

Bolsa Família Program and environmental health: a systematic review of the effects on diarrhea and malnutrition

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Abstract *The Bolsa Família Programme and environmental health interventions are public policies that can have a combined positive effect on health inequities. The Bolsa Família Programme is designed to improve health conditions, reduce food insecurity and increase family incomes. Environmental health interventions aim to ensure public health and environmental protection. This study reviewed the literature for possible interactions between these two types of intervention that influence morbidity and mortality outcomes due to diarrhoea and malnutrition in the under-fives. A total of 1,658 articles were identified in the LILACS, SciELO and PubMed databases. The studies' methodologies were evaluated by scores on an adapted Downs & Black scale and four met all the study inclusion criteria. The findings showed evidence of the positive independent effects of the Bolsa Família Programme and of environmental health interventions in reducing illness and death from diarrhoea and malnutrition in the study age group. However, none of the articles offered results that might elucidate a joint effect of these public policies on an interaction model, revealing a gap in the literature on these diseases attributable particularly to poverty.*

Key words *Systematic review, Environmental health interventions, Social programmes. Public policy*

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Introduction

Conditional Cash Transfer Programmes (CCTPs) arose for the purpose of breaking the intergenerational cycle of poverty by providing poor families with a regular minimum income source, conditional on their participating in services offered by the State, generally in education and health¹. The *Bolsa Família* Programme (BFP), a Brazilian family allowance CCTP, was set up in 2003 and regulated in 2004 by Law nº 10.836/2004² and Decree nº 5.209/2004³, progressively merging four different cash transfer programmes (*Bolsa Escola*, *Bolsa Alimentação*, *Cartão Alimentação* and *Auxílio Gás*)². It contemplates families in situations of poverty and extreme poverty in three distinct respects: income transfer, health and education conditionalities and complementary measures actions by other social programmes which are accessible only to families registered on the federal government's unified register for social programmes (*CadÚnico*)². The BFP, designed to foster social inclusion for beneficiary families, became a tool for offering opportunities and emancipation from conditions of poverty, improving health conditions, reducing food insecurity and increasing family incomes⁴. In the year it was introduced, the BFP served 3.6 million families and, in 2013 and 2018, respectively, it reached 14.1 and 14.2 million beneficiary families. In 2019, the programme benefited 13.8 million families, who received an average of R\$ 186.78 (reals) per month⁵.

As regards environmental health interventions, in recent years, the chief provisions regulating the sector are represented by Law No. 11.445/2007⁶. This law sets out the national guidelines for basic environmental health interventions in Brazil, with a view to universal coverage by appropriate water, sanitation, street cleaning and solid waste collection services. National Basic Environmental Health Intervention Plan (PLANSAB)⁷ figures for 2017, show that 85.79% of Brazilian households were connected to the water supply system, a figure that rose to 95.6% if water drawn from a well was included. In the period from 2007 to 2015, however, 40% of the population not connected to the system received income of up to 200 dollars. Of those without access to the public network, 86.7% did not have water every day⁸. As regards sanitation systems, the figures show that these are far from universally accessible in Brazil, where only 66.5% of domiciles are connected to the public sanitation or drainage systems, and 15.6% used septic

tanks in 2017⁷. Also, although sewage treatment had expanded by 6.8% since 2013, only 50% of the total volume of sewage generated by the population in 2016 was treated in Brazil⁸.

As public policies, the BFP and environmental health interventions can have a very positive effect on health inequities, particularly when the two types of intervention are combined. Over the period since the BFP was put in place in Brazil, studies have related the programme's increasing population coverage with a reduction in mortality among the under-fives and in infant mortality⁹⁻¹¹, as well as improved nutritional status among beneficiaries and diminished morbidity from malnutrition and diarrhoea¹¹⁻¹⁹. Other studies point to an association between improved environmental health conditions – such as availability of, and access to, water and sanitation – and better health outcomes^{13,20-24}.

