



FOOD INSECURITY, COMORBIDITIES AND INTERSECTORALITY IN FOOD BANKS: A MULTIPLE CASE STUDY

Luciana de Melo Costa¹
Oduvaldo Vendrametto²
Giancarlo Medeiros Pereira³
Adriane Akemi Zenke⁴
Sirlei Rodrigues do Nascimento⁵

ABSTRACT

Objective: To develop a system of communication between the sectors (health, social assistance, education) in order to prevent the worsening of the health conditions of those assisted.

Theoretical Framework: the text presents the concept and purpose of food banks in Brazil and around the world, their relevance and the intrinsic relationship between food insecurity and comorbidities.

Method: Multiple case study involving the Food Banks of Itanhaém-SP, Carinhanha-BA and Rosário do Catete-SE to analyze the situation in different Brazilian states.

Results and Discussion: The research indicated that the proposed system proved promising in reducing the distress of the people assisted, highlighting the effectiveness of an integrated approach between the different sectors involved.

Research Implications: The research suggests that the proposed communication system can contribute significantly to improving coordination between the different agents of assistance and public policies integrated into the Food Banks, with the potential to improve food security and the health conditions of the people assisted.

Originality/Value: The intersectoral approach through more agile communication is an innovation in the management of Food Banks, aligning them more concretely with SDG 2030, especially SDGs 1, 2 and 3.

Keywords: intersectoral collaboration, comorbidities, information, vulnerability.

INSEGURANÇA ALIMENTAR, COMORBIDADES E INTERSECTORIALIDADE EM BANCOS DE ALIMENTOS: UM ESTUDO DE CASOS MÚLTIPLOS.

RESUMO

Objetivos: Desenvolver um sistema de comunicação entre os setores (saúde, assistência social, educação) para evitar o agravamento das condições de saúde dos assistidos.

Referencial Teórico: O texto apresenta o conceito e propósito dos Bancos de Alimentos no Brasil e no mundo, sua relevância e ainda a relação intrínseca entre a insegurança alimentar e comorbidades.

Método: Estudo de casos múltiplos envolvendo os Bancos de Alimentos de Itanhaém-SP, Carinhanha-BA e Rosário do Catete-SE para analisar a situação em diferentes estados brasileiros.

Resultados e Discussão: A pesquisa indicou que o sistema proposto se mostrou promissor ao reduzir a aflição das pessoas assistidas, destacando a eficácia de uma abordagem integrada entre os diferentes setores envolvidos.

¹ UNIP-Universidade Paulista, Salvador, Bahia, Brasil. E-mail: lueducita@yahoo.com.br

² UNIP-Universidade Paulista, São Paulo, São Paulo, Brasil. E-mail: oduvaldo.vendrametto@docente.unip.br

³ UNIP-Universidade Paulista, Gravataí, Rio Grande do Sul, Brasil. E-mail: giancarlo.pereira@docente.unip.br

⁴ UNIP-Universidade Paulista, Indaiatuba, São Paulo, Brasil. E-mail: zenkedri@gmail.com

⁵ UNIP-Universidade Paulista, Ribeirão Pires, São Paulo, Brasil. E-mail: sirlein@gmail.com



Implicações da Pesquisa: A pesquisa sugere que o sistema de comunicação proposto pode contribuir significativamente para melhorar a coordenação entre os diferentes agentes de assistência e políticas públicas integradas aos Bancos de Alimentos, com o potencial de melhorar a segurança alimentar e as condições de saúde das pessoas atendidas.

Originalidade/Valor: A aproximação intersetorial através de uma comunicação mais ágil constitui uma inovação em gestão de Bancos de Alimentos, alinhando-os com maior concretude aos ODS 2030, sobretudo os de Nº 1, 2 e 3.

Palavras-chave: colaboração intersectorial, comorbidades, informações, vulnerabilidade.

INSEGURIDAD ALIMENTARIA, COMORBILIDADES Y TRANSVERSALIDAD EN LOS BANCOS DE ALIMENTOS: ESTUDIO DE CASOS MÚLTIPLES

RESUMEN

Objetivos: Desarrollar un sistema de comunicación entre sectores (salud, asistencia social, educación) para evitar el empeoramiento de las condiciones de salud de las personas asistidas.

Referencia teórica: El texto presenta el concepto y propósito de los Bancos de Alimentos en Brasil y el mundo, su relevancia y sin embargo la relación intrínseca entre 'inseguridad alimentaria y comorbidades

Método: Estudio de casos múltiples en los que participaron los Bancos de Alimentos de Itanahém-SP, Carinhanha-BA y Rosário do Catete-SE para analizar la situación en diferentes estados brasileños.

