

# Conditional Cash Transfer Program Effects on Anthropometric Index from Children in Latin America: A Systematic Review

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## Abstract

**Introduction:** To compare the Brazilian conditional cash transfer program, the “Bolsa Família” with the similar programs found in Latin America regarding its effects in the children’s growth and development. **Methods:** The systematic review contemplated the Scopus, Embase, Pubmed, Scielo and Lilacs data bases. The inclusion criteria were epidemiological quantitative, observational, descriptive and analytical studies that had as target public children contemplated by the income transfer program with health conditionalities in Latin America. Narrative reviews related to the research theme were excluded as well as systematic reviews with or without meta-analysis related to the research theme. **Results:** The titles and abridgements review from 1007 articles resulted in the selection of 17 complete studies. After the quality analysis of these, as well as the application of the inclusion criteria, 10 articles were included in this review. Among the types of epidemiologic studies selected to compose this systematic review, 3 are cohort analytical studies. **Conclusion:** Studies carried out in Brazil, Mexico, Ecuador and Nicaragua were selected and indicated the positive effects that the conditional income transfer brought to the anthropometric index from beneficiary children in the researched countries.

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## Keywords

Cash Transfer Program, Child Development, Income Distribution, Primary Health Care

### 1. Introduction

Currently in different countries, due to the labor crisis, social disadvantages accumulation and the fragilities of public protection systems, there is a special highlight to the designing and implementation of conditional cash transfer programs [1].

These programs consist in monetary transfers of financial resources, straight from the government, with no previous contribution, to families that have *per capita* income below the poverty line. In return, families make specific commitments related their children education and health [2].

In Latin America, although there are differences between the programs, such as access conditionals, benefit amount and management, there are, at least, three aspects that are common among those implemented in this region: the focus on families in social vulnerability situation (poor or in extreme poverty), with children and teenagers (except for the Uruguayan program), the conditionality principle and the non belonging to the permanent rights. Its main objective is to reduce infant mortality in children under the age of 5 caused by poverty related diseases that surpass generations such as malnutrition, diarrhea and respiratory infections [2] [3].

As a consequence of the spreading of these conditional cash transfer programs, common to several developing countries in different parts of the world, with a special highlight to Latin America, and in it Brazil, there is great international interest in getting to know the different effects of this policy, health effects inclusive. In this field, Lagarde, Haines and Palmer [4] made an important systematic review approaching the effects of conditional cash transfer in the improvement of the beneficiaries health, in developing countries, including Latin America. The results suggest that the conditional cash transfer programs are effective in the increasing of the use of primary attention to health services and, at times, in the improvement of its target public health.

In Brazil, a study made points that the “Bolsa Família” reduced 19.4% the general mortality among children in cities where there was a high coverage of the primary health care. This reduction was even bigger when the study considered specific mortality caused by some diseases such as malnutrition (65%) and diarrhea (53%). The Program “Saúde da Família” (PSF) also contributed to the mortality reduction in children under the age of 5 in a synergic effect with the program “Bolsa Família” [2].

Although there is some accumulation of evaluations regarding the impact on the cash transfer programs beneficiaries health, particularly in the infant growth and development, which is intimately related to the reduction of both diseases and death in childhood, there still is a shortage of more systematic evaluations about its evidences.

In this perspective, this review study objective is to compare the Brazilian conditional cash transfer program, the “Bolsa Família” with the other similar programs found in Latin America as to its effects in the children growing and development.

It has as a focus the anthropometric evaluation as one of the main components to children’s growth and development. The anthropometric indicators are considered as of mere reference, and have advantages such as low cost, application and standardization ease, amplitude of the analyzed aspects, besides not depending on invasive proceedings, being the most adequate and viable technique to be adopted in health services [5].

### 2. Methods

It is a systematic review study made in the period of 2000 through 2012. The selection of studies was made between January and June of 2013 in the Scopus, Embase, Pubmed, Scielo and Lilacs data bases. The search was made without language restriction, through strategies that combined descriptors registered in the DECS (Descritores em Ciências da Saúde) list, as described in [Table 1](#).

