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REVIEW

CHRONIC NON-COMMUNICABLE DISEASES AND THEIR RISK FACTORS IN THE *BOLSA FAMÍLIA* PROGRAM BENEFICIARY POPULATION: AN INTEGRATIVE REVIEW [1]

DOENÇAS CRÔNICAS NÃO TRANSMISSÍVEIS E SEUS FATORES DE RISCO NA POPULAÇÃO BENEFICIÁRIA DO PROGRAMA BOLSA FAMÍLIA: UMA REVISÃO INTEGRATIVA[1]

ENFERMEDADES CRÓNICAS NO TRANSMISIBLES Y SUS FACTORES DE RIESGO EN LA POBLACIÓN QUE SE BENEFICIA DEL PROGRAMA BOLSA FAMÍLIA: UNA REVISIÓN INTEGRADORA[1]

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ABSTRACT

Objective: to systematize the scientific evidence on chronic non-communicable diseases (CNCD) occurrence and their risk factors (RF) in the Bolsa Família Program (BFP) beneficiary population. **Methods**: this is an integrative literature review whose search for publications from 2004 to 2020 was carried out in the following databases: Latin American and Caribbean Literature in Health Sciences (LILACS) and Indice Bibliográico Español en Ciencias de la Salud (IBECS), via the Virtual Health Library (VHL); Medline, via Pubmed, Scopus (via Portal CAPES); and Scientific Electronic Library Online - SciELO. **Results**: 23 articles were selected and grouped into three categories: 1) Prevalence of risk factors for CNCDs in BFP beneficiary women: beneficiary women had worse outcomes in tobacco consumption, lower physical activity, higher prevalence of diabetes, hypertension, and obesity; 2) Nutritional status and food insecurity in BFP beneficiary children, adolescents and families: the studies pointed to a high prevalence of obesity and coexistence of height deficit in beneficiary children; and 3) Food consumption of BFP beneficiaries: an unhealthy eating pattern was identified. **Conclusion**: BFP users have a high prevalence of risk factors for chronic non-communicable diseases and worse dietary patterns. These data reinforce the importance of the BFP being directed to the most vulnerable populations, aiming to mitigate the immense social inequalities. However, it is necessary to advance other public policies of social protection that impact the social determinants and improve the life quality of a large part of the Brazilian population.

Keywords: Social Inequality; Aid to Families with Dependent Children; Non-communicable Diseases; Risk Factors; Feeding Behavior; Nutrition for Vulnerable Groups.

RESUMO

Objetivo: *sintetizar as evidências científicas sobre a ocorrência de doenças crônicas não transmissíveis* (DCNT) *e seus fatores de risco* (FR) *na população beneficiária do Programa Bolsa Família* (PBF). ***Métodos***: *trata-se de uma revisão integrativa da literatura, cuja busca por publicações de 2004 a 2020 foi feita nas seguintes bases de dados: Literatura Latino-americana e do Caribe em Ciências da Saúde* (LILACS) *e Índice Bibliográico Español en Ciencias de la Salud* (IBECS), *via Biblioteca Virtual da Saúde* (BVS); *Medline, via Pubmed, Scopus* (via Portal Capes); *e Scientific Electronic Library Online - SciELO.* ***Resultados***: *foram selecionados 23 artigos, os quais foram agrupados em três categorias: 1) Prevalência dos fatores de risco para DCNT em mulheres beneficiárias do PBF: as mulheres beneficiárias apresentaram piores desfechos no consumo de tabaco, menor prática de atividade física, maior prevalência de diabetes, hipertensão e obesidade; 2) Estado nutricional e insegurança alimentar em crianças, adolescentes e famílias beneficiárias do PBF: os estudos apontaram para uma elevada prevalência de obesidade e coexistência de déficit estatural em crianças beneficiárias; e 3) Consumo alimentar de beneficiários do PBF: foi identificado um padrão não saudável de alimentação.* ***Conclusão***: *usuários do PBF apresentam elevadas prevalências de fatores de risco para doenças crônicas não transmissíveis e pior padrão alimentar. Esses dados reforçam a importância de o PBF estar sendo direcionado às populações mais vulneráveis, visando mitigar as imensas desigualdades sociais. No entanto, é necessário avançar em outras políticas públicas de proteção social que impactem os determinantes sociais e melhorem a qualidade de vida de extensa camada da população brasileira.*

Palavras-chave: *Desigualdade Social; Ajuda a Famílias com Filhos Dependentes; Doenças Crônicas não Transmissíveis; Fatores de Risco; Comportamento Alimentar; Nutrição de Grupos de Risco.*

