical or mental impairments, poverty, religious and cultural beliefs and practices, they are likely to be segregated, isolated and denied the opportunity to have access to education and to participate to social life (Ehrmann et al. 1995; Huper et al. 2014; Trani et al. 2011). This gives scope to the economic, equity and ethical argument for investing in the well-being of boys and girls with disabilities (Harris-White 1996; Heckman 2006; Stabile and Allin 2012; WHO 2012; UN 1989; 2006).

Community-based Rehabilitation (CBR) is considered an effective approach in low and middle income countries of promoting the rights and opportunities of person with disabilities (ILO et al. 2004; Hartley et al 2009; Mauro et al; 2014) including their participation in the community (Sharma 2007; Biggeri et al. 2013). In India, the shift from professional, institutional carers to CBR programs has been massive (O'Keefe 2009) and vital to address the social problem of the high and increasing number of persons with disabilities who are segmented in a large territory especially in rural areas (Census 2011).

Due to the recognition of the efficacy of CBR programs, these have been increasingly adopted in many countries and evaluations have mushroomed in the last decade (see Grandisson et al. 2014 for a review). However, while there are increasing evidence over the impact of CBR on persons with disabilities, there is very limited research on the impact of CBR interventions on children and youth with disabilities well-being using control-case studies and even less quantitative research on how the impact is mediated by gender, ethnic group, class, age, and other salient markers of identity (Alavi and Kuper 2010).

The aim of this paper is to investigate the role of overlapping identities in a development program using the case study of CBR in Karnataka (India). The case study analysed here uses data from a large scale CBR program in two districts of Karnataka State in India collected in 2009/2015. The research was part of a larger research initiative conducted by the NGO AIFO. A multilevel analysis accounting for village effects is adopted.

The paper is divided into seven sections. The second section of the paper introduces the interpretative framework. The third section discusses the relation between gender, disability and caste in India. Section 4 introduces the case study; Section 5 describes the empirical strategy; Section 6 presents the results of the impact evaluation, while section 7 presents the findings on inclusiveness. Final remarks are given at the end.

II Conversion Factors

According to the capability approach (Sen 1985), every person should be given the opportunity to live the life that he or she deems as valuable. During childhood, the opportunity to function is further important as the capabilities experienced during childhood influence both actual and future well-being with larger societal implications (Klasen 2001). Children have evolving capabilities (Biggeri et al. 2011) implying that the opportunity to exercise self-determination and autonomy evolves continuously and it is critical in the process of capability expansion beginning from childhood. Such capability expansion is inherently multidimensional due to the complex nature of child development and the interconnectedness of children’s capabilities (Dixon and Nussbaum 2006; Di Tommaso 2007; Wolf and de-Shalit 2007; Addabbo et al. 2014).

The ability of the individuals to convert resources into capabilities and functionings depends on conversion factors (Sen 1985, 2009). Conversion factors at individual, family, and community level produce material and immaterial barriers to the opportunity to functioning. Among the conversion factors, disability, gender and caste influence the opportunities to function in a complex way since childhood. In particular, children and youth with disabilities need specific types and amounts of inputs (including policies, resources, changes in social norms or infrastructure) to achieve the same levels of well-being of children without disabilities (Sen 1992; Mitra 2006; Trani et al., 2011). Whereas gender and caste act through a much more subtle way that will be detailed hereafter.

The relation between capabilities, conversion factors and wellbeing has been modelled through the "production function of wellbeing" (Sen 1985; Kuklys 2005) and the level of potential wellbeing Q_i can be represented by the following expression [1]:

$$Q_i(X)_i = \{b_i | b_i = f(c(x_i | z_i, z_s, z_e)\}$$

Where:

Q_i is the capability set comprising all potential functioning an individual can achieve

$(X)_i$ is a vector of market and non-market goods and services

b is a vector of states of being and doing (functionings)

c is a function that maps commodities into characteristics

f_i is a conversion factors function that maps commodities into functionings

z_i are personal conversion factors

z_s are social conversion factors

z_e are environmental conversion factors

Therefore, the individual wellbeing can be captured by the vector (b) of activities and states of beings [2]:

$$b = f[c(X|z_i, z_s, z_e)]$$

and depends to the means to achieve X available to that person (e.g. income, ...), to the societal and environmental conversion factors at the local level z_e and z_e and to the individual conversion factors z_i (Sen 1985).

In order to understand how overlapping identities shape the conversion functions, we draw on inter-sectional studies that show the flaws of an approach that investigate disability regardless of gender and viceversa. They posit that the dimensions of social stratifications (such as gender and disability) are mutually defining, and should be analysed in intersecting rather than in additive terms (Crenshaw 1991; Mc Call 2005; Mullings and Schulz 2006). Thus, disability, caste, and gender all concur to qualify and quantify the extra-needs at the individual level. Furthermore, it is assumed that conversion functions might differ not only across individuals, but also across dimensions. For example, having a disability is likely to negatively influence some dimensions such as being respected by the community, but not others, such as the opportunity to live in a clean environment.

Below there is a graphical depiction of the relation between means to achieve, conversion factors and wellbeing for one dimension of wellbeing for three individuals: an able-bodied boy, an able-bodied girl and a girl with disability, controlling for all the other characteristics (such as the environmental characteristics or age). This functional relationship draws on Zaidi and Burchardt (2005) albeit they applied it to standard of living rather than to capability set.