The inclusion criteria used were the following:

- Epidemiologic quantitative, observational, descriptive and analytical studies that have as target public children benefited by the cash transfer programs with health conditionalities;
- Studies made with the cash transfer beneficiary population in 19 countries located in Latin America (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico,

- Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Trinidad and Tobago and Uruguay);
- The excluding criteria used were the following:
  - Narrative reviews related to the research theme;
  - Systematic reviews with or without meta-analysis related to the research theme.

The potentially relevant publications were selected through the analysis of both title and abridgement of the articles found in all the bases. The complete articles selected after the title and abridgement analysis were reviewed independently by the authors and included in the review according to the inclusion criteria. They were included in this review *Observational Studies in Epidemiology*. So the quality of the studies was assessed through the MOOSE strategy [6] (Figure 1).

After the study selection, there were made searches in the bibliographic references from this systematic review selected studies, not being found potentially relevant studies to be included in this paper.

Since this is a systematic review study, which uses secondary data, there was no need of an ethics committee approval.

### 3. Results

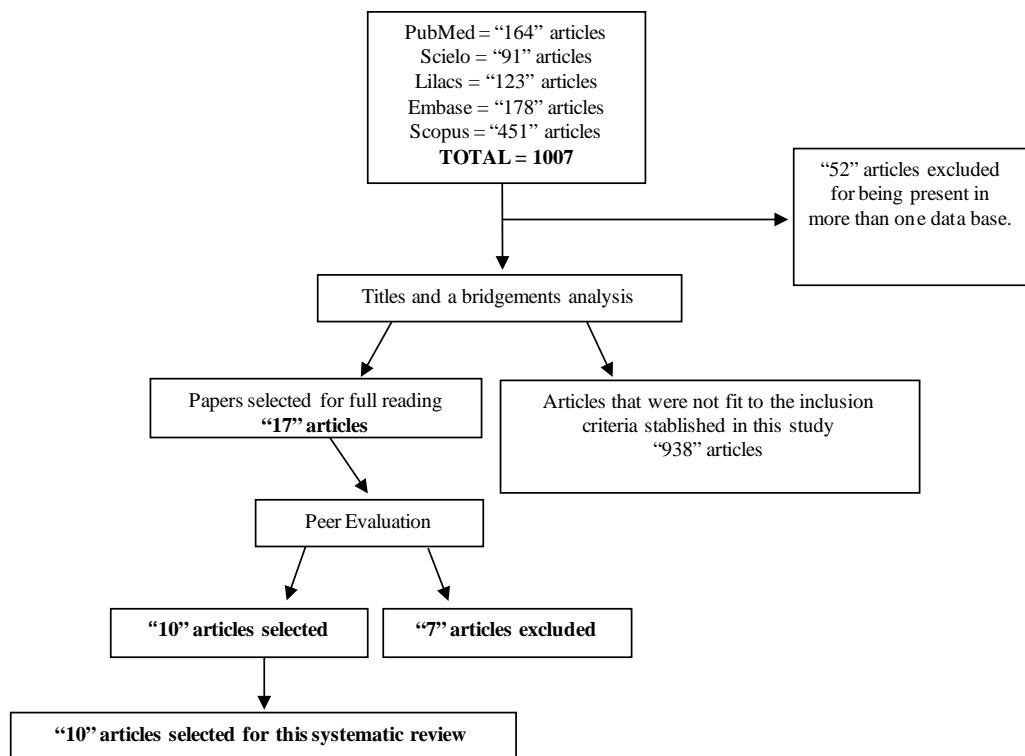
The titles and abridgements review of 1007 articles resulted in the selection of 17 complete studies. After the analysis of the quality of these, as well as the application of the inclusion criteria, 10 articles were included in this review Table 2.