RESUMEN

Objetivo: *sintetizar evidencias científicas sobre la ocurrencia de enfermedades crónicas no transmisibles* (ECNT) *y sus factores de riesgo* (FR) *en la población beneficiaria del Programa Bolsa Familia* (PBF). ***Método***: *se trata de una revisión bibliográfica integradora, cuya búsqueda de publicaciones entre 2004 y 2020 fue realizada en las bases de datos Literatura Latinoamericana y del Caribe en Ciencias de la Salud* (LILACS) *e Índice Bibliográfico Español en Ciencias de la Salud* (IBECS) *a través de la Biblioteca Virtual en Salud* (BVS), *Medline a través del Pubmed, Scopus* (vía Portal Capes) *y Scientific Electronic Library Online - SciELO.* ***Resultados***: *se identificaron 23 artículos agrupados en tres categorías: 1) Prevalencia de factores*

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[1]Article extracted from the thesis entitled and defended in August 2021: "*Programa de transferência condicionada de renda e indicadores de doenças crônicas não transmissíveis: uma análise das mulheres adultas beneficiárias do Programa Bolsa Família*" available at: http://hdl.handle.net/1843/38377

de riesgo de ECNT en mujeres beneficiarias del PBF: las mujeres beneficiarias mostraron peores resultados en consumo de tabaco, menor actividad física, mayor prevalencia de diabetes, hipertensión y obesidad. 2) Estado nutricional e inseguridad alimentaria en niños, adolescentes y familias beneficiarias del PBF: los estudios señalaron una alta prevalencia de obesidad y coexistencia de déficit de talla en los niños beneficiarios. 3) Consumo alimentario de los beneficiarios del PBF: se identificó un patrón alimentario poco saludable. ***Conclusión****: los usuarios del PBF presentan una alta prevalencia de FR de ECNT y un peor patrón alimentario. Estos datos refuerzan la importancia de que el PBF se dirija a las poblaciones más vulnerables, con el objetivo de mitigar las inmensas desigualdades sociales. Sin embargo, es necesario avanzar en otras políticas públicas de protección social que impacten en los determinantes sociales y mejoren la calidad de vida de grandes segmentos de la población brasileña.*

Palabras clave*: Inequidad Social; Ayuda a Familias con Hijos Dependientes; Enfermedades no Transmisibles; Factores de Riesgo; Conducta Alimentaria; Nutrición de los Grupos de Riesgo.*

INTRODUCTION

Following a global trend, Brazil is undergoing a process of transformation in its population structure and morbimortality pattern. This process is characterized by a decline in fertility and birth rates and a progressive increase in life expectancy, chronic non-communicable diseases (CNCDs), accidents, and violence[1].

The context shows that CNCDs are the leading cause of death globally, with estimates of 41 million deaths annually, representing 70% of deaths worldwide[2] and an even higher rate of 76.0% of total mortality[3] in Brazil.

Non-communicable diseases have a multifactorial etiology. Nonetheless, their principal causes include modifiable risk factors (RFs), such as smoking, alcohol abuse, lack of physical activity, and inadequate diet[1]. There are also the effects of social, economic, and demographic inequalities, which contribute to the increased burden of CNCDs and their RFs in vulnerable groups. This is because these groups have less access to health goods and services, healthy eating, and health promotion and disease prevention actions[1,3,4].

In Brazil, there is a scenario of socioeconomic and health inequalities in a large part of the population, characterized by regional, income, race, gender, and educational differences[5]. Therefore, aiming to reduce these inequalities, conditional cash transfer programs (CCTPs) were established, which are considered effective strategies for reducing poverty, combating hunger and misery, and promoting social mobility[6]. Among these programs, the *Bolsa Família* Program (BFP), launched in October 2003 and instituted by law No. 10,836 of January 9, 2004, stands out[7]. The program aims to transfer monetary amounts directly to families in poverty and extreme poverty, establishing, in return, specific conditionalities focused on health, education and social assistance[6].

The creation and expansion of the BFP have been linked to diminishing poverty and income inequality[6], which by improving economic conditions, generated positive effects on the population's health[5]. These effects can be perceived by monitoring the growth and development of children, pregnant women, and nursing mothers, by closer and facilitated access of beneficiary families to health units, with the Family Health Strategy (FHS). However, there are gaps in knowledge about the impact of the BFP on CNCDs and their RF[9], mainly because these diseases result in premature deaths, physical disabilities, treatments, and hospitalizations, besides reducing the individual productive capacity and the income of families and communities[3].

Therefore, this study aimed to synthesize the scientific evidence on CNCDs' occurrence and their RF in the BFP beneficiary population.