Given this context, the question arises as to whether implementation of the *Bolsa Família* programme simultaneously with improved environmental health conditions leverages better health outcomes. Accordingly, this study reviewed the literature for indications of interactions between these two interventions that influenced the outcomes morbidity and mortality from diarrhoea and malnutrition in under five year olds – and thus to inform future investigations by describing the present state of the art on this issue.

Methods

This systematic review of the scientific literature of published articles was conceived using the recommendations of the *Cochrane Collaboration*²⁵ and the *Preferred Reporting Items for Systematic Reviews and Meta-Analysis* (PRISMA)²⁶. The guiding research question was: “Has combined access to the BFP and to appropriate environmental health conditions resulted in better health outcomes as regards morbidity and mortality from diarrhoea and malnutrition in the under-five year olds?” In order to answer this question, the following stages were undertaken²⁷: 1) identification of the review problem; 2) formulation of the guiding question; 3) selection of the sample; 4) data categorisation and analysis; and 5) discussion of the results and summary of the knowledge produced.

Data were collected between October and November 2019 by searching the Latin American and Caribbean Health Sciences Literature (LI-

LACS), National Library of Medicine – National Institutes of Health (PubMed) and Scientific Electronic Library Online (SciELO) electronic data bases and by manual searches of journals cited in the reference sections of the articles selected. The descriptors, in English, Spanish and Portuguese, applied in combination using the Boolean operator (AND), were: “*Bolsa Família*”, “conditional cash transfer programme”, “environmental health interventions”, “access to water”, “sanitation”, “diarrhoea” and “malnutrition”. Selection of articles was restricted to studies published between October 2003 (when the BFP was set up) and November 2019.

The articles located were subjected to the following inclusion criteria: they should be complete, open-access articles in English, Spanish and Portuguese evaluating the BFP and access to environmental health and considering health outcomes relating to mortality and/or morbidity from diarrhoea and malnutrition. The articles located were then subjected to the following exclusion criteria: 1) repeat articles in the data bases and/or duplicates in the same data base; 2) articles evaluating individuals outside the range of interest to the study (denominated exclusion by population type, PT); 3) articles on systematic and integrative reviews, as well as case studies (denominated exclusion by study type, ST); and (iv) articles addressing CCTPs other than the BFP or outcomes other than diarrhoea and malnutrition (denominated exclusion by intervention type, IT). Articles were selected firstly by reading their title and abstract, so as to see whether they had characteristics relating to the question guiding the study. Those with information that answered the question were read in their entirety.

The data in each article were collected separately using a spreadsheet in Microsoft Office Excel 2010 to record the following information: authors, year and journal of publication, unit of analysis (national, regional or local), study type, comparison group, dependent and independent variables of interest to this study, statistical measures, measures of association and confidence intervals (CIs), when available, and existence of impacts by BFP and environmental health interventions on the outcomes of interest.

In addition, the articles finally selected were evaluated for the quality of their methodology, using the validated Downs & Black method (1998)²⁸, adapted for non-experimental studies. The 20 evaluation questions used were: are the objectives/hypothesis described; are the outcomes described clearly in the abstract; are the

main outcomes described in the methodology section; are the inclusion and exclusion criteria defined; are any interventions of interest described; are the main confounders listed; are the study findings and related estimates of variability described; are any losses to follow-up described; are actual probability values reported in full; is the sample representative; was follow-up, when applicable, the same for all study participants; were the statistical tests appropriate; were the measures used to evaluate the outcome appropriate and reliable; were participants recruited from the same population and at the same time, when applicable; was there adequate adjustment for confounders; were the study limitations specified; were losses of individuals, municipalities or units of analysis reported; and was the study’s power sufficient? For each of these categories, a score of “1” was recorded when met and “0” when not met. In cases where the criterion was not applicable, a score of “1” was recorded. The closer to the total score (20/100%), the higher the quality of the study.