Resultados y Discusión: La investigación indicó que el sistema propuesto resultó prometedor en la reducción de la aflicción de las personas asistidas, destacando la eficacia de un enfoque integrado entre los diferentes sectores involucrados.

Implicaciones de la investigación: La investigación sugiere que el sistema de comunicación propuesto puede contribuir significativamente a mejorar la coordinación entre los diferentes agentes de asistencia y las políticas públicas integradas con los Bancos de Alimentos, con el potencial de mejorar la seguridad alimentaria y las condiciones de salud de las personas atendidas.

Originalidad/Valor: El acercamiento intersectorial a través de una comunicación más ágil es una innovación en la gestión de los Bancos de Alimentos, alineándolos más concretamente con los ODS de 2030, especialmente los de los números 1, 2 y 3.

Palabras clave: colaboración intersectorial, comorbidades, información, vulnerabilidad.

RGSA adota a Licença de Atribuição CC BY do Creative Commons (<https://creativecommons.org/licenses/by/4.0/>).



1 INTRODUCTION

This section presents an analysis of Nutritional Food Insecurity (NFIS), highlighting the role of food banks in mitigating these problems. It then looks at the complications that people in situations of vulnerability can have from consuming food that is not aligned with their comorbidities. It also analyzes other problems that Food Banks (FBs) and other public agencies



can cause for the people they serve. The section closes by presenting the study's premises and a summary of its contributions.

Food insecurity is a problem that affects 39,7 million Brazilians (FAO *et al.*, 2024). Most of these people have a lower level of income and schooling, as well as no employment or access to basic sanitation (Morais *et al.*, 2014; Bezerra; Olinda; Pedraza, 2017). In this context, the lack of attention to food insecurity helps to perpetuate and institutionally and environmentally segregate the least favored people (Câmara *et al.*, 2024). Paradoxical as it may seem, the food consumed can also aggravate the food insecurity of people in situations of vulnerability. This is the case with the consumption of inappropriate items contributing to the worrying obesity seen among adolescents living in deprived areas, and among younger, black or brown, lower-income boys living in households with moderate and severe food insecurity (Santana *et al.*, 2021).

An investigation into this gap needs to be based on innovative and successful actions. An example of such actions was identified in the cities of Itanhaém in the state of São Paulo (SP), Rosário do Catete in the state of Sergipe (SE) and Carinhanha and Brotas de Macaúbas in the state of Bahia (BA). In these cities, the actions benefited a total of 14,924 people (see Table 1).

The actions in question are based on the personalization of the food baskets donated to the needy population, the formulation of which considers the comorbidities of those assisted. As such, this study investigated how relationships have developed that help to mitigate some of the food insecurity and improve the health of the less fortunate in these municipalities.

The investigation considered the problems related to food insecurity, the implications generated by donations not aligned with comorbidities and the limitations of public power in general. Due to the characteristics of the food banks in focus, the study is limited to public purchases from family farming and food collected from the donor network. All this food is donated by the food banks in the form of food baskets. The research question that guided this study was: How can the list of food donated to people in vulnerable situations be improved through greater intersectoral cooperation?

The results help to indicate actions that can benefit public bodies (Martins *et al.*, 2023) and the people they assist. As far as public bodies are concerned, the actions could reduce the demand for emergency health services related to food insecurity (Seligman; Laraia; Kushel, 2009) or reduce the precariousness of public health policies (Mattioni; Rocha, 2023).



These actions are in line with the lean health care philosophy (Gurgel *et al.*, 2023), which is to prevent a problem from occurring in the first place. The results also help guide the proposal of legal norms (Martins *et al.*, 2023, Silva *et al.*, 2024).

As far as people are concerned, the innovations analyzed can reduce a small but important part of the following problems: cardiovascular risk among women and the elderly (Silva *et al.*, 2022), mortality among black women (Luiz *et al.*, 2024), the harmful effects of hypertension and diabetes (Santana *et al.*, 2021, Cheyne *et al.*, 2020, Neves *et al.*, 2023) or even change the poor eating habits of adolescents (Maravalhas *et al.*, 2022).

2 THEORETICAL FRAMEWORK

Starting in Phoenix, Arizona, FBs have spread to several countries with the premise of combating food insecurity. They are non-profit physical structures that aim to collect food destined for disposal that is still fit for human consumption. This food is distributed to people in situations of social vulnerability (González-Torre; Coque; 2015, Brasil, 2020).