METHOD

This review was developed based on the following recommendations by Botelho, Cunha and Macedo[10]: 1 - identification of the topic and selection of the research question; 2 - establishment of inclusion and exclusion criteria; 3 – identification of the pre-selected and selected studies; 4 - characterization of the selected studies; 5 - analysis and interpretation of the results; and 6 - presentation of the review/synthesis of knowledge. The selection of studies followed the recommendations of the international guide Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension (PRISMA)[11].

To formulate the guiding question of the research, the PICO strategy was adopted (P = Population; I = Intervention/Interest; C = Comparison; O = Outcome)[12], the following question was established: "What are the distribution of CNCDs and their risk factors in the Bolsa Família beneficiary population?". Thus, the following were defined: P - beneficiaries or beneficiary families of the *Bolsa Família* Program; I - Conditional Cash Transfer Program (CCTP) / *Bolsa Família* Program; C - non-beneficiary population; O - CNCDs and their risk factors.

The review included primary quantitative or qualitative studies published in Portuguese, English, or Spanish between 2004 and 2020. It is justified to start selecting studies from 2004 because the BFP was instituted in Brazil in January 2004. Studies whose primary objective was not to evaluate CNCDs and their RF in the BFP beneficiary population were excluded, besides narrative, integrative, and systematic reviews, theses and dissertations, and internet texts and editorials were also excluded.

Searches for scientific productions were carried out between September and December 2020 in the following

databases: Latin American and Caribbean Literature in Health Sciences (LILACS); Spanish Bibliographic Index of Health Sciences (IBECS) (via Virtual Health Library - VHL); Medical Literature Analysis and Retrieval System Online (MEDLINE) (via PubMed); SCOPUS (Via Portal Capes); and Scientific Electronic Library Online - SciELO. In all databases, the search was performed regarding the publication date until December 14, 2020.

Regarding the inclusion criteria, the search strategy was elaborated in PubMed, based on the Medical Subject Headings (MeSH) and the Descriptors in Health Sciences (DeCS), plus keywords. The final strategy combining the groups A, B and C are displayed in Table 1.

To identify studies not found in the previous searches, the references of the selected articles were also checked, observing the previously established inclusion criteria.

The study screening and selection were carried out based on their titles and abstracts. Subsequently, the pre-selected papers were read in full, accurately identifying their relevance to the research and whether the inclusion criteria were met. Cases of doubt were promptly discussed among the authors for consensus.

The extraction and synthesis of the essential elements found in each publication were carried out using a structured instrument developed for this study, and Microsoft Excel was used for data tabulation. Data extracted included details on authorship, year and place of publication, journal title, study title, study type, objective, study population characteristics, evidence levels, and main results. This allowed the synthesis of findings to generate categories of analysis by thematic similarity.

The study evidence level and recommendation degree were assessed using the method proposed by the Joanna Briggs Institute. (JBI)[13]: 1 - experimental studies; 2 - quasi-experimental studies; 3 - observational analytical studies; 4 - observational descriptive studies; and 5 - expert opinion and bench research. Recommendation grades from A to E were adopted, "A" indicates effectivity demonstrated in the study, "B" signalizes established effectivity, suggesting application, "C" typifies established effectivity, implying the use of results, "D" means study effectivity displayed limitations and "E" indicates that the effectivity was not demonstrated in the study.

Table 1 - Search strategy developed in PubMed

Group	Keywords/Descriptors
A	(beneficiaries) OR “beneficiary family” OR “beneficiary families”
B	“conditional cash transfer” OR “conditional cash transfers” OR “conditional cash transfer program” OR "Bolsa Família" OR "Bolsa Família Program" OR (“social programs”)
C	(“Healthy Lifestyle" OR "Health Behavior” OR "Health Risk Behavior” OR “Motor Activity” OR “Exercise” OR “Sedentary Behavior” OR “Feeding Behavior” OR “Diet, Healthy”) OR (Dyslipidemias) OR (overweight OR obesity) OR (Tobacco OR “Tobacco Use Disorder” OR “Tobacco Use” OR “Tobacco Smoking” OR Smokers OR Smoking OR “Cigarette Smoking") OR (alcoholics OR "Binge Drinking") OR (“Noncommunicable Disease” OR “Non-infectious Diseases” OR “Non infectious Diseases” OR "Non-infectious Disease" OR "Non-communicable Diseases" OR "Disease, Non-communicable" OR "Non communicable Diseases" OR "Non-communicable Disease" OR "Noninfectious Diseases" OR "Noninfectious Disease" OR "Non-communicable Chronic Diseases”) OR (“Cardiovascular Diseases” OR Hypertension OR “Blood Pressures”) OR ("Respiratory Tract Diseases") OR ("Diabetes Mellitus") OR (Neoplasms OR Cancer) OR (Mortality OR Morbidity)

Source: prepared by the authors, 2020.