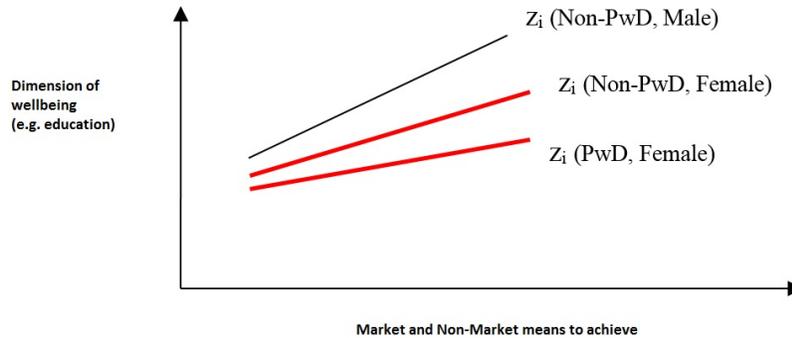


Figure 1: Well-being, Means to Achieve and Conversion Factors. *Source: Author's Elaboration*

Figure 1 shows that individuals with the same means to achieve but different individual char-

acteristics might enjoy different level of wellbeing. More precisely, the figure above describes the circumstances where being female and belonging to low caste lower the level of wellbeing given the same endowments of resources. When the individual is cut across different axes of discrimination (being a girl and having a disability), these axes are not considered in an additive way, that is why the lines are not parallel. The figure describes the most recurrent situation where the identity is less salient at low level of resources. Rather than adding up discriminations, we need to investigate how the different grounds of discrimination interact with each other. This is also relevant in the development programs which is the object of this paper.

III Gender, Caste, and Disability in India

Persons with disabilities face several impediments due to the exclusionary nature of the labour market, of the education systems, of the political institutions and of the culture that is prevalent in a given society. In recognition of this, in the last decades, the conceptualization of disability as object of medical intervention and rehabilitation was gradually abandoned in favour of the “social model of disability” which locates disability in the social, economic and cultural structure of the society rather than in the body of the individual (Nagi 1991; Oliver 1996; Shakespeare and Watson 2002; Addlakha, 2008).

In India, the social meaning of disability differs substantially by religion, rural and urban areas, community and cohort. In terms of religion, in Hindu scriptures human sufferings can be understood through the theory of Karma, that is if one has committed misdeeds in the previous births, one has to bear the consequences. Belief in the theory of Karma has very often led to the acceptance of disability, with little if none effort in the direction of improving the life conditions (Dalal, 2002). However, in India a multitude of cultures and religions coexist and the other predominant view is the notion that God inflicts suffering on good people to test their strengths (Dalal 2002). In this case, persons with disabilities are treated with love and care.

The definition of disability varies also across urban and rural areas where in the former people are more likely to rely on the western understanding and in the second people tend to see impairments in terms of religious punishment (or reward) (Lang 2001).

Finally, the notion of disability also varies across communities. The Erb and Harris-White (1996) study, for example, found that in rural India the ability of a person to work determined whether an individual was deemed to be disabled or not. Having said this, persons with disabilities do not represent a homogenous group: they are clearly stratified in terms of severity of disability, gender, caste, religion, location, class (O’Keefe 2009; Harris White 1996; Mehrotra 2006; Pal 2010). Very little work is available on the intersection between class, caste, gender and disability.

In terms of the intersection between class and disability, disability is clearly both a cause and a consequence of poverty (Braithwaite and Mont 2008; Barron and Ncube 2010; Yeo and More 2013). Class and disability reinforce each other: poverty can cause disability through malnutrition, exposure

to disabling disease, inaccessibility of health care system, while disability increases vulnerability and poverty by making it difficult for persons with disabilities to be employed and by increasing household expenses. Generally, disability pertaining to men is responsible for a much greater degree of economic loss as compared to disability of women, who often do not engage in external economic activity in the first place (Chowdhury 2006).

In terms of caste, due to the high level of overlap between caste and class, the percentage of persons with disabilities among the scheduled castes and the scheduled tribes is higher than it is in other castes and in these communities economic suffering is mainly found to be working against the survival of the girl child with disability (Mehrotra 2008).

The intersection between disability and gender is quite complex, and it is not much investigated. While Dalit women and women workers have been widely recognized as marginalised groups, women with disabilities are only now being recognised as a distinct marginal category (Addlakha 2008).

The complex interplay between disability and gender starts from the recognition of the disability itself. Indeed, in order to be socially recognized as disabled, women need to have a higher level of severity of disability. The reason is that women tend to perform domestic duties regardless of the disability, thus being the notion of disability strictly connected with the capability to work, women consider themselves to be disabled at a later stage of impairment compared to men (Erb and Harris-White 1996; Lang, 2001; Chowdhury 2006). This partly explains why in many surveys (including Census 2011) men with disabilities tend to outnumber women with disabilities.

Women with disabilities are characterised by high level of marginalization and isolation. Indeed, their conditions are worse than that of men with disabilities and of non -disabled women (Addlakha 2008). In the social hierarchy it is not unlikely that – given the same social class - a man with disabilities is on higher position than a girl without disability. Not surprisingly, mentally impaired men are assigned tasks that usually pertain to the women. Thus, a male with reduced mental faculty is supposed to be able to perform the tasks of a woman (Mehrotra 2008).