Other food banks donate purchased food (Bazerghi; Mckay; Dunn, 2016), but can trade both sources. The literature indicates that the importance of food banks for society has taken on recognized proportions, both in their guiding concepts and in their ability to respond quickly in situations of economic and social crisis (Capodistrias *et al.*, 2021, TGFN, 2022) or social inclusion and health promotion (Marquez Ibarra *et al.*, 2019).

Despite their good intentions, items donated by banks can exacerbate the problems faced by people in vulnerable situations. This is a possibility that has been verified in different countries. One study identified a misalignment between donated food and the comorbidities of Americans and Canadians in situations of vulnerability (Cheyne *et al.*, 2020). On the other hand, better matching of donated food can prevent the worsening of Chronic Non-Communicable Diseases or Chronic Conditions and Sexually Transmitted Infections. One example is reducing the possibility of further complications for people with diabetes (Neves *et al.*, 2023).

Tackling and reducing these possible problems can be compounded by other challenges for the food banks. In Brazil, when they are identified in the public service, they can perpetuate the vulnerability related to the donation of inadequate food. Among these problems are: the low governance capacity of the SUS in interstate health regions, which means that the political pattern is unclear and restricted to the ideological level (Aleluia *et al.*, 2022). Other problems



include intersectoral disarticulations and the decentralization of actions, which can compromise results in certain socio-political contexts (Oliveira *et al.*, 2022).

Relevant problems also include the lack of guidelines to guide the process of implementing improvements in the country's public health (Silva *et al.*, 2024) the bureaucratization and precariousness of work processes (Anéas *et al.*, 2023) as well as the bottlenecks and selectivity of current health and social assistance policies (Martins *et al.*, 2023).

Furthermore, the results of the National Humanization Policy seem to be incipient. For example, one study revealed that an advance such as the Electronic Patient Record faces challenges related to underutilization and resistance from professionals (Toledo *et al.*, 2021). As shown, the literature indicates the need to investigate the materialization of intersectionality as a mechanism for building actions that can overcome the bottlenecks and selectivity's of current health and social assistance policies (Martins *et al.*, 2023).

3 METHODOLOGY

This investigation was based on the multiple case study method. It is a qualitative approach whose evidence came from interviews, observations and documentary research (Yin, 2018). The method used to gather this data was empirical exploratory and involved four food banks located in Itanhaém (SP), Rosário do Catete (SE), Carinhanha (BA) and Brotas de Macaúbas (BA). Table 1 shows the characteristics of the food banks investigated.

Table 1

Characteristics of the food banks surveyed.

	FB- Itanhaém /SP	FB-Rosário do Catete/SE	FB- Carinhanha/BA	FB-Brotas de Macaúbas/BA	
Foundation	2007	2020	2023	2024	
Team	1 manager; 1 nutritionist; 1 coordinator; 1 assistant; 4 receptionist; 1 assistant	1 social worker; 1 operational motorista; 1 handlers; 1 administrative	1 manager;1 driver; 2 handlers; 1 stockist; 1 general services 6 collectors	2 managers, 1 agronomist; 1 driver; 2 handlers	1 manager, 2 farm technicians,2 handlers,1 general services, 2 collectors
Coverage	602 km²	102 km²	2525 km²	2372 km²	
Population	112.467	9.295	28.869	11.765	
Assisted	4500 people	2404 people	6810 people	1200 people	
Registration	Informal, with the participation of the Education, Public	No registration	Informal, with the participation of the Education, Health	Informal carried out by the BA and Social Assistance	



	Prosecutor's Office, Social Welfare and Health sectors		and Social Assistance sectors.	
FF (1)	44	17	1937	1050
Food collection	Urban harvesting, Donor network, and FA purchases.	Urban/rural harvesting, Donor network, Purchases from the FA, and Backfeeding garden.	Purchasing from the FA and Backyard Garden	Purchasing from the FA, Backyard Garden and Donor Network
Resources FA – 2024	Waiting resources	US\$ 10,240.00	US\$ 86,111.00	US\$ 71,992.00
Municipal Governance	Secretariat for Economic Development	Secretariat of Social Assistance and Development	Secretariat of Agriculture, Livestock, Fisheries, Aquaculture and Supply	Secretariat of Agriculture,
Legal Nature	Public	Public/private	Public.	Public.

Source: Prepared by the authors based on Municipality of Itanhaém /SP- Brazil, 2024. Municipality of Rosário do Catete/SE - Brazil, 2024; Municipality of Carinhanha/SP – Brazil; Municipality of Brotas de Macaúbas/BA- Brazil, 2024. IBGE- Brazilian Institute of Geography and Statistics. Available at <https://www.ibge.gov.br/> [accessed 2024 Mar 06]; MAPA- Ministry of Agriculture, Livestock and Supply. CAF - FAMILY FARMER REGISTER. Available at <https://sistemas.agricultura.gov.br/caf/dados-publicos/membros-ufpa> [accessed 2024 Mar 06]; MDA-Ministry of Agrarian Development and Family Farming. DAP extract Available at <https://smapi14.mda.gov.br/extratodap/> [accessed 2024 Mar 06].