### 4. Discussion

According to the results of this systematic review, it's possible to say that the conditional cash transfer brought positive effects in the anthropometric index of beneficiary children in the researched countries. Nevertheless, not all beneficiary children had their growth and development improved. Similar results were commonly observed in the evaluation of the effects of these same programs in the other Latin American countries included in this paper. The analysis of the of the results by age subsets was made in some of the evaluated studies. It's important to emphasize that the subset of children under 24 months seemed to have obtained better effects in the anthropometric index in most of the studies carried out in Brazil. The positive effect of the conditional cash transfer programs for this age range does not corroborate with one of the Brazilian studies, that stratify the results by age range, and revealed better effects of the program in children older than 12 months old.

**Table 1.** Terms used in these archstrategies of this systematic review.

Potuguese	English	Spanish
Indicadores de qualidade	Quality indicators	Indicadores de calidad
Desenvolvimento infantil	Child development	Desarrolloinfantile
Desnutrição infantil	Child malnutrition	Transtornos de lanutricióndelniño
Distribuição de renda	Income distribution	Distribución de renta
Transferência	Transfer	Distribución
Renda	Income	Renta
Programas de nutrição	Nutrition programs	Programas de nutrición
Políticas públicas	Public policies	Políticas públicas
Políticas sociais	Social policies	Políticas social
Proteção social	Social protection	Política social
Pobreza	Poverty	Pobreza
Saúde infantil	Child health	Saluddelniño
Cuidados primários em saúde	Primary healthcare	Atención primaria de salud
Aleitamento materno	Breast feeding	Lactancia materna
Mortalidade infantil	Child mortality	Mortalidad materna



**Figure 1.** Flow diagram of the studies selection.

Positive effects in the anthropometric index of children benefited by cash transfer programs implemented in Latin America were also observed in systematic review made by Souza [17], that evaluated programs implemented in the following countries: Mexico, Nicaragua, Colombia, Ecuador and Brazil; and Lagarde, Haines and Palmer [4], that evaluated programs implemented in already mentioned countries and Ecuador.

Differently from the Brazilian cash transfer program, the Mexican program, besides the monetary benefit, offers nutritional supplements to children. The results found in the studies carried out by Rivera *et al.* [16], Fernald, Gertler and Neufeld [7] and Fernald, Gertler and Neufeld [8] showed improvement in the height-for-age index (H/A), and less prevalence of malnutrition among beneficiary Mexican children. Although in the Brazilian program (Bolsa Família) there is no use of nutritional supplement, the findings made by the index H/A evaluation, in the national studies of Paes-sousa, Santos and Miazaki [13] and Paula *et al.* [14] and are similar to the ones evidenced in the Mexican studies. The improvement in the anthropometric index and chronic malnutrition index reduction among children benefited by conditional cash transfer programs is also shown in a study carried out in Nicaragua, with results found by Macours, Schady and Vakis [11].

The high risk of overweight among Brazilian children benefited by the Bolsa Família program may be a demonstration that although the financial offer may guarantee bigger spending of families with food, it is likely that this allocation alone may not guarantee adequate eating habits to the beneficiary. According to Peixoto *et al.* [18], that carried out qualitative research with the objective of investigating meanings of the Bolsa Família program to beneficiary residents in a medium size city, located in the Brazilian northeast, observed an increase in family spending with food; in contrast, no positive effect in the nutritional state was observed, due to the diet quality.

The diet quality is directly associated with eating choices, that in turn have several determining factors. According to Lignani and Salles-Costa [19], that concluded studies with beneficiary families by the Bolsa Família program, it is needed to comprehend the beneficiary eating choices not only in the economy rationality and health perspective, once these families face several questions when purchasing food, such as: wide offer and reduced price of low nutritional value and high energy density, the publicity and merchandise of unhealthy food and the symbolic value of food as a consumption product. Thus, they suggest that the cash transfer programs must incorporate policies to facilitate healthy eating choices, starting with comprehensive public policies.

Table 2. Description of the studies included in this systematic review.