RESULTS

A total of 133 studies were found employing the search strategy, and a further six were included by searching the selected study references. Forty-one duplicate articles were excluded, and 98 studies were selected for abstract reading, of which 67 were excluded as they did not meet the inclusion criteria. Finally, 31 studies were selected for full reading, of which eight were excluded for the following reasons: they addressed infectious diseases (2/8) and did not focus on BFP (6/8). At last, 23 studies were included in this review (Figure 1).

Publication Characteristics

Of the 23 selected studies, the majority had a cross-sectional design (n=21), followed by quasi-experimental (n=1) and qualitative (n=1). They were carried out in Brazil (n=5), in the Northeast and Southeast regions (n=1), and in specific populations in the states of *Minas Gerais* (n=5), *São Paulo* (n=1), *Paraná* (n=2), *Rio Grande do Sul* (n=1), *Rio Grande do Sul* and *Acre* (n=1), *Alagoas* (n=2), *Sergipe* (n=1), *Rio Grande do Norte* (n=1), *Bahia* (n=1), *Paraíba* (n=1) and *Mato Grosso do Sul* (n=1). The publication years were: 2020 (n=4), 2019 (n=1), 2018 (n=1), 2017 (n=3), 2016 (n=1), 2015 (n=3), 2014 (n=3), 2013

(n=2), 2011 (n=3), and 2010 (n=2). The study population consisted of children and adolescents (n=12), families, adult individuals (n=6), and women (n=5). The levels of evidence were 4.b - cross-sectional study (n=21), 4.d - case study (n=1), and 2.c - prospective controlled quasi-experimental study (n=1) (Table 2).

The papers' main results were summarized in three categories: 1. Prevalence of risk factors for CNCDs in BFP beneficiary women; 2. Nutritional status and food insecurity in children, adolescents, and beneficiary families; and 3. Food consumption of BFP beneficiaries.

1. Prevalence of risk factors for CNCDs in BFP beneficiary women

Two identified studies evaluated the prevalence of NCD indicators in BFP beneficiary women[14,18]. Beneficiary women had a higher prevalence of overweight[14,18], obesity[14,18], smoking[14,18], consumption of soft drinks[14], consumption of beans[14,18] and physical activity practice at home[14]. In contrast, they had a lower prevalence of leisure-time physical activity[14], alcohol consumption[18], and fruit and vegetable consumption[14].

These women also had higher prevalence of self-reported morbidities such as diabetes[14] and hypertension[14,18]. In one of these studies, the participants' laboratory tests were verified, showing that the beneficiaries had a higher prevalence of HDL cholesterol <40 mg/dL[18]. It is noteworthy that, among beneficiaries with higher education (12 or more years of study), lower prevalence of CNCD indicators were observed, with worse performance for overweight, consumption of soft drinks, and self-reported hypertension[14].