Results

Characterisation of the studies

Figure 1 illustrates the stages of the selection structuring the review, which identified 1,658 articles, of which 1,613 were available in full-text form. Of those 1,613 articles, 1,611 were selected in the three different data bases used in the study, and two resulted from the manual search. By applying the exclusion criteria to the selection, articles were excluded as follows: 785 (48.66%) duplicates; 468 (29.02%) after evaluation of the title; 286 (17.73%) after evaluation of the abstract; and 70 (4.33%) after reading the article in full. As a result, four (0.26%) articles met the inclusion and exclusion criteria and were used as input to this review. Of these studies, two were published in English and two in Portuguese.

Chart 1 lists the characteristics of interest of the studies included in the review. After these articles were selected, information was extracted by the variables mentioned in the Methodology section. All the articles used a quantitative methodological approach and the study periods ranged from 2004 to 2012. Two of the articles were published in Brazilian journals and two in international journals. As regards their geographical scope, one used a sample of Brazilian municipalities¹¹, two reported on local studies^{13,15}

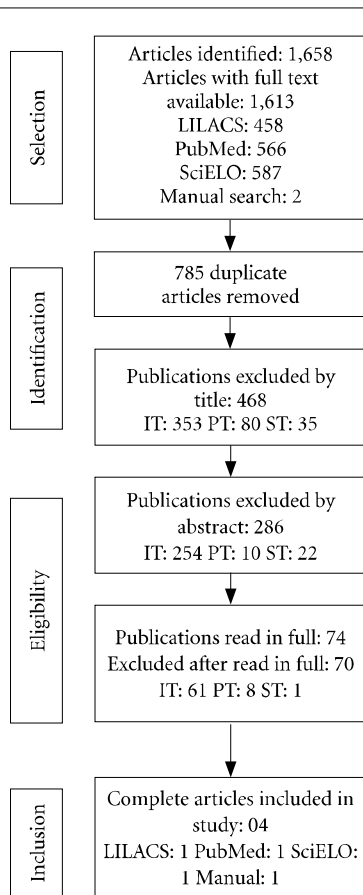


Figure 1. Flow diagram of stages in selection of studies to structure systematic review.

IT: Intervention type. PT: Population Type. ST: Study Type.

Source: Author's elaboration.

and one assessed Brazilian macroregions¹⁷. As regards the variables of interest, all the studies considered environmental health interventions and the BFP as independent variables. The treatment given to environmental health interventions varied across the studies. Rasella et al.¹¹ and Chagas et al. (2013)¹⁵ used the variable in aggregate form (access to water, sanitation and solid waste collection) and classified the municipalities as offering adequate or inadequate access. Paes-Sousa, Santos & Miazaki¹⁷ evaluated only access to water, while Imada et al.¹³ evaluated separately, by household, the existence of an indoor toilet, the water source, frequency of lack of water, existence of treated drinking water and solid waste

and sanitation. With regard to the BFP, three studies analysed by comparing groups by exposure or non-exposure to the programme^{13,15,17}, and one evaluated the proportion of the target population and of the total municipal population covered¹¹.

Of the outcome variables of interest to this study, one article evaluated morbidity and mortality from diarrhoea and malnutrition¹¹, two evaluated morbidity from malnutrition^{15,17} and another, morbidity from diarrhoea¹³.

Lastly, Table 1 shows the data for assessment of the methodological quality of the articles included in this review, by the adapted Downs & Black²⁸ methodology. A total of 20 criteria were considered, affording a maximum score of 20 points, relating to four groups: characteristics of the study, internal validity, external validity and the power of the study. The median score was 16.5; the minimum, 13; and the maximum, 17. Most of the studies (75%) scored from 16 to 17. The studies' main limitations had to do with the description of confounders and adequate adjustment for them, specification of the limitations and clearly reported losses of individuals/municipalities or units of analysis, followed by the description of actual probabilities and representativeness of the sample. All other criteria scored between 75% and 100%.