Author/ year	Country/ city	Population (n total and n CTP*)	Type of study	Out coming or interest	Result**	CTP*
Fernald LCH, Gertler PJ, Neufeld LM 2008 [7]	Mexico 252 rural communities in Mexico	n = 2449	Transversal Descriptive	H/A Score and BMI Percentage	The cash transfer program is associated with better results in the growth (H/A increase z-score (p < 0.0001) and less malnutrition prevalence (p < 0.00001).	Opportunities
Fernald LCH, Gertler PJ, Neufeld LM 2009 [8]	Mexico	n = 1793	Coorte Analytical	H/A Score and BMI Percentage	An additional of 18 months in the program before turning 3 years old for children aging 8 - 10 years, resulted in the improvement of child growth in about 1.5 cm—H/A index Z score ( $\beta$ 0.23 [0.023 - 0.44] p = 0.029).	Opportunities
Fernald LCH, Hidrobo M 2011 [9]	Ecuador	n = 1196 n H/A = 1074	Analytical case and control	H/A Score	There was no significant statistic difference among beneficiary children aging 12 to 35 months when compared to the controlled group ( $\beta$ = 0.02 e p = 0.42).	Good human development
Leroy JL, García-Guerra A, García R, Domínguez C, Rivera J, Neufeld LM 2008 [10]	Mexico (Urban Area)	n = 432	Coorte Analytical	W/A Score	Age < 6 months in the beginning of the study = increase of 1.53 cm (p = 0.015) to the height 0.41 Z-scores (p = 0.035). Age between 6 a 12 months in the e beginning of the study = increase of 0.73 in or 0.23 Z-scores; but the results were not statistically significant (p = 0.13 and p = 0.11, q respectively).	Opportunities
Macours K, Schady N, Vakis R 2012 [11]	Nicaragua Rural Zone	n H/A = 2368 n W/A = 2377 n W/H = 2383	Coorte Analytical	Escore de H/A, W/A e W/H	W/A (average z-score -0.98 em 2006, turning a -1.01 in 2008), H/A (average z-score -1.19 em 2006, turning to -1.22 in 2008) and W/H (average z-score -0.14 turning to -0.17 in 2008). The program improved the infant growth and reduced the chronic malnutrition rates among the beneficiary children.	Social Protection Network
Morris SS, Olinto P, Flores R, Nilson EA 2004 [12]	Brazil 4 cities in the Northeast Region of Brazil	n = 1889 n CTP = 1387	Transversal Descriptive	W/A and H/A Score	Children benefited by the Bolsa Familia program presented W/A average values significantly lower (difference = $-0.21 \pm 0.08$ , SEM; p = 0.009, t test) e H/A (difference = $-0.19 \pm 0.09$ , SEM; p = 0.033, t test)	Bolsa Familia
Paes-Sousa R, Santos LM, Miazaki ES 2011 [13]	Brazil 419 cities in 23 states (Brazil)	n = 22,375 n CTP = 9,152	Analytical case and control	H/A, W/A and W/H Score	Children benefited by the Bolsa Familia program had a 26% higher chance of having adequate height as related to age and weight than a non beneficiary child. No association was found between the participation in the Bolsa Familia program and weight to height.	Bolsa Familia
Paula, DV, Botelho LP, Zamirati VF, Lopes ACS, Santos LC 2012 [14]	Brazil City of Belo Horizonte (capital of a Brazilian State)	n = 115 n CTP = 41	Transversal Descriptive	H/A Score and BMI Percentage	H/A: Statural deficit inexistence (p = 0.28) BMI: 16.2% from the children benefited by the Bolsa Familia program in risk of overweight/obesity	Bolsa Familia
Paxson C, Schady N 2007 [15]	Rural Zone of 6 provinces in Ecuador	n = 1479	Analytical case and control	H/A Score	H/A average z-score around -1.1. Data indicate that 27.2% of the evaluated children are stunted (with a z-score under -2)	Good human development
Rivera JA, Sorres-Alvarez D, Habicht JP, Shamah T, Villalpando S [16]	Mexico Rural Zone of 6 states in Mexico	n = 650 until 12 months	Analytical case and control	H/A Score	Z-score 0.3—Height elevated in 1.1 cm in the intervention group (n = 373)	Opportunities

\*CTP: Cash Transfer Income, \*\*W/A (Weight-for-age), H/A (height-for-age) e W/H (Weight-for-height) ou BMI: Body/Mass Index.