(1) FF - Family Farmer

Note: The volume of resources refers to monetary values in food purchases from family agriculture.

The sources of evidence were chosen for convenience considering the different sources of data on the pioneering cases under study (Yin, 2018). Starting the investigation with the bank in Itanhaém (SP), it was found that the implementation model of this BA had been replicated in the FBs in Rosário do Catete (SE), Carinhanha (BA) and Brotas de Macaúbas (BA). The study therefore sought to cover these two new banks as well. The initial contact with the Itanhaém managers was extended to the others, clarifying the objectives of the research. With the adhesion of the new managers, it was possible to access the relevant data needed for the study and, at the same time, to expand the sources of evidence consulted.

During the investigations, the problems faced by the banks were identified, as well as the actions taken to provide a better service to those assisted by the bank. Understanding the activities carried out by the FBs indicates that the improvement in the service provided to the people assisted was based on supplying food baskets in line with their respective comorbidities. To improve this, the banks organized intersectoral actions aimed at improving the service. These actions included the registration of comorbidities, which provided the necessary information for more appropriate baskets.



The investigation also considered the data provided by the food banks. Negotiations with those responsible began in 2022 and were updated in 2024. As a guideline, information on comorbidities was requested, considering the following criteria: 1) list detected diseases; 2) consider all ages and genders; 3) provide only numerical data while preserving the identity of the beneficiary. This information proved the presence of comorbidities associated with Nutritional Food Insecurity (FNS). Table 2 points to a scenario of significant prevalence of chronic diseases such as hypertension, diabetes and depression in the BAs in this study, with the exception of Rosário do Catete -SE, which does not follow the practice of assessing these aggravations associated with food insecurity.

Table 2

Comorbidities of Beneficiaries of the Study Units.

Comorbidities	FB*	FB	FB
	Itanhaém/SP	Carinhanha/BA	Brotas de Macaúbas/BA
Alcoholism	0	0	1
Food Allergy	0	0	1
Anemia	7	2	0
Mobility abnormality	7	0	0
Asthma	4	2	1
Ataxia	1	0	0
Autism	12	1	0
Muscular atrophy	1	0	0
CVA **	1	0	0
Bronchitis	0	1	1
Cachexia	1	0	0
Heart Disease	18	2	3
Blindness	1	1	0
Intellectual disability	0	1	0
Depression	41	0	13
Atopic Dermatitis	1	0	1
Functional Diarrhea	1	0	0
Diabetes	85	12	10
Diverticulitis	1	0	0
Metabolic Disorders	1	4	0
Intellectual Disability	0	1	0
Congenital Deformities	3	0	0
Severe Protein Malnutrition	3	0	0
Malnutrition/Obesity	19	0	0
Vascular Diseases	7	0	0
Chronic Pulmonary Disease	1	0	0
Obstructive Pulmonary Disease	8	0	0
Renal Disease	25	0	3
Dorsalgia/Cervicalgia	2	0	0
Epilepsy	12	2	0
Schizophrenia	16	0	0
Fibromyalgia	1	1	0
Gastritis/Duodenitis	1	0	1
Glaucoma	1	0	0
Down Syndrome	5	0	0



Carpal Tunnel Syndrome	1	0	0
Flaccid Hemiplegia	1	0	0
Hidradenitis Suppurativa	1	0	0
HIV	27	0	0
Hypertension	25	16	26
Hyperuricemia	0	0	1
Hypothyroidism	2	0	1
Lupus Erythematosus	4	0	0
Benign Neoplasia	1	0	0
Malignant Neoplasm	67	1	1
Obesity	3	0	0
Polyarthritis/Arthrosis	18	0	1
Rheumatism	0	1	0
Rhinitis	7	0	0
Cerebral Palsy	0	0	2
Tuberculosis	3	0	0
Thyroidism	0	0	1
Joint Disorders	0	0	1
Spinal Disorders	3	3	2
Seizure Disorders	0	0	2
Musculoskeletal Disorders	1	0	0
Psychiatric Disorders	46	2	10
ADHD***	2	1	0
TOTAL	503	54	85

Source: Prepared by the authors, 2024.