Associations with morbidity and mortality from diarrhoea and malnutrition

Rasella et al.¹¹ found a protective effect of BFP against hospital admissions and deaths from diarrhoea and malnutrition. BFP was treated as a variable on two parameters: the proportion of the total municipal population covered by the programme (MPC) and coverage of the programme's target-population (TPC). Accordingly, the municipalities were classified into four categories of coverage: low (0% - 17.1% MPC), intermediate (17.2% - 32.0% MPC), high (> 32.0% MPC) and established (> 32.0% MPC and > 100.0% TPC for the past 4 years). The protective effect against morbidity from diarrhoea and malnutrition increased as coverage increased from low to established: the rate ratios and respective CIs for diarrhoea with intermediate, high and established coverage were, respectively, 0.86 (CI 0.84-0.78), 0.80 (CI 0.77-0.83) and 0.61 (CI 0.57-0.65) and, for malnutrition, 0.82 (CI 0.76-0.87), 0.68 (CI 0.62-0.75) and 0.53 (CI 0.44-0.63). A similar result was observed when mortality from these causes was evaluated: the rate ratios for di-

Chart 1. Description of studies selected for systematic review.

Authors Year Journal	Title	Unit of analysis (municipalities) (Year)	Study type	Comparison group	Dependent/ independent variables of interest to this study	Statistical measures used / Values	Sample size	Impact of the BFP and environmental health on outcomes of interest
Rasella et al. (2013) ¹¹ The Lancet	Effect of a conditional cash transfer programme on childhood mortality: a nationwide analysis of Brazilian municipalities	Nacional (2.853) (2004-2009)	Ecological	Yes	Mortality and morbidity from diarrhoea and malnutrition / BFP inadequate sanitation (water supply, sewers, and garbage collection)	Rate ratio (CI) Mortality: BFP x Diarrhoea: 0.83 (0.74-0.92) 0.68 (0.59-0.80) 0.47 (0.37-0.61) BFP x Malnutrition: 0.66 (0.57-0.77) 0.54 (0.44-0.67) 0.35 (0.24-0.50) Morbidity: BFP x Diarrhoea: 0.86 (0.84-0.88) 0.80 (0.77-0.83) 0.61 (0.57-0.65) BFP x Malnutrition: 0.82 (0.76-0.87) 0.68 (0.62-0.75) 0.53 (0.44-0.63) Inadequate sanitation x overall mortality: 1.10 (1.05-1.15)	N = 2.853 Brazilian municipalities	Positive
Imada et al. (2016) ¹³ Revista de Saúde Pública	Fatores socioeconômicos, higiênicos e de saneamento na redução de diarreia na Amazônia [Socioeconomic, hygiene and sanitation factors in reducing diarrhea in the Amazon]	Location (Jordão, Acre) (2005 and 2012)	Cross-sectional	Yes	Morbidity from diarrhoea / BFP and existence of toilet, water source, frequency of lack of water, treated drinking water, solid waste disposal, sewage disposal	Relative Risk (RR) BFP x Diarrhoea Families enrolled increased from 23.9% to 53.9%. Differences between 2005 and 2012 as regards: Income Mothers' schooling Access to water x Diarrhoea 1.38 (well water) 1.17 (other sources)	N = 466 children (2005) N = 826 children (2012)	Positive

it continues

Chart 1. Description of studies selected for systematic review.