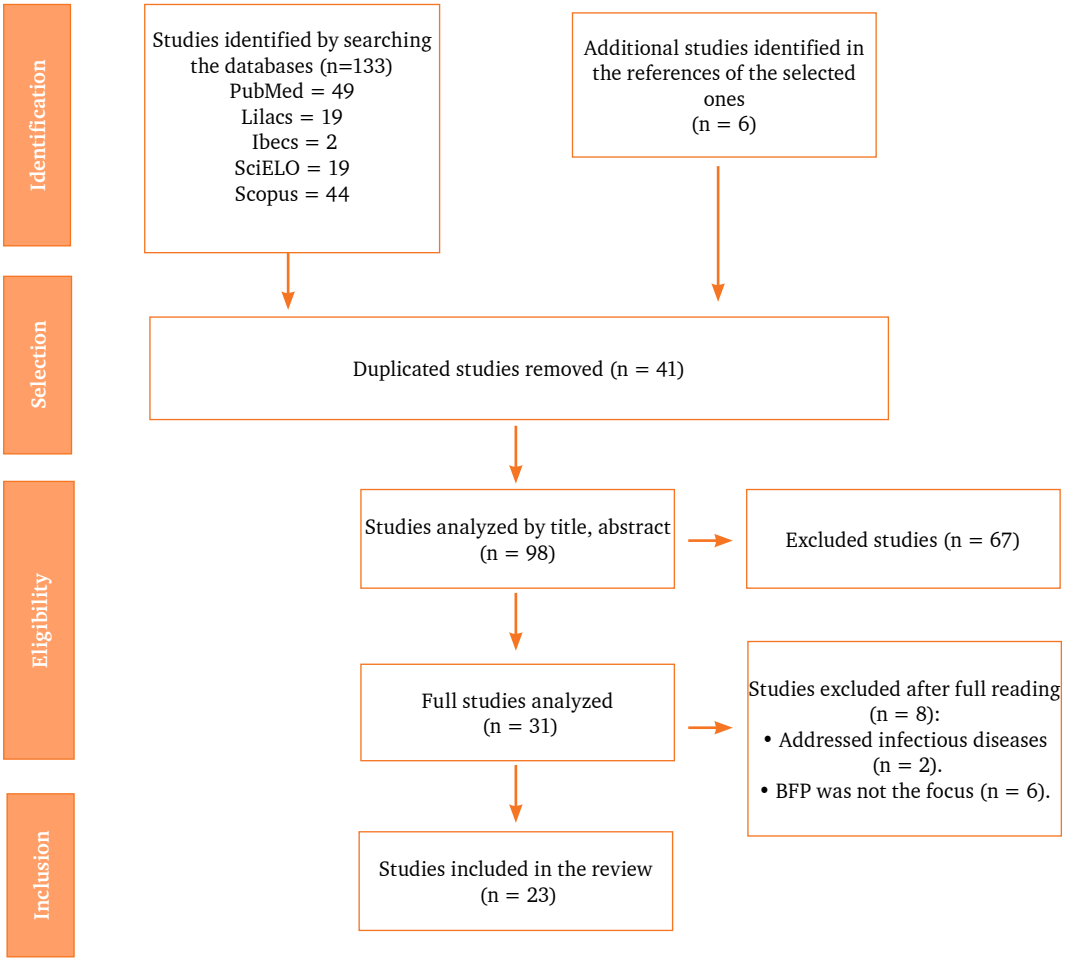

Figure 1 - PRISMA flowchart of study selection[11].
Source: Adapted from Moher et al.[11]

2. Nutritional status and food insecurity in BFP beneficiaries (children, adolescents, and families)

This theme was addressed by 11 studies, of which nine evaluated the children's nutritional status[21,25-29,32-34]; one analyzed these conditions of children and adolescents[22]; the other focused on families[30]. Moreover, three of these studies also addressed food insecurity[26,29,30].

Overweight and obesity were the most prevalent nutritional disorders in BFP beneficiary children[21,25-30,32,33,35]. Nevertheless, they co-occurred with height deficit, affecting children aged 6 months to 10 years[25,29,30-33] and adolescents from 11 to 19 years[30]. Children younger than 48 months were 4.4 times more likely to have shorter height than older children[32,33].

Another study demonstrated that, in the Northeast and Southeast regions, the BFP had a beneficial impact on the nutritional status of children and adolescents of 5-19 years[22]. The Northeast beneficiary families had a lower proportion of underweight children and adolescents, and the Southeast ones presented a lower proportion of overweight or obese children and adolescents[22].

The prevalence of severe food insecurity in BFP beneficiary children was 52.3%, and only 18.7% were food secure[26]. When analyzing these factors in BFP member families, the prevalence of food insecurity was above 80%[29,30].

3. Food consumption of BFP beneficiaries

Food consumption among BFP beneficiaries was assessed by 10 studies, three in children and adolescents[17,23,35], three in women[15,16,20] and four in families[19,24,31,36].

It was verified a high consumption of ultra-processed foods by the child population. BFP children were more likely to consume sweets[35] and more regularly consumption of soft drinks[23] In addition, 90.6% of children under two had consumed ultra-processed foods in the last 24 hours[17].

Regarding the availability of healthy foods at purchasing locations, 98.6% of beneficiary women reported having healthy options available; however, when asked if they included such foods in their purchases, this percentage dropped to 78.1%[15]. Beneficiaries showed higher consumption of beans, fresh fruits, and sweetened beverages and low intake of vegetables[16]. Another study showed that, among beneficiaries, there is a higher consumption of caloric foods based on flour, sugar, and fat and low consumption of fruits and protein foods, such as milk, cheese, beef, and fish[20].

Among adult individuals belonging to beneficiary families, there was an adequate consumption of beans[31], low consumption of fruits[19,31], vegetables[19,31] and dairy products[31], and high consumption of soft drinks[36]. On the other hand, among BFP families, there was a 7.3% expenditure on fresh or minimally processed foods, such as meat, tubers and vegetables, and a 10.4% expenditure on cooking ingredients, such as sugar and vegetable oils[24].

DISCUSSION

This review identified 23 studies published between 2004 and 2020, whose results were synthesized into three thematic categories. These categories brought considerations about the occurrence of CNCDs and their risk factors, nutritional status, and food consumption in the BFP beneficiary population.