Disability affects women more acutely because of the impact on two main aspects which are critical for social reputation in India: marriage and employment. As it was said before, being employed is a critical factor because it determines whether individuals are recognized as disabled or not. In Indian context, especially in rural areas, employment is mediated by gender and caste/class and also by religion. In upper caste families, women are expected to be engaged in domestic work, whereas in poor Dalit families women have always worked outside. Women with disabilities are found to remain domestic active, regardless of the disability. Women with moderate disabilities are no exception here as they continue to work, especially Dalit women. Main reason is that, especially for poor and low caste the capacity to work is a key factor for marriage, thus a disabled girl is "initiated into all of a woman's traditional responsibilities, to the maximum extent possible" (Mehrotra, 44:2013). Women with disabilities have much lower chance to work than men with disabilities and if they work, they are likely to earn less than their counterparts.

A woman's future is still deeply dependent on marriage agreements. Men with disabilities are more

likely to be married than women with disabilities (Lang 2001; Pal 2010; World Bank 2007; WHO and WB 2011, Mehrotra 2013). Women with disabilities are more likely to remain unmarried or to marry a disabled man, a widower, a lower caste man, a lower class man (Mehrotra 2008). Chowdhury (2006) finds that marriage is perceived in different way by man and women with disabilities. While women are worried that they are unable to cope with the responsibilities of the marriage, especially regarding childbirth, men are much more confident that they can find a woman that would take care of him. Indeed, due to gender roles in the couple, a woman with a physical impairment is considered as “useless”, helpless, unable to care for her family, and unable to contribute to family’s economy (Thomas and Thomas 2003). This explains why the dowry for women with disabilities as well as the rate of abandonment and divorce of women with disabilities is substantially higher than in other cases. Finally, the impact of disability changes across ages. Children are likely to encounter difficulties in being accepted within their families, to experience further isolation, both in lower and upper class/caste families (Lang, 2001) and they are more likely to be out of school (Singal and Jeffrey 2009; Singal et al. 2011;). Furthermore, being isolated and often ostracized, children with disabilities internalize such perceptions undermining their potentialities and self-esteem (Addlakha 2008).

When they grow up, adolescent girls are the most vulnerable ones, because they are socialised in traditional gender roles and all the possible responsibilities. According to Mehrotra (2008: 46) “No special care is extended in terms of their specific physical/mental disability. Rural society does not perceive disabled people as people with any special requirements. This is truer in the case of women. Their traditional gender roles as worker and reproducer are strictly enforced, as in the case of any non-disabled woman”. After the marriage the woman is put to work (this being the most demanding phase of her life) and the conditions of living only improve when the family expands and she can count on the help from sons, daughters, daughters-in-law and grand-children.

IV The case study

IV.1 Community-Based Rehabilitation Programs

In the last two decades, Community-Based Rehabilitation (CBR) has been promoted as the most viable and practical solution for the massive problem of disability in India (Dalal 2002; O’Keefe 2009). CBR programs are based on the principles of the UNCRPD as well as on individual and social empowerment that embrace self-advocacy and sustainability (WHO et al., 2010). The CBR strategy “promotes the rights of people with disabilities to live as equal citizens within the community, to enjoy health and well-being, to participate fully in educational, social, cultural, religious, economic and political activities” (WHO et al. 2010:4).

CBR programs recognize that persons with disabilities “have a higher likelihood of experiencing poverty because of the institutional, environmental and attitudinal discrimination faced, from birth or the moment of disablement onward” (Yeo and More, 2013: 572).

CBR programs are usually designed following the WHO guidelines (WHO et al., 2010) and taking into account both the context and the funds available as well as the priorities in the communities. All the actions are expected to have an impact on the multiple dimensions that compose the quality of life of persons with disabilities. All the aspects are linked to CRPD and to human capabilities (Sen 1999; Nussbaum 2003; Mitra 2006; Deepak et al., 2013).

CBR programs envisage a social environment in which a community shows awareness and sensitivity to the special needs of its disabled members and feels responsible to bring about the desired changes (Dalal 2002). Thus, by participating to collective actions individuals have an influence on the capability set of the community as a whole (Trani et al 2011).

The CBR approach assumes that persons with disabilities are able to work together and that developing community support and participation in the rehabilitation process is essential for effective rehabilitation. To achieve this, community and CBR workers need a good understanding of the community and its potential (WHO 2007).

As it was discussed in the last section, caste, gender and religion continue to pervade every sphere of life and many of the disadvantages faced by women with disabilities are related to the traditional social and cultural beliefs and practices. Thus, whether CBR succeeds in being gender inclusive depends on its capacity to address some of the complex cultural, economic and social factors, especially those that are related to expectations from traditional gender roles (Thomas and Thomas 2003). So far, evidence show that this is not always the case. CBR programs are rarely built on cultural strengths of the community (Dalal, 2002) and they do not usually comprehend strategies that are tailored to address the unique disadvantage women face (Thomas and Thomas 2003).

IV.2 Description of the Programme

The case study is a CBR program supported by the Italian Association Amici di Raoul Follereau (AIFO) in the State of Karnataka (India). This programme started in 1997 and, by 2010, had reached a total of 2,045 villages in the districts of Mandya and Ramanagaram, including approximately 22,000 persons with disabilities.