Authors Year Journal	Title	Unit of analysis (municipalities do Brazil) (Year)	Study type	Comparison group	Dependent/ independent variables of interest to this study	Statistical measures used / Values	Sample size	Impact of the BFP and environmental health on outcomes of interest
Chagas et al. (2013) ¹⁵ Revista Brasileira de Epidemiologia	Prevalência e fatores associados à desnu- trição e ao excesso de peso em menores de cinco anos nos seis maiores muni- cípios do Maranhão [Prevalence and factors associated to malnutrition and excess weight among under five year-olds in the six largest cities of Maranhão]	Location (São Luís, Imperatriz, Caxias, Codó, São José de Ribamar and Timon) (2006 and 2007)	Cross- sectional	No	Nutritional status: H/A, W/A, W/A / BFP and inade- quate sanitation	Prevalence Ratio (PR) (CI) BFP x W/A: 1.4 (0.7-2.6) Inadequate sanitation x W/A: 1.1 (0.6-2.2)	N = 1,214 children (2006/2007)	No impact
Paes-Sousa, Santos e Mia- zaki (2011) ¹⁷ Bulletin of the World Health Organization	Effects of a conditional cash transfer programme on child nutrition in Brazil	Regional Brazilian States (23) (2005-2006)	Cross- sectional	Yes	Nutritional status: H/A, W/A, W/A / BFP and household access to water	OR (CI) BFP x H/A: 1.26 (1.16-1.37) Head of family's schooling x H/A: 0.72 (0.66-0.79) Household access to water x H/A (under-fives): 0.90 (0.82-0.98) Household access to water x H/A (stratified by age 0-11 months): 0.85 (0.73-0.99)	N = 22,375 children (2005/2006)	Positive

BFP: Bolsa Família Programme. CI: Confidence Interval. H/A: Height-for-age. W/A: Weight-for-age. W/A: Weight-for-height. PR: Prevalence Ratio. OR: Odds Ratio.

Source: Author's elaboration.

Tabela 1. Percentual de acertos segundo os critérios da escala adaptada de Downs & Black (1998)²⁸, n = 4.

Criteria	Score (%)
Study characteristics	
Objectives and hypothesis clearly described	100.0
Main study findings presented clearly in the abstract	75.0
Main outcomes measured described in the methodology	100.0
Study inclusion and exclusion criteria defined	75.0
Interventions of interest applicable to the study are clearly described	100.0
Main confounders listed	25.0
Main study findings/outcomes described clearly	100.0
Data variability estimates provide for the main results	100.0
Losses to follow-up described	100.0
Actual probability values reported in full	75.0
External validity	
Sample representativeness	75.0
Follow-up time equal for whole sample, when appropriate	100.0
Statistical tests appropriate	100.0
Outcome measurements valid and reliable	100.0
Internal validity	
Individuals recruited from the same population, when appropriate	100.0
Individuals recruited at the same time, when appropriate	100.0
Appropriate adjustment for confounders	25.0
Study limitations clearly specified	25.0
Losses of individuals/municipalities/units of analysis reported	25.0
Study power	
Study power of effect ($p < 0.05$)	100.0

Source: Author's elaboration.

arrhoea were 0.83 (CI 0.74-0.92), 0.68 (CI 0.59-0.80) and 0.47 (CI 0.37-0.61) and, for malnutrition, 0.66 (CI 0.57-0.77), 0.54 (CI 0.44-0.67) and 0.35 (CI 0.24-0.50). There was also an association with inadequate basic environmental health conditions, for which the rate ratios were 1.10 (CI 1.05-1.15), i.e., municipalities with environmental health service coverage below the median returned higher risks of mortality among children in the study age range from all these causes. The authors concluded that a CCTP, such as the BFP,

can contribute significantly to reducing morbidity and mortality in the under-fives from all causes and particularly mortality attributable to poverty-related causes such as malnutrition and diarrhoea.

Association with morbidity from diarrhoea

Imada et al.¹³ evaluated morbidity from diarrhoea by comparing the findings of two cross-sectional studies conducted in Acre State in 2005 and 2012, in a municipality considered one of Brazil's poorest. The comparison between the findings of the two studies showed a decrease in disease prevalence (from 45.1% to 35.4%), but an increase in disease-related hospital admissions (from 4.5% to 10.7%), mainly in the municipality's urban area. A significant association was found between access to water and the outcome diarrhoea, with water from the public system showing a protective effect. Relative Risk (RR) was 1.38 for well or river water and 1.17 for water from other sources. Over the years between the two studies, there were improvements in the population's housing conditions, an increase in the number of indoor ceramic toilets, improved access to water and sewage disposal. It was concluded that environmental health conditions had improved substantially in the municipality, but that access to clean water and sanitation were not yet universal, with the onus falling particularly on the rural portion of the population.