As realized, most of these studies are from the nutritional field, highlighting food (in)security and its practices. On the other hand, few studies have sought to investigate different outcomes that may also be related to nutrition, such as CNCDs. We must note that these studies address aspects of the health of individuals in conditions of significant socioeconomic vulnerability since they are beneficiaries of a program such as Bolsa Família, meaning these people already have a higher burden of inequality and, with this, the coexistence of risk factors in duplicate or more, such as malnutrition or obesity.

In the first thematic category, female beneficiaries had worse outcomes for CNCDs, such as higher tobacco consumption, lower physical activity, and higher occurrence of self-reported diabetes and hypertension, besides having a higher rate of overweight and obesity. We must be aware that women are among the group considered a priority regarding the BFP health conditionalities[37]. However, actions for this public are still mainly based on reproductive issues[18], contributing to female emancipation, opposite to the context of a manhood society[8]. From this perspective, it is understood that the BFP needs to be aligned with other public policies for the comprehensive care of women's health. It is worth mentioning that the higher level of schooling among BFP women is related to the lower occurrence of risk factors for CNCDs, showing the importance of education to break the intergenerational cycle of poverty and directly influencing the health of the most vulnerable[4,5]. Moreover, education provides opportunities for better qualifying these women to enter the labor market and contribute to an increase in family income with greater financial autonomy[8].

Table 2 - Characterization of publications according to author, year, design, location, population, journal, and level of evidence.

Author/Year	Design	Place of experiment	Target population	Journal	Level of evidence
Malta et al.[14]	Cross-sectional	National –Brazilian capitals	Women	*Revista Brasileira de Epidemiologia*	4.b
Batista; Moreira.[15]	Cross-sectional	*João Pessoa* – PB	Women	*Revista Brasileira de Ciências da Saúde*	4.b
Rocha et al.[16]	Cross-sectional	*Bahia*	Women	*DEMETRA: Alimentação, Nutrição & Saúde*	4.b
Marçal et al.[17]	Cross-sectional	*Alagoas*	Children	*Public Health Nutrition*	4.b
Bernal et al.[18]	Cross-sectional	*Nacional*	Women	*Revista Brasileira de Epidemiologia*	4.b
Silvani et al.[19]	Cross-sectional	*Porto Alegre – Rio Grande do Sul*	Adult beneficiaries	*Ciência & Saúde Coletiva*	4.d
Ferreira; Magalhães[20]	Qualitative case study	*Diamantina* – MG	Women	*Saúde e Sociedade*	4.b
Freitas et al.[21]	Cross-sectional	*Acre e Rio Grande do Sul*	Children	Journal of Human Growth and Development	4.b
Sperandio et al.[22]	Cross-sectional	*Região Sudeste e Nordeste do Brasil*	Children and Adolescents	*Revista de Nutrição*	4.b
Carmo et al.[23]	Cross-sectional	*Belo Horizonte Minas Gerais*	Adolescents	*Jornal de Pediatria*	4.b
Martins; Monteiro[24]	Quasi-experimental	*Nacional*	Families	BMC Public Health	2.c
Santos et al.[25]	Cross-sectional	*Piratininga – São Paulo*	Children	Journal of Human Growth and Development	4.b
Vega et al.[26]	Cross-sectional	*Nacional*	Children	*Ciência & Saúde Coletiva*	4.b
Silva; Nunes[27]	Cross-sectional	*Mato Grosso do Sul*	Children	*Revista Brasileira de Epidemiologia*	4.b
Saldanha et al.[28]	Cross-sectional	*Minas Gerais*	Children	*Revista Médica de Minas Gerais*	4.b
Monteiro et al.[29]	Cross-sectional	*Colombo – Paraná*	Families	*Ciência & Saúde Coletiva*	4.b
Cabral et al.[30]	Cross-sectional	*Maceió – Alagoas*	Families	*Estudos Avançados*	4.b
Lima et al.[31]	Cross-sectional	*Curitiba – Paraná*	Families	*Revista Brasileira de Epidemiologia*	4.b
Oliveira et al.[32]	Cross-sectional	*Paula Candido –Minas Gerais*	Children	*Ciência & Saúde Coletiva*	4.b
Oliveira et al.[33]	Cross-sectional	*Paula Candido –Minas Gerais*	Children	*Epidemiologia e Serviços de Saúde*	4.b
Silva[34]	Cross-sectional	*Sergipe*	Children	*Revista Paulista de Pediatria*	4.b
Saldiva; Silva; Saldiva[35]	Cross-sectional	Northeast Region	Children	*Revista de Nutrição de Campinas*	4.b
Lignani et al.[36]	Cross-sectional	Brazil	Families	Public Health Nutrition	4.b