This program is administered in the Mandya and Ramanagaram districts by two partner organizations: MOB (Maria Olivia Bonaldo), and SRMAB (Sri Raman Maharishi Academy for Blind). The CBR activities include: home visits, health awareness, therapy services, referral services, aid/appliance support, assistance for benefits (pension and allowances), assistance for school, educational benefits, non-formal education, school based awareness, support for inclusive education, sports/cultural events, celebration events, legal support, support for marriage, promoting in community events, assistance for social activities, support for loans, support for income activities, support for job, advice for savings, the promotion of Self-Help Groups (SHGs), the promotion of persons with disabilities organization, and the promotion of HR activities (amongst other things).

Biggeri et al. (2012) and Mauro et al. (2015) have explored the impact of this program on the well-being of persons with disabilities. They found that the program has a positive impact on the treated.

However, the authors did not evaluate the impact of the CBR activities on the well-being of people with specific characteristics in terms of the nature of their disability, gender, age and caste. By building on their work, this paper attempts to expand the knowledge about the impact of the CBR program, first of all by investigating whether the program is effective in improving the conditions of children and the youth and secondly by investigating whether the program is inclusive in terms of gender, caste and severity of disability.

V Data and estimation methodology

The research was part of a larger research programme between AIFO and WHO/DAR ¹. In terms of survey design, questions were designed in order to capture the level of opportunity deprivation suffered by people with disabilities, rather than capturing the lack of achievements. For example, they were asked about their opportunity to participate to political life rather than whether they voted at the political elections or not. The core idea was that persons with disabilities and persons without disability differ in their opportunities to achieve what they value, and it is the deprivation of the opportunity that should be the target of the policies.

In terms of data analysis, following the CRPD and the CA a multidimensional understanding of well-being was adopted accounting for the fact that individuals – including children – value different aspects, ranging from having economic capacity, to participate to the activities of the communities.

V.1 Sample

The analysis is based on a stratified random sample of villages of the districts covered by the intervention (Mandya and Ramanagaram). As almost no communities refused CBR, the intervention covered nearly all the villages of the two districts so that selection bias at the village level is expected to be negligible. For control purposes, a few villages with similar characteristics were randomly sampled from a neighboring district (Mysore) not covered by the CBR program.

Persons with disabilities were selected using a one-stage cluster sample design with villages as primary sampling units. Villages were stratified according to three variables: the geographical area at sub-district level (taluk), the size of the village (above or below 1,000 inhabitants), and the starting year of the CBR program (in covered areas only).

The survey was administered between December 2009 and March 2010. Data was collected from 265 villages, including 237 villages covered by the CBR program and 28 villages located in control areas. In control areas all persons with disabilities were interviewed. In the villages covered by the program, only beneficiaries were interviewed, except for 17 villages where all persons with disabilities were sur-

¹The research programme lasted three years with Mario Biggeri as scientific director of the quantitative research. The research was approved by the Ethical Committee of AIFO and complied with AIFO's ethical guidelines. Ethical clearance was also received from UCL's Ethics Committee in November, 2009 which strictly followed the UK's Economic and Social Research Council's "Research Ethics Framework" as well as the internal guidelines of UCL's.

veyed with the aim of estimating the coverage of the program (Biggeri, et al., 2012).

Further data collection was purposely conducted by the authors in 2015. Indeed, in the survey administered between December 2009 and March 2010 the Scientific Advisory Committee decided that it was better not to collect information on caste due to the sensitive nature of these topic. Therefore, the variable caste was only partially included in Mauro et al. (2014; 2015). In 2015, a further data collection was conducted with the aim of identifying the caste of the respondents. This led to the identification of caste for the 85% of respondents. An imputation was made for the residual 15% by taking into consideration the following variables for year 2002: level of education, household size, parental education; size of the land owned; quality of the house; whether there was a toilet in the house or not, distance to the nearest source of water and access to food resources.

As the aim of the paper is to investigate the impact of CBR on child and youth deprivations, the subsample only includes those that were from 6 to 23 years old in 2002, thus they are from 13 to 30 at the moment of the interview in 2009 (December) and 2010 (January to May 2010). The young age of the individuals belonging to the sample represents a novelty in the CBR impact. The total number of the sample includes 593 boys and girls with disabilities. Among them, 410 belong to the treatment group and 183 belong to the control group. Total number of villages is 248.

V.2 Outcomes Variables

In line with the capability approach, the CRPD and the CBR Matrix, final outcomes are evaluated under different dimensions. The main domains/dimensions of well-being and well-becoming have been identified by drawing on the CBR guidelines and matrix, and on the research carried out through Focus Group Discussions (FGDs) (Nussbaum 2003; Robeyns 2003; Biggeri, et al. 2006; Biggeri et al. 2011). Drawing on that pool of dimensions, the choice was to restrict the number by taking into account only those dimensions that can be reasonably applied to children and the youth. Finally, the dimension of marriage was added, being it extremely sensitive to gender and disability as the literature review surveyed above has illustrated. The introduction of the outcome “opportunity to get married” represents a novelty to previous research (Mauro et al., 2014; 2015). Finally, following Mauro et al. (2015) an aggregate index was created by taking an un-weighted average of the eight dimension-specific variables, and assigning values between 0 and 3 to the levels of the Likert scale.

Outcomes were measured at the time of the interview and through retrospective questions relating to 2002. In this paper, the impact of the program is analyzed over the span of the time that goes from 2002 to 2006 (medium term) and from 2002 to 2009 (long term) on the seven dimensions defined in Table 2.