The study findings also showed the effect of the BFP. Between the two study years, the proportion of families enrolled increased from 23.9% to 53.9%, the effect of which was observed in terms of its dimensions and conditionalities: increased family income (considered to be a factor driving purchases of consumer goods and better-quality foods) and access to education (resulting in a reduction of illiteracy from 17.4% to 12.0% and more schooling for mothers).

Association with morbidity from malnutrition

A study by Chagas et al.¹⁵ in six municipalities in Maranhão State, Brazil, evaluated the prevalences of, and factors associated with, malnutrition and overweight in under-five year olds. The prevalence of malnutrition was 8.5% by height-for-age (H/A); 3.9% by weight-for-height (W/H) and 4.5% by weight-for-age (W/A). In the logistic regression model for W/A (the only indicator for which results were presented), no association

was found with the BFP (Prevalence Ratio/PR 1.4, CI 0.7-2.6), nor with exposure to unsuitable environmental health conditions (PR 1.1, CI 0.6-2.2). The study concluded there was social equality as to malnutrition, suggesting that the municipalities were progressing towards greater equity.

Paes-Sousa, Santos & Miazaki¹⁷ evaluated data on 22,375 children under five years old from 479 Brazilian municipalities in 23 states. The children were grouped as exposed or not exposed to the BFP and their nutritional status was evaluated. The study findings showed a significant difference between the exposed and non-exposed groups when nutritional deficit was evaluated against height-for-age (H/A) and weight-for-age (W/A): the children enrolled with the BFP were 26% more likely (Odds Ratio/OR 1.26 CI 1.16-1.37) to be of appropriate H/A. Head of household's schooling, reflecting conditionalities of the BFP, also proved protective with regard to H/A (OR 0.72, CI 0.66-0.79), as was the study population's household access to clean water (OR 0.90, CI 0.82-0.98). When stratified by age, household access to water and H/A were associated in the zero to eleven months age group (OR 0.85, CI 0.73-0.99). The study discussed the importance of the BFP as regards the increase in beneficiaries' income, which afforded better access to food, goods and services. It also discussed the importance of the conditionalities in education, which made it possible to increase Brazilians' schooling while the programme existed and thus foster more appropriate care for children. Better social service structures, including access to water, sanitation and solid waste collection, under environmental health policies, are also important to improved health outcomes.

Discussion

CCTPs, such as the BFP, and public policies designed to improve the physical environment, such as environmental health interventions, are actions that have to be evaluated for effectiveness, so that these important strategies for addressing the risks of deterioration in social conditions in the present scenario in Brazil can receive the necessary improvements. Brazil has families in situations of economic and social vulnerability associated with extreme structural poverty and characterised by underemployment, low wages, lack of access to health and education services and inappropriate diet, as well as issues relating to lack of proper housing or access to en-

vironmental health services²⁹. The risk is that these conditions of vulnerability will worsen, particularly in view of measures to contain the COVID-19 pandemic, which leave populations more prone to perpetuating the cycle of disease and poverty. Public policies that serve to lift people out of poverty and alter the main social determinants of health favourably, such as housing, environmental health, income and education, are the best antidote to the regressive effects of the social situation.

More specifically, social inclusion and the structural improvements that can result from such public policies, providing they are properly managed, can enable morbidity from malnutrition and diarrhoea – and, consequently, mortality from those causes – to be reduced³⁰. With a view to examining trends in that respect, this systematic review brought together studies that report on panoramas and findings with regard to these conditions of vulnerability. Two main findings can be identified from the evidence they presented.