Table - 3 Categorization of studies by thematic similarity

Authorship	Objectives	Study population - sample
Category 1 - Prevalence of risk factors for NCDs in BFP beneficiary women		
Bernal et al.[18]	To assess the prevalence of chronic non-communicable disease indicators (including laboratory tests) in the population of Brazilian women of reproductive age regarding receiving or not the *Bolsa Família*.	924 beneficiary and 2,207 non-beneficiary women
Malta et al.[14]	To compare the distribution of chronic non-communicable disease indicators among BFP beneficiary and non-beneficiary adult women in Brazilian capitals.	3,330 beneficiary and 63,152 non-beneficiary women

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Table - 3 Categorization of studies by thematic similarity

Authorship	Objectives	Study population - sample
Category 2 - Nutritional status and food insecurity in BFP beneficiary children, adolescents, and families		
Oliveira et al.[32]	To know the nutritional status of children enrolled in the BFP, comparing beneficiaries with non-beneficiaries, and the risk factors for malnutrition based on hierarchical modeling.	262 from the BFP children group and 184 from the non-beneficiary group
Oliveira et al.[33]	To analyze the differences in the nutritional status of BFP beneficiary children of a *Zona da Mata Mineira* Municipality.	262 from the BFP children group and 184 from the non-beneficiary group
Silva[34]	To estimate the prevalence of overweight and obesity in BFP beneficiary children from 2008 to 2010, according to gender and health regions of the state of *Sergipe*.	79,795 BFP beneficiary children (38,903 girls and 40,892 boys)
Cabral et al.[30]	To evaluate the nutritional status, food consumption, and food security of BFP beneficiaries living in the slums of *Maceió* (AL).	204 families and 847 BFP beneficiary individuals
Vega et al.[26]	To characterize children under two years of age benefiting from any CCTP in force in Brazil in 2006 (with emphasis on the BFP) regarding demographic and socioeconomic variables, as well as to evaluate some nutritional variables, comparing them with the non-beneficiary population.	1,735 children (29.4% were beneficiaries of CCTP)
Monteiro et al.[29]	To identify the prevalence of food insecurity in BFP families in the Colombo (PR) municipality and the factors related to this condition. To describe the nutritional status of children under five years old who are part of these families.	442 families and 199 children under five years
Saldanha et al.[28]	To characterize the nutritional status of BFP beneficiary children under seven years monitored by the Food and Nutrition Surveillance System (SISVAN) in *Minas Gerais* (MG).	BF children 2008 = 272,453 2009 = 349,792 2010 = 416,345 2011 = 395,655
Santos et al.[25]	To evaluate the nutritional status of children under five years old whose families benefited from BFP in a northwest region city of the state of *São Paulo*.	283 BFP children
Silva; Nunes[27]	To estimate the prevalence of underweight, overweight, and obesity in children from 5 to 10 years living in poverty and extreme poverty, according to gender and geographic mesoregions in *Mato Grosso do Sul*.	19,289 children (9,451 girls and 9,838 boys)
Freitas et al.[21]	To compare the prevalence of the nutritional profile of BFP beneficiary children in the states of Acre and *Rio Grande do Sul*, as well as to analyze changes in the anthropometric profile of these children over five years.	94,865 children from Acre and 342,462 from *Rio Grande do Sul*
Sperandio et al.[22]	To evaluate and compare the impact of the BFP on the nutritional status of children and adolescents in Northeast and Southeast Brazil.	Northeast: 6,718 families with children and adolescents (2,216 were BFP beneficiaries) Southeast: 1,670 families (379 were beneficiaries)
Category 3 - Food consumption of BFP beneficiaries		
Lignani et al.[36]	To analyze changes and predictors of change in self-reported diet among BFP beneficiary families in Brazil	5,000 families
Saldiva; Silva; Saldiva[35]	To evaluate the health and nutrition conditions of children under five and to associate the quality of food consumption of BFP beneficiaries in a municipality in the Brazilian semi-arid region.	164 children under 5 years (51.8% were BFP beneficiaries)
Lima et al.[31]	To investigate the diet quality of the population enrolled in the BFP in the Municipality of *Curitiba*, PR.	747 individuals. (91.4% women and 8.6% men)
Carmo et al.[23]	To assess the food frequency and nutritional status of students participating in the government-funded Bolsa Família program.	319 children (37% BFP beneficiaries)
Martins; Monteiro[24]	To assess the impact of the conditional cash transfer program *Bolsa Família* on food purchases of low-income families in Brazil.	11,282 households (48,5% were BFP beneficiaries)
Ferreira; Magalhães[20]	To investigate the dietary practices of poor and obese women from a health promotion perspective.	54 beneficiary women
Silvani et al.[19]	To evaluate the food consumption of SUS users according to the type of care received - conventional care model (UBS) and care model (ESF) - and according to participation in the BFP.	187 beneficiaries

continue...