As baseline, only persons who experienced specific deprivations at the beginning of the program (2002), that is, persons with disabilities not achieving the maximum score on the scale (those scoring the maximum are regarded as ‘non-deprived’) are considered. The share of deprived persons with disabilities varies across the dimensions considered. The improvement of a deprived person with disabilities in a

	Capabilities Dimension	CRPD Articles	CBR Matrix
1	To have good health	10, 15, 16, 17, 22, 25, 28, 30	Health
2	To express own views and participate in family decisions	3, 19, 29, 30	Social
3	To be free from community prejudice and self-prejudice	3	CA Not in CBR Matrix
4	To express own views and participate in community decisions	19, 29, 30	Empowerment
5	To spend leisure time with friends	30	Social
6	To have access to resources (a job or other income source)	4	Livelihood
7	To get married	23	Social

Table 1: Dimensions of outcome variables selected for the analysis according to the theoretical framework

given dimension is measured through the change in the outcome: specifically, for each unit, a binary variable taking a value of 1 if the person with disabilities experienced an improvement and 0 otherwise is defined. This approach does not rely on the magnitude of the improvement, thus limiting potential bias from: (i) low reliability associated with the scoring of subjective variables based on recalling retrospective information; (ii) variations in responses due to the way that different respondents perceive and interpret the Likert scale². It must also be stressed that while dimensions 1-5 are measured in terms of capabilities (opportunities) and thus they are subjective, dimensions 6-7 are measured in terms of functionings and thus they are objective. Finally, according to the outcome the sample was restricted in order to include only the individuals that given their age can reasonably enjoy the opportunity. Thus, when it comes to measure the outcomes “expression in the community” and “control over resources”, only children between 12 years old and 24 years old were considered in 2002; while with regard to marriage, all the individuals who are above 15 years old were considered.

V.3 Control variables

The impact is estimated through a multilevel model including covariates at both individual and village level (Francavilla et al. 2013). The covariates have been selected according to previous empirical analyses (Mauro et al., 2014; 2015) and statistical significance. Compared to Mauro et al. 2014; 2015, the control variable “Other Caste” was introduced. The variable “Other Caste” is dichotomous taking the value 1 if the boy/girl belongs to upper castes and taking the value 0 if the boy/girl belong to Scheduled Caste, Scheduled Tribes and Backward Castes. We are aware that this distinction might hinder strong differences within each of this group, but it represents a common procedure in categorizing castes in economic applied studies, when data suffer from limitation.

All the individual covariates (later denoted with $X_{i,j}$) are measured in 2002. The village-level covariates (later denoted with Z_j) are measured in 2009, but it has been considered plausible to assume them being static over 7 years. The village has been considered small when below 500 people.

²See Mauro, Biggeri and Grilli (2015) for details

Variables	Name	Obs	Mean	Std. Dev.	Min	Max
<i>Individual Level</i>						
CBR treated	Dtrattati	593	0.693086	0.4616028	0	1
Age in 2002	eta02	593	1.490.388	5.439.396	6	23
Gender	gender	593	0.4721754	0.4996467	0	1
Upper Caste	OC2	593	0.6205734	0.485654	0	1
HH Illiteracy	HH_illit	593	0.46543	0.4992246	0	1
HH Size	hhsz	593	4.504.216	1.397.536	2	8
Mental Disability	hhsz	593	0.2580101	0.437909	0	1
Heavy Disability	Dheavydi b	593	0.3220911	0.4676722	0	1
Education (in years)	edu02	593	3.866.779	4.091.949	0	14
Pension	pens2002	589	0.4312394	0.4956704	0	1
Size of Land owned	guntat09	593	1.753.794	5.639.217	0	360
Quality of the House	goodown	593	0.6863406	0.4643714	0	1
<i>Community Level</i>						
Share of individuals in the village living in a house with a toilet.	mean_toil	593	0.2631096	0.2086232	0	1
Share of individuals in the village scoring 1 in housing quality	mean_goodown	593	0.696068	0.2200298	0	1
Big village	big	593	0.4317032	0.4957317	0	1
Small village	small	593	0.1551433	0.3623469	0	1
Distance from the nearest hospital	hosp	593	3.775.717	2.482.768	0	9
Presence of a Middle School	Dmiddle	593	0.6323777	0.4825648	0	1
Distance from a main road (Km)	road	593	1.524.452	2.004.174	0	8
Type of the road entering the village	tarmud	593	0.8819562	0.3229324	0	1
Presence of SHG	Dvshgdpo	593	0.7790894	0.4152106	0	1

Table 2: Descriptive Statistics of Control Variables

V.4 The Statistical Model

Following Mauro et al. (2015), the effect of the CBR program on the probability of improving the lives of deprived children and youth with disabilities is estimated by means of a random effects logit model, controlling for both individual- and village-level covariates. A random effects model explicitly accounts for the multilevel structure of the data, thus the inferential results are adjusted for the within-cluster correlation (Snijders and Bosker 2012; Rabe-Hesketh and Skrondal 2012). In the present application, clusters are villages, which are indexed by $j=1, \dots, J$, whereas persons with disabilities within village j are indexed by $i=1, \dots, n_j$. The random effects logit model adopted here is specified as follows [3]:

$$\begin{aligned} \text{logit}[P(Y_{i,j} = 1 | T_{i,j} X_{i,j} Z_{i,j} u_j)] &= \beta_T T_{i,j} + \beta_X X_{i,j} + \beta_Z Z_j + u_j \\ u_j &\sim N(0, \sigma^2) \end{aligned}$$

The response variable $Y_{i,j}$ is the binary indicator for improvement on the dimension (1 if the person experienced an improvement, 0 otherwise). The model includes vectors of individual-level covariates $X_{i,j}$ as well as village-level covariates Z_j . The individual-level binary indicator $T_{i,j}$ represent the type of treatment: specifically, $T_{i,j}=1$ indicates that person i of village j joined the program and $T_{i,j}=0$ and that person i of village j who did not join the program. In this model, caste, gender and severity

of disability are considered as individual conversion factors denoted as z_i in models (1) and (2) (see section 2).