*Food Bank;

** Cerebral Vascular Accident;

*** Attention Deficit Hyperactivity Disorder

Information was collected on the interaction of other sectors of public governance in the respective BAs, on communication between them and dialog about public policies. We sought to analyze the type of formal intersectoral dialogue; the existence or creation of registers in the food banks; and the management of transdisciplinary registers between the actors. This information helped to understand a set of requirements that need to be considered when organizing improvement actions between different sectors.

The analysis of the sources of evidence collected in interviews and the documentary analysis enabled the findings to be triangulated. This triangulation considered regional diversity, the timeline of project implementation, and the documentary data gathered and discussed in the light of this study's research question.

The next section presents the problems identified in the food banks investigated. As was found, these problems prevented the food banks from providing a better service.

3.1 PROBLEMS AT THE BANK: WORSENING VULNERABILITY

The food insecurity of those assisted is worrying. For most of them, the food provided by the food banks is the only way to mitigate this situation. Reducing the negative effects of



some of the beneficiaries' comorbidities requires a change in food consumption. However, the food banks investigated provide a standard set of foods, which can be detrimental to the health of some of those assisted. Thus, adapting the items to the comorbidities of each patient is mandatory. However, this is made difficult by the lack of detailed information about individual comorbidities. Those assisted by the FBs attend health services infrequently. Additional consultations with health units and specialized centers have shown that some of the food provided by the banks can aggravate certain problems.

The combination of these problems seems to contribute to perpetuating the vulnerability of those being assisted. In fact, the misalignment between the items in the basket and the comorbidities seems to be an insoluble issue. For people, it's a matter of Sofia's choice: go hungry, or eat something that could damage their health! A difficult choice!

The identification that the food supply can harm the health of beneficiaries has guided the search for improvements in the actions of the FBs. However, certain limitations can prevent this improvement. Nutritionists are qualified professionals to define foods that do not aggravate comorbidities. However, these professionals are not always available in health centers.

The lack of an information bank listing the comorbidities of each patient and the foods that can be given to them is another problem. When asked, the health services said that not all information about comorbidities could be entered in these registers. This is a legal requirement. Despite this limitation, a lot of other information can be entered in people's records.

3.2 THE BANKS' LIMITATIONS

The identification that the food supply can harm the health of beneficiaries has guided the search for improvements in the actions of the FBs. However, certain limitations can prevent this. Nutritionists are qualified professionals to define foods that do not aggravate comorbidities. However, these professionals are not always available in health centers.

The lack of an information bank listing the comorbidities of each patient and the foods that can be given to them is another problem. When asked, the health services said that not all information about comorbidities could be entered in these registers. This is a legal requirement. Despite this limitation, a lot of other information can be entered in people's records.



3.3 MISALIGNMENT BETWEEN SECTORS

The lack of harmony between all the public sectors in charge of assisting people in situations of vulnerability seems to contribute to the continuation of the negative implications listed. These sectors include the municipal departments of health, education, social assistance and the food bank, among others. Each of these sectors seems to operate in an uncoordinated manner. Intersectoral exchanges about improvement actions are insufficient, infrequent and oriented towards control and monitoring. The Figure 1 summarizes the problems identified.

Figure 1

Problems of the FBs

Coding	Description
Worsening of vulnerability	Banks disregard the relationship between comorbidities and the food provided. Lack of information about the comorbidities of the people assisted when donating food.
Bank's Limitations	Lack of nutrition professionals Legal specifications regarding the use of information about those assisted
Misalignment between the areas	Lack of cooperation and communication between sectors Lack of a committee or chamber to coordinate the analysis and intersectoral problem solving

Source: Prepared by the authors, 2024.

3.4 IMPROVING THE BANKS' ACTIONS

The identification of the problems guided the investigation of the mitigating actions undertaken by the banks investigated. The results point to a sequence of actions that could be adopted by other banks.

3.5 CROSS-SECTOR APPROACH

In all the FBs investigated, the development of informal relationships between bank managers and other sectors resulted in the creation of spaces dedicated to exchanging experiences, knowledge and analyzing demands not met by public services. This approach seems to be more productive when those responsible for the sectors feel committed to the other managers. Valuing contradictory perceptions about the actions under analysis also facilitates cooperation and the improvement of projects under development. However, not everything can be solved with better informal relations alone. Greater closeness and intersectoral cooperation seem to require the establishment of formal joint procedures, respecting the limits set by legislation and ethics.