The retrospective cohort studies carried out by Morris *et al.* [12] found results that diverge from the other Brazilian studies included in this review, once they do not reveal meaningful evidence from positive effects in the anthropometric index of beneficiary children, when compared to non beneficiary. On the other hand, the results found in this study point average weight-for-age (W/A) and H/A values lower among beneficiary children. According the authors, this negative effect, unexpected for the Brazilian program, may be explained by the fact that those responsible for the children interpret wrongly the program eligibility rules, understanding that only children with under weight and/or height would be benefited. In fact, the Bolsa Família program does not take the nutritional state of the child as an inclusion criteria, but the family income.

The Brazilian studies carried out by Paula *et al.* [14], Paes-sousa, Santos and Miazaki [13] and Morris *et al.* [12] do not evidence important stature deficits among children benefited by conditional cash transfer. Thus, according to data from this systematic review, the Bolsa Família program is associated with better growth index for children. Similar result was observed in Mexico by Rivera *et al.* [16] and Leroy *et al.* [10], from the data analysis that associate the conditional cash transfer program with better H/A index, specially evidenced among poorer children, and less than 12 or 24 months old.

The positive effect of the conditional cash transfer in lower income children growth was also found by Paxson and Schady [15] in Ecuador, once that evaluating children from lower social groups included in the program, found improvement in the anthropometric index that reflect in the growth and height for the age, in comparison with the control group. According to Souza [17], the efficiency of interevencion of conditional cash transfer evaluated in his research, seems to be directly proportional to the capacity of directing the program to families with very low income levels, once this measure may increase the capacity of inclusion of malnourished children in the program. It may be said that this fact was also evidenced in this systematic review.

Particularly, the results obtained by Macours, Schady and Vakis [11], seem to indicate that positive changes occurred in families behavior assisted by some conditionality cash transfer programs, underlining that these changes continued even after the end of the program duration, even though the studies findings do not leave clear if these changes were themselves responsible by the good results in the evaluated children's growth. It is important to underline that these same authors evidenced, among beneficiary families, an increase in the usage of services related to preventive health care directed to children. Evaluating this same aspect, the study carried out by Fernald and Hidrobo [9], related that the effect of the conditional cash transfer program implemented in Ecuador in the Z score H/A index was considered meaningful for children whose mothers believed that receiving the program benefits depended solely on the fact of using the primary health care for their children's assistance.

According to Souza [17], the cash transfer programs with health conditionalities offer in an effective way the increasing of access to health services, as well as the utilization of health preventive measures, in specific contexts. Thus, the good results of cash transfer programs depend on the existence of good primary attention to health services, accessible to beneficiary families.

## 5. Conclusions

The results from the evaluated studies are usually similar, and indicate the positive effects that the conditional cash transfer brought to anthropometric index of beneficiary children in the researched countries. However, not all the beneficiary children improved their growth and development. The analysis of the age subgroups results was carried out in some of the evaluated studies. It is important to highlight that the 24 months old children subgroup seem to obtain better effects in the anthropometric index in most of the studies. In Brazil, children aged more than 12 months seem to be more benefited by the cash transfer program Bolsa Família.

The methodological limitations of the studies, the existence of other factors that may influence in the growth and development of children and the heterogeneity of both programs and populations researched, prevent our conclusion that the effect of anthropometric index is statistically meaningful. Thus, new studies with a more adequate methodology that may allow the carrying out of a meta-analysis are necessary to prove the positive effect in anthropometric index of children registered in conditional cash transfer program.

## Competing Interests

The authors declare that they have no competing interests.

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## Abbreviations List

PSF: Programa Saúde da Família

Embase: Excerpta Medicadata BASE

Scielo: Scientific Electronic Library Online

Lilacs: Literatura Latino-Americana e do Caribe em Ciências da Saúde

DECS: Descritores em Ciências da Saúde

H/A: Height-for-Age

W/A: Weight-for-Age