The first has to do with the BFP. Most of the studies evaluated in this review showed the programme's positive impact in reducing processes of illness and death from diarrhoea and malnutrition in the under-five year olds. Those findings are corroborated by other studies that have examined BFP beneficiaries' nutritional status before and after exposure to the programme and pointed to better health outcomes in beneficiary populations^{9,12-14,16,18,31,32}. However, in order to understand better the action of the BFP, there is a need for studies to evaluate, at the same time, the programme's coverage of the total population and of the target population, the effects of its dimensions and conditionalities on health outcomes (increases in beneficiaries' income, in the years of schooling of beneficiary children and adolescents and of their future mothers and caregivers and greater health care), in addition to its integration with other public policies. In particular, environmental health interventions are of major importance, because of their proven effect in better health outcomes, particularly as regards poverty-related diseases affecting children under five years old^{13,21-23,34,36,38,39}.

The second finding has to do with another objective of this review, the impact of environmental health interventions. Regardless of how the variable "environmental health interventions" was evaluated in the studies in this review, three of the four studies pointed to a protective effect in relation to processes of illness and death

from diarrhoea and malnutrition, when appropriate conditions of access to water, sanitation and/or solid waste collection are present. The relationship between environmental health interventions and health outcomes is quite explicit in the literature^{13,21-24,31,33-42}. However, as observed in relation to the BFP, in order to evaluate access to environmental health interventions, which are acknowledged to be active public policy in the social, economic, political and cultural dimensions and to be producing positive outcomes in promoting quality of life for individuals, nuclear families and communities, it is necessary to assess how they interact with other public policies, such as the BFP, as well as with other strategies designed to improve the population's conditions of life and health in Brazil.

Generally speaking, the studies reviewed tended to show that better access to CCTPs and, at the same time, to environmental health yields a positive effect by each of these interventions on the outcomes considered in those studies, even in the presence of the other. That is, each intervention contributed a part of the reduction in deaths and diseases from diarrhoea and malnutrition. It is possible that interaction between the two measures may have leveraged that reduction, but was not assessed in the studies reviewed. Studies to understand that possibility would help fill gaps in the literature by producing evidence to permit social programme managers to redesign programmes with funding sufficient to achieve coverage of the whole population eligible to the BFP and, jointly, to universalise access to environmental health in Brazil.

For the purposes of this systematic review contemplating the effect of the BFP and of environmental health interventions on the outcomes morbidity and mortality from diarrhoea and malnutrition in under-five year olds, only four scientific papers answered the guiding research question. The BFP was introduced in 2003²; coordinated government environmental health interventions have been conducted since the 1950s; a regulatory framework was put in place in 2007⁶; and both policies relate to health outcomes for

similar groups of diseases and age groups. Accordingly, one would expect a larger number of studies to have been published on the two issues, thus permitting more substantial evaluation of the evidence presented.

Nonetheless, the findings do suggest that the BFP and environmental health interventions have a positive effect in reducing processes of illness and death in children under five years old from the outcomes diarrhoea and malnutrition, which are diseases directly related to poverty. Although none of the studies dealt with the interaction between the population's exposure to the BFP and to adequate access to environmental health, in the interpretations of the studies' findings, each of these interventions proved protective. Interestingly, the effect of the BFP can also be seen in the outcomes of some of the dimensions of the programme, that is, its protective effect was observed in the beneficiaries' increased income, access to health services and number of years of schooling among mothers and heads of households^{13,17}.

The methodological quality of the articles selected for this review was good, on criteria adapted from Downs & Black²⁸, which guaranteed that their findings were reliable. Most converged to the same conclusion in considering the BFP and improved environmental health services important from a public health standpoint.

This review indicated the need for greater investment in studies to evaluate the interaction between the BFP and environmental health interventions. In public policy terms, it is stressed that it is important to maintain the BFP and extend its coverage, because austerity policies – in combination with the as yet imprecise effects of policies to contain COVID-19 – pose the risk of a dramatic increase in the number of families in situations of poverty and extreme poverty in Brazil. It is also stressed that more investments are needed in basic environmental health interventions, following the PLANSAB guidelines, towards assuring universal access to water and sanitation, which are Sustainable Development Goals (SDG 6) to be attained by 2030.

Collaborations

Both authors contributed to the conception, planning, analysis, interpretation and drafting of the study. Both authors approved the final version submitted.

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