3.6 IMPROVING THE BANK

Closer relations have made it possible to review the processes and requirements considered by the bank when defining and allocating food baskets. These banks also began to require beneficiaries to undergo medical examinations and reports at a SUS health unit. Good inter-sectoral relations made it easier to get consultations and laboratory tests. Once it had the medical report, FB created a database with information about each person's comorbidities. Good internal relations also made it possible to hire nutritionists. Documentary analysis and observations indicate that the Itanhaém food bank now has a record of information on each of the people and their families who receive the food basket. The other banks are replicating this initiative.

3.7 MITIGATING VULNERABILITY

Despite the registration problems, the existence of a database has helped to reduce the negative impacts of vulnerability. Analysis of the interviews and the basket composition reports indicate that the items delivered are more in line with the respective comorbidities. The lists also specify which foods should be provided according to the reality of the assisted person's life. This is the case with the provision of a greater quantity of fruit and vegetables for homeless people, given the lack of conditions for preserving and cooking food. As well as guiding the assembly of “personalized” baskets, the information supports the logistical planning of deliveries. And this support rationalizes the use of public money. The Figure 2 summarizes the information presented.

Figure 2

Actions taken by the FBs and remaining problems

Coding	Actions and remaining problems
Intersectorial Approach	Actions Establishment of informal relations with managers from other city hall sectors Appreciation for other managers and sector to facilitate change Remaining problems Lack of formal intersectoral procedures to mitigate problems arising from informality, considering the law and ethics.
Bank improvement	Actions Requirement that beneficiaries submit medical reports on their comorbidities. Hiring nutritionists to specify the composition of the basic food basket for each beneficiary.



	Creation of a system to manage information about each person assisted, also about their families and their living conditions. Remaining Problems Lack of accuracy in some of the information inserted into the system due to the attitude of some assistants. More accurate information's are in possession of the health sector, due to professional, legal and ethical reasons. Need of formal procedures to regulate the interaction and cooperation between sectors
Vulnerability mitigation	Actions Use of the system by nutritionists when defining the food basket, taking into account comorbidities and the living conditions of those assisted. Use of the system in the logistical planning of deliveries, to optimize the use of public money. Remaining Problems There is a need to expand the information registered in the system in order to create a routine of care for people with chronic diseases.

Source: Prepared by the authors, 2024.

4 RESULTS AND DISCUSSIONS

The literature lacks more studies on intersectoral interventions capable of improving care for vulnerable populations (Martins *et al.*, 2023). This study contributes by suggesting that food banks can improve care for this population, especially in situations of food insecurity. However, this improvement needs to be preceded by a set of non-technical actions.

A discussion of these preparatory actions and their contribution to mitigating vulnerability is presented below.

4.1 INTERSECTORAL APPROACH

The results revealed that intersectoral barriers can prevent the successful implementation of improvements in the public health sector, which impact on the actions of food banks. This is an obstacle that needs to be considered when designing actions to assist the homeless population (Martins *et al.*, 2023).

The interrelationship between professionals from different areas is an essential requirement for improving collective health (Vieira; Matias; Queiroz, 2021). The existence of a harmonious environment creates the conditions for a good professional relationship in the health sector (Vasconcelos *et al.*, 2024).

This study contributes by suggesting that closer relations between the different sectors should precede the installation of any project in the public sector (Martins *et al.*, 2023). This is a preparatory action that can facilitate cooperation, helping to mitigate some of the problems



related to the lack of guidelines to guide the process of implementing improvements in the country's public health (Silva *et al.*, 2024) or the problems encountered in health management (Aleluia *et al.*, 2022, Oliveira *et al.*, 2022). Future studies could investigate the impacts caused by changes in public policy resulting from the replacement of managers by others with different ideological views.

Interpersonal relationship problems can make it difficult to implement improvements in public health. However, these challenges can be mitigated by valuing the achievements and contributions of other managers. This study suggests that recognizing and valuing the efforts of others can not only facilitate the implementation of improvements (Mendonça *et al.*, 2023), but also hinder the authoritarian attitudes of some municipal managers.

Authoritarian attitudes can weaken collective spaces and the link between service and community, as well as contributing to the bureaucratization and precariousness of work processes (Anéas *et al.*, 2023). To leverage new intersectoral cooperation, future studies could map out which actions are successful in the opinion of professionals who have been hired or are in positions of trust, or the impacts generated by political or professional disputes. A better understanding of these gaps could remove some of the traditional problems found in primary care (Bortoli *et al.*, 2023, Campos *et al.*, 2023) or in the nutritional care of disadvantaged children (Pedraza, 2021).

The findings also suggest that not all intersectoral problems can be solved through a better relationship between managers from the different sectors involved. The formalization of joint actions is essential, as is the creation of parameters to evaluate the actions designed and implemented. This study contributes by suggesting that the absence of these instruments is a barrier to implementing improvements in the country's care services (Mendonça *et al.*, 2023, Silva *et al.*, 2024).