In the model the random effects $u_j \sim N(0, \sigma^2)$ summarize unobserved factors at village level affecting individual outcomes, thus the standard deviation σ measures between-village variations in response that are not accounted for by a simple logistic regression. The exogeneity of the random effects is checked through the Hausman test (e.g. Rabe-Hesketh and Skrondal 2012) comparing the estimates from model with those obtained from the fixed effects version (conditional logit model). Performing the test separately for the seven response variables yields p-values well above the 1% threshold, so there is no evidence of violation of the exogeneity assumption. The multilevel model was fitted for each of the response variables defined in Table 1. To test that the multilevel analysis explained a larger share of variance than a non-multilevel mode, for each response variable we started fitting the model with no covariates (null model), then we added the individual-level covariates, and finally the village-level covariates (full model). Estimates were obtained via maximum likelihood with adaptive Gaussian quadrature (Rabe-Hesketh and Skrondal 2012) using Stata 12 (Stata Corp, 2011). The standard deviation σ of the random effects u_j summarizes the unobserved heterogeneity at village level³.

VI Results

VI.1 Impact Evaluation

In this section the results of the model are presented to see whether the program had an impact in the medium and long term on the aggregate variable and then on the single dimensions of wellbeing. Table 3 below shows the average marginal effect of being treated on each of the outcome first in the medium term and then in the long term.

	Health	Family Consid	Free From Prejudice	Expr Community	Leisure	Control Over Resources	Marriage
After 4 years	—	—				—	—
Tij (Treatment effect)	0.361***	0.197***	0.305***	0.281***	0.229***	0.433***	0.355***
After 7 years							
Tij (Treatment effect)	0.404***	0.18***	0.269***	0.319***	0.247***	0.206***	0.368***
Obs.	n=440	n=354	n=330	n=268	n=477	n=390	n=811

Table 3: Average marginal effects for deprived persons with disabilities after 4 years and 7 years

Table above shows that the treatment effect after four years and after seven years is positive and significant for all the dimensions and it varies according to the dimension analyzed. After for years, the estimated average marginal effect is 36.1% for achieving a good health; 19.7% for expressing their own

³For the aggregate index after seven years, the estimate of σ decreases from 0.71 in the null model to 0.39 in the model with individual covariates, and to 0.36 in the full model (which is still significant as the p-value of the likelihood ratio test is <0.01).

views and participating in family decisions, 30.5% for feeling respected by the community, 28.1% for expressing their own views and participating in the community decisions, 22.9% for spending leisure time with friends, 43.3% for having access to resources and 35.5% for getting married.

After seven years, the estimated average marginal effect is, 40.4% for achieving a good health; 18% for expressing their own views and participating in family decisions, 26.9% for feeling respected by the community, 31.9% for expressing their own views and participating in the community decisions, 24.7% for spending leisure time with friends, 20.8% for having access to resources and 36.8% for getting married.

Overall, the impact of the treatment is always significant and positive in the medium and long term. In some dimensions the impact increases in the long term (health, expressing in the community; leisure and marriage) while in the others it decreases. In any case, the impact it is preserved.

Table 4 below shows the impact of the treatment on the aggregate outcome over the two spans of time. The treatment is significant and positive in both the models. The control variables are seldom significant due to the limited number of the observations (for a discussion on the characteristics of these control variables within this model, refer to Mauro et al. 2015).

	Aggregate after 4 years			Aggregate after 7 years		
	Coeff	Std. Err.	P > z	Coeff.	Std. Err.	P > z
Individual Level						
Treated	2.417.849	0.298408	0	1.681.562	0.256856	0
Age in 2002	-0.0004857	0.018793	0.979	-0.0016389	0.018113	0.928
Female	-0.5676796	0.194304	0.003	-0.2567896	0.188981	0.174
Other Caste	-0.3191554	0.217513	0.142	0.1225763	0.206421	0.553
HH Literacy	-0.0329267	0.199178	0.869	0.3304952	0.196146	0.092
HH size	-0.112473	0.07315	0.124	-0.1009188	0.070278	0.151
Mental Disability	-0.1151615	0.235874	0.625	-0.1422551	0.231263	0.538
Heavy Disability	-0.1581542	0.230526	0.493	-0.1590647	0.2224	0.474
Edu in 2002	0.0112119	0.02852	0.694	0.0446377	0.027675	0.107
Pension in 2002	-0.4570415	0.211509	0.031	-115.994	0.21116	0
Size of Land owned	-0.0014833	0.001746	0.395	-0.0015662	0.001768	0.376
Quality of the House	-0.3604389	0.253532	0.155	-0.1718987	0.235706	0.466
Village Level						
Share Toilet	-0.8224371	0.563967	0.145	-0.8172385	0.536714	0.128
Share HH Quality	0.0260379	0.548482	0.962	-0.062091	0.530791	0.907
Big Village	0.3111015	0.259557	0.231	0.1229498	0.244787	0.615
Small Village	-1.090.179	0.322689	0.001	0.167942	0.322435	0.602
Distance from the nearest hospital	0.0477807	0.045881	0.298	-0.0559872	0.044369	0.207
Presence of a Middle School	-0.7175219	0.255702	0.005	-0.0701167	0.244888	0.775
Distance from a main road (Km)	0.0427037	0.056438	0.449	0.0046151	0.052541	0.93
Type of the road entering the village	0.2760679	0.323258	0.393	0.0350383	0.338614	0.918
Presence of SHG	0.0225384	0.267911	0.933	0.0141448	0.26104	0.957
cons	0.3043979	0.779744	0.696	0.4214213	0.736685	0.567
lnsig2u	-154.637	0.935898		-2.020.642	1.089.994	
sigma_u	0.4615407	0.215977		0.364102	0.198434	
rho	0.0608126	0.053453		0.0387356	0.040586	
Obs.	622			589		