...continuation.

Table - 3 Categorization of studies by thematic similarity

Authorship	Objectives	Study population - sample
Category 3 - Food consumption of BFP beneficiaries		
Batista; Moreira[15]	To evaluate aspects related to the food decisions of BFP beneficiaries.	73 beneficiary women
Rocha et al.[16]	To know the determinants of food choices among BFP beneficiaries in a municipality in the interior of *Bahia*.	40 beneficiary women
Marçal et al.[17]	To evaluate the association between the consumption of ultra-processed foods and the practice of breastfeeding in children under two served by the *Bolsa Família* conditional cash transfer program.	1,604 BFP beneficiary children

The second category addressed the nutritional status and food (in)security of children and adolescents benefiting from the BFP[21,22,25-29,32-34]. The studies displayed that BFP beneficiary children had a higher degree of obesity, besides coexistence with height deficit. This picture reveals an antagonistic process of nutritional transition in Brazil, in which malnutrition that occurs in early childhood due to cumulative effects is associated with impaired psychomotor development, lower school performance, and lower productive capacity in adulthood, besides predisposing this population to obesity and other CNCDs[29,38]. Deprivation and instability to healthy food access are a Brazilian reality, especially among the poorest, and can have consequences for individual well-being and health, thus configuring a state of food insecurity[29].

In Brazil, in 2017 and 2018, of the 68.9 million households, 36.7% had some level of food insecurity, affecting a total of 84.9 million people[39]. During this period, severe food insecurity was sporadically present in the homes of 10.3 million Brazilians[39]. Food insecurity is characterized by a hunger experience due to a severe reduction in food quantity and quality in the meals of all household members, including children[26,29]. Ensuring food and nutrition security requires programs addressing malnutrition, overweight, and obesity. The BFP, when combined with other interventions and public policies promoting and accessing healthy food, can contribute more effectively to the nutritional well-being of the beneficiaries[23].

The third category presented the food consumption of BFP beneficiaries, evidencing an unhealthy dietary pattern[15-17,19,20,23,24,31,35,36]. The BFP contributed to increasing access to food in quantity and variety[24]; nonetheless, the difficulty in purchasing healthy foods is probably due to both lack of access to information and the high cost of healthy foods, such as fruits, vegetables, meat, milk, and dairy products[24,40]. Therefore, this issue should be the subject of public policies to reduce the cost of healthy foods and, eventually, to tax ultra-processed foods[40].

Given this scenario, the BFP population, as a large portion of the Brazilian population, has presented a high prevalence of overweight and obesity[14,18,40] due to unhealthy eating habits and low physical activity. The choice of caloric and ultra-processed foods results from their low cost and the continuous encouragement of misleading advertising for industrialized products with excess sugars, fats, and salt instead of homemade or natural foods[40]. All these elements generate a leading environment to develop CNCDs, causing health damage[3,4]. Thus, public policies to regulate food that facilitate access to healthy foods are urgently needed[3,14].

In this perspective, adequate diet should be promoted through nutritional education in schools and Basic Health Units – Unidades Básicas de Saúde (UBS). The government should act to encourage the creation of community gardens, offer practical cooking classes in community kitchens, expand popular markets and restaurants with fair prices for the low-income population and the food production system, support family farming, and assist in the marketing of healthy products through public projects[29].

The BFP moves towards guaranteeing the human right to adequate food, and even though it is not a nutritional intervention program, it is closely linked to changing the population's health and nutritional status[31].

CONCLUSION

Of the 23 articles included in this review, most showed that the BFP has benefited families with high social vulnerability; however, beneficiaries are exposed to RF for the development of CNCDs, such as low consumption of fruits and vegetables, contrasting with elevated consumption of ultra-processed foods, lower physical activity, high tobacco use and a higher prevalence of obesity. It is

worth to notice the schooling level increase of BFP beneficiary women reduced the risk factors of CNCDs, pointing out the importance of public policies that converge to diminish vulnerabilities and social inequalities.

Given these results, progress must be made in strengthening social protection policies. The BFP should be developed in synergy with other programs comprehensively involving the health of women, children, and adolescents. It is also necessary to strengthen school and community feeding and physical activity programs to promote health and reduce CNCDs and their RF in this population.

It is hoped that this study can assist in understanding the BFP performance as a direct cash transfer policy and its relationship with CNCDs and their RF, and thus assist in the planning of social protection policies and programs with the potential to achieve better effects on the health of vulnerable individuals.

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