4.2 IMPROVING THE BANK

Those assisted by the banks seem reluctant to undergo medical consultations or tests through the SUS. This reluctance means that the FBs only register the comorbidities reported by people in situations of vulnerability. As this information can be inaccurate, this is a cause of a lack of accuracy in some of the information entered the system.

Inaccurate data compromises the alignment between the baskets donated and the comorbidities of each person. This study contributes by indicating that this barrier can negatively affect public actions (Martins *et al.*, 2023).



Similar problems have been identified among the indigenous population. According to the literature, these people often consume non-standardized medicines (Fernandes *et al.*, 2023). The cultural problems described suggest that we need to improve our understanding of their mitigation. Future studies could investigate how to change the culture of those assisted to induce them to undergo examinations and consultations.

One alternative could be to produce educational booklets, like those developed for adolescents (Alves *et al.*, 2023). However, this alternative may not be feasible due to the low level of education of many of those assisted. This possibility suggests the need to research other ways of promoting awareness. This is a challenge for health education (Méllo *et al.*, 2024) and family assistance agents (Januário *et al.*, 2023).

Improving the composition of food baskets required the hiring of nutritionists and the creation of an information management system. The release of resources for the hiring and development of the system was facilitated by a good intersectoral relationship. This conclusion helps to fill the gap in studies on the materialization of intersectionality in the construction of actions to overcome the bottlenecks and selectivity's of current health and social assistance policies (Martins *et al.*, 2023). The provision of financial resources to hire nutritionists and to develop computer systems has helped to ensure the provision of adequate food for all (Lopes *et al.*, 2022). These results help to indicate that proactive, intersectoral action can eliminate a small part of the shortcomings of the SUS described in the literature (Silva *et al.*, 2024) or the tendency towards fragility resulting from the decentralization of actions (Oliveira *et al.*, 2022).

Ethical aspects occur in different contexts. For example, the information provided by cannabis associations (Rodrigues; Lopes; Mourão, 2024). Ethical and legal aspects prevent the provision of the information needed to compose a basket that is appropriate to the needs of each person receiving care. This study contributes by suggesting that the absence of this information may hinder the implementation of improvements in the country's care services (Mendonça *et al.*, 2023, Silva *et al.*, 2024).

The study also contributes by indicating that the disregard of certain information prevented better results in the actions carried out by the food banks. This is a barrier that prevents better care for the homeless population (Martins *et al.*, 2023). Future studies could investigate the approach to barriers related to ethics and logic in the public health sector. It is suggested that an alternative functionality be implemented in the information systems of the public health sector: the prescription of food that can be consumed by those assisted.



This information could be conveyed without major problems, as it omits the chronic illness of the person in a situation of vulnerability. It is a matter of fulfilling a role that takes ethical and legal issues into account (Martins *et al.*, 2023).

Future studies could investigate how to motivate vulnerable people to improve their health. How can the results of the units be used to increase the public resources earmarked for caring for the most vulnerable population? How to disseminate information about those being assisted while respecting ethical and legal aspects?

4.3 MITIGATING VULNERABILITY

Countries like the USA and Canada also have problems arising from the insufficient qualifications of nutrition workers (Bazerghi; McKay; Dunn, 2016). It was found that the use of the bank's information system by nutritionists helps to specify the most suitable foods for each person, helping to reduce cardiovascular risk. This risk is higher among women, in all age groups or among elderly people who are socioeconomically vulnerable (Silva *et al.*, 2022).

The health problems identified (see Table 2) are not limited to the elderly population. Thus, the existence of data on the entire family of those being cared for makes it possible to food banks nutritionists can contribute to changing the poor eating habits of adolescents whose families are in a situation of vulnerability (Maravalhas *et al.*, 2022). Such benefits can mitigate prejudices between the vulnerable population and health services (Brito; Silva, 2022).

Better use of the food bank information system could reduce the demand for emergency health services by reducing food insecurity (Seligman; Laraia; Kushel, 2009). Proactive actions could reduce public spending on prevention (Martins *et al.*, 2023). However small this reduction in the use of health services may be, its feasibility needs to be addressed due to the precariousness of public health policies, especially in primary care (Mattioni; Rocha, 2023).

Generating small savings could mitigate the lack of resources, allowing the money allocated by the public authorities to be put to better use. For example, in promoting healthier eating in primary care (Bicalho *et al.*, 2023). Future studies could quantify the gains that such a reduction in the use of public resources could generate, to uncover elements that persuade public managers to invest more in the efficiency of food banks.