Table 4: Results of the Random-effects logistic regression after 4 and 7 years of treatment

Overall, this results are in line with those found in Mauro *et al.* 2015. Both the analyses confirm the positive and significant role of the CBR in improving substantially the wellbeing of the beneficiaries. In addition, both the analysis find that the CBR is particularly effective in tackling some dimensions such as health and community respect, while it seems less effective in improving some other dimensions such as the empowerment of the individuals within their family.

VI.2 CBR inclusiveness by intersectionality perspective

In this section, we examine the extent to which this program is inclusive with respect to gender, severity of disability and caste. The inclusion is disentangled by analyzing it according to three aspects of the CBR program: the access or entitlement, impact capacities and equalizer capacities.

The access or the entitlement is measured by the coverage as the capacity of the programs to reach the weakest segment of the population: women, persons with heavy disability and persons belonging to lowest castes.

In order to measure the capacity of the program to reach the weakest segments of the population we performed significance tests. These were performed to identify whether the probability of joining the program could be affected by the observable variables of our interest, namely: gender, caste and severity of disability. Tests were performed in 17 villages where all persons with disabilities were surveyed (both treated and non-treated).

We find that there is no difference in joining the program due to gender (p value = 0.6622); while there is evidence of a higher probability of participation for people belonging to “Other Caste” (p value = 0.0014) and for those experiencing heavy disabilities (p value = 0.0185). This implies that the program is inclusive with respect to gender and severity of disability while apparently it is not inclusive with respect to caste. This can be explained by the fact that the upper caste people selected in the program are the poorest, thus the program selects the poor people belonging to medium-high caste, but it fails to reach the poorest among the lowest caste. Finally, there is evidence of a lower probability of participation for wealthier (wage earnings p value = 0.0151) and older people (p value = 0.0000).

Impact capacities of a CBR program are reached if everyone benefits from the program, including the poorest segment of the beneficiaries. In order to capture this characteristic, the profiles for 8 individuals, each of them characterized by the same characteristics⁴, except for gender, caste and severity of disability were constructed⁵. The combination between these three characteristics (each of them dichotomous) gives the following eight profiles of interest:

Profiles	Gender	Caste	Severity of Disabilit	Type of Disability	Other Control Variables
Profile (1)	Male	OC	No High Disability	No Mental Disability	Mean Values
Profile (2)	Male	OC	High Disability	No Mental Disability	Mean Values
Profile (3)	Male	Non OC	High Disability	No Mental Disability	Mean Values
Profile (4)	Male	Non OC	No High Disability	No Mental Disability	Mean Values
Profile (5)	Female	OC	No High Disability	No Mental Disability	Mean Values
Profile (6)	Female	OC	High Disability	No Mental Disability	Mean Values
Profile (7)	Female	Non OC	High Disability	No Mental Disability	Mean Values
Profile (8)	Female	Non OC	No High Disability	No Mental Disability	Mean Values

Table 5: Profiles

Then, it is measured whether the impact of the CBR program is positive for the eight typologies of persons indicated above. To do this, it is calculated the estimated probability of improvement for each of the eight profiles on each of the seven dimensions⁶.

⁴This means that all the other control variables are set at the average except mental disability which is set at zero.

⁵In the logit model, the estimated probability $P(Y_{ij}=1 \mid T_{ij}, X_{ij}, Z_j, u_j)$ was calculated setting an average profile for the individual

⁶We concentrate our analyses after 7 years to capture the long term effect

Dimensions	Profile (1)	Profile (2)	Profile (3)	Profile (4)	Profile (5)	Profile (6)	Profile (7)	Profile (8)
	M	M	M	M	F	F	F	F
	OC	OC	Non OC	Non OC	OC	OC	Non OC	Non OC
	Non High Dis	High Dis	High Dis	Non High	Non High Dis	High Dis	High Dis	Non High
Health	48.00%	30.00%	31.10%	49.20%	44.20%	26.60%	27.60%	45.40%
Family Consid	28.80%	19.20%	16.40%	26.40%	27.30%	17.30%	14.60%	24.60%
Free From Prejudice	33.20%	27.30%	26.20%	32.50%	32.20%	25.70%	24.60%	31.40%
Express in the Community	56.70%	13.80%	13.40%	56.20%	53.30%	11.60%	11.30%	52.70%
Leisure	26.60%	16.90%	15.10%	24.30%	24.80%	15.50%	13.80%	22.60%
Control over resources	24.70%	21.80%	21.70%	24.60%	19.90%	16.70%	16.60%	19.80%
Marriage	33.50%	26.00%	32.30%	40.10%	16.70%	12.00%	15.90%	21.70%
Average	35.90%	22.20%	22.30%	36.20%	31.20%	17.90%	17.80%	31.20%

Table 6: Net improvement due to Program

Table 6 above shows that the impact is positive and very high for every profile including girls non-OC with heavy disability. Thus, by including everyone the program is inclusive. However, the impact is highly differentiated across typologies of characters. On the average, those that are more likely to see their wellbeing increased due to the program are the boys and the girls without high disability. The difference of the impact by caste is relatively small and it is not homogenous according to dimension. On the average, the impact is higher for the boys than for the girls. Girls with high disability benefit less from the program.