Avoiding failure is one of the precepts of lean health care (Gurgel *et al.*, 2023). The results suggest that the information recorded in the food bank system needs to be expanded to improve humanitarian logistics (Silveira *et al.*, 2023) and the recording of food consumption markers in public systems (Ricci *et al.*, 2023). This study contributes by suggesting that this



improvement needs to be provided for in legal norms (Martins *et al.*, 2023, Silva *et al.*, 2024), to guide the FBOs on suitable foods for people with cancer, kidney disease, anemia, and reducing the mortality of black women (Luiz *et al.*, 2024). A better diet can also reduce the harmful effects on hypertension and diabetes, as well as reducing the occurrence of other unwanted complications (Santana *et al.*, 2021, Neves *et al.*, 2023).

However, it should be borne in mind that information on the most appropriate diet is lacking in different countries, including the United States (Cheyne *et al.*, 2020) or even among individuals belonging to the wealthiest quintiles (Flores *et al.*, 2023). In Brazil, problems have been identified in more general information systems, such as the Electronic Patient Record (Toledo, *et al.*, 2021). Despite these problems, a system with more accurate information can improve the Health Care Network, thus enabling it to fully fulfill its functions (Martinelli *et al.*, 2023).

Future studies could investigate the following questions: What information about the family of those assisted needs to (can) be considered in information systems? What other functionalities need to be considered in information systems? How do preventive health services impact financially on the costs of the different public sectors? Analysis of the discussions also suggests that the actions listed need to follow a logical sequence (Martins *et al.*, 2023).

5 CONCLUSION

This study investigated how intersectoral actions can be promoted to improve the health of people in vulnerable conditions in the food banks environment. The results show that such initiatives provide more efficient care for those they assist. These actions seem to be more effective when orchestrated in a certain sequence: Intersectoral Approach, Bank Improvement, and Vulnerability Mitigation.

The first group of mitigating actions focuses on intersectoral rapprochement. The findings contribute by indicating that improving intersectoral relations requires the promotion of spaces for closer relations between professionals from different sectors. Valuing the achievements and possible contributions of other managers can influence more humanized attitudes and more democratic management. The findings also indicate that the lack of parameters for defining and evaluating the actions designed and implemented is a barrier to implementing intersectoral improvements.



The second group focuses on improving the bank itself. It's about improving the services and parameters that govern this public body. The results help indicate that better inter-sectoral relations can facilitate the hiring of professionals and the creation of more appropriate information management systems. However, better use of information can come up against ethical issues. This study contributes by suggesting the need to develop mechanisms that respect ethics and, at the same time, provide the information needed to compose a food basket that is more appropriate to the reality of those assisted.

Finally, the findings indicate that success in the above actions allows strategies to be developed to mitigate the vulnerability of those assisted. The demand for emergency health services and the severity of treatments can be reduced by improving the diet of people in a state of vulnerability. This requires reliable information. As well as benefiting the citizen, observing a more balanced diet can reduce the costs incurred by the public authorities.

Among these costs are assisting people in vulnerable situations, humanitarian logistics and recording food consumption markers in public systems. This is an essential reduction in times of increased municipal spending on health and fiscal dependence for health costs in small municipalities with lower household incomes (Cruz; Barros; Souza, 2022).

However, the feasibility of these mitigating actions requires a better understanding of some gaps. These gaps need to be filled by future studies. The Figure 3 shows the suggested focuses for future studies.

Figure 3

Suggestions for future studies.

Coding	Suggestions for future studies
Intersectoral Approach	How can interactions between sectors led by people affiliated to different ideological lines be promoted in the opinion of professionals who have been appointed to positions of trust? How to formalize and audit the intersectoral actions?
Bank improvement	How can we get people in a state of vulnerability to search for ways to improve their health? How can the results of public assistance units be used to increase public resources for the most vulnerable? How to disseminate information about those being assisted while respecting ethical and legal aspects?
Vulnerability mitigation	What information about the families of those being assisted needs to (can) be considered in the information systems? What other functionalities need to be considered in information systems? How do preventive health services impact financially on the costs of the different public sectors?

Source: Prepared by the authors, 2024.



ACKNOWLEDGEMENTS

This work was carried out with the support of the Coordination for the Improvement of Higher Education Personnel - Brazil (CAPES) - Funding Code 001.

REFERENCES

- Agência Brasil. Agência Brasil. 2023 [cited 2024 Apr 3]. Insegurança alimentar atinge 70 milhões de brasileiros. Available from: <https://agenciabrasil.ebc.com.br/saude/noticia/2023-07/inseguranca-alimentar-