The equalizer capacities are reached if the program has improved the conditions of those who were most deprived at the onset of the program relatively more than the conditions of those who were less deprived. Table 7 below shows the percentage of deprived in the six groups of interests (boys, girls; OC; non OC; with heavy disability; without heavy disability) in 2002.

	Health	Family Consid	Free From Prejudice	Expr Community	Leisure	Control Over Res	Marriage
Males	71%	55.93%	43.53%	74.23%	76.61%	77.96%	74.15%
Females	75.50%	58.14%	63.33%	81.48%	82.59%	74.34%	74.90%
<i>p value</i>	0.2419	0.5959	0	0.0389	0.0789	0.0593	0.7106
Persons with heavy disability	79.20%	75.20%	59.32%	93.25%	85.39%	69.53%	82.99%
Persons without heavy disability	70.50%	48.57%	50.12%	70.54%	76.74%	78.82%	71.79%
<i>p value</i>	0.0305	0	0.0424	0	0.018	0	0
Other Caste	77.16	61.56	57.97%	80.63%	81.50%	77.13%	76.77%
Non Other Caste	67.12	49.77	45.20%	73.05%	76.25%	75.20%	69.61%
<i>p value</i>	0.0085	0.0058	0.003	0.0351	0.133	0.3293	0.0009

Table 7: Share of Deprived at the onset of the program by gender, severity of disability and caste

Table 7 above shows that at the onset of the program girls were more likely than boys to be deprived in the following dimensions: freedom from prejudice, have a voice in the community, and spending leisure time with friends. In terms of severity of disability, it shows that boys and girls with

heavy disability are more likely to be deprived than boys and girls without heavy disability in every dimension. In terms of caste, boys and girls that belong to “other caste” are more likely to be deprived than boys and girls that do not belong to “other caste” in every dimension except spending leisure time with friends where no statistically difference is found.

To test whether the program was equalizer we run the same model on the seven dimensions introducing three interaction terms between: treatment and being female; treatment and being OC; and treatment and having heavy disability. If the program was equalizer, the interaction term would be positive and significant. If not, it means that the program does not increase relatively more the probability of improvement of the persons who were more deprived before the program started. We find no evidences of positive and significant coefficient for the any of the interaction terms. On the contrary, we find a negative and significant coefficient for persons with heavy disability on the probability to improve in the dimensions of “leisure” and “control over resources”. This means that the programs has a smaller impact on some dimensions of persons with heavy disability. Overall, non evidence of an equalizer impact of the program was found.

VII Final Remarks

The analysis provides five main findings. The first is that the CBR program implemented in Karnataka has a positive effect on the wellbeing of children and youth. The magnitude of this effect is different across dimensions of wellbeing. Joining the program improves particularly health, the ability to express one’s view and the opportunity to participate in community decision making.

The second finding is that the improvement due to the program is found in the medium term and it is preserved or expanded in the long term.

Then, this paper investigates whether the program is inclusive. In terms of coverage, it was found that boys and girls have equal probability to join the program, that persons with severe disability are over represented among the treated, and that persons belonging to medium-high caste have higher probability to join the program, but it was also found that medium-high caste people selected in the program are the most deprived. Thus, the program is inclusive with regard to gender, severity of disability and class, because it selects the poorest among the people belonging to medium-high caste. Although the program improves the conditions of the poorest (even if they belong to higher castes) and it improves the conditions of those belonging to the lowest caste (SC/ST), the capacity to include the most deprived among the most backward castes, such as tribals, is less strong.

The fourth finding is that the CBR program is inclusive because it increases the wellbeing of everyone including those that were most deprived at the onset of the program.

The final finding is that albeit the program improved the conditions of everyone it did not manage to equalize the opportunities, this meaning that those that were most deprived at the onset of the program are still relatively more deprived than the others, this is the case of people with severe disability. It is importanto to notice here that this is not intended to be an outcome of the project.

This paper has some limitations, mainly related to data. Indeed, in terms of sample size, a bigger dataset would have detected more strongly the role of intersectionalities. In terms of variables, the variable “caste” should be much more disaggregated (in jati) in order to give a picture of inequalities due to caste.

This study could be expanded in many ways. One could try to control for different kinds of disability (e.g. mental disability VS physical disability), to see whether the program improves the conditions of everyone regardless of disability. Additionally, one could try to understand the role of age in determining the salience of disability on multidimensional wellbeing. Finally, this paper through the adoption of a multilevel analysis has taken into consideration the role played by territories, however, this insight could be further expanded.

Overall, this paper confirms the importance of CBR in improving the conditions of children and the youth with disabilities including the girls, poorest and persons with heavy disability and it suggests that in order for the programs to be inclusive, they need to acknowledge the inequalities stemming from cultural and social factors and engage with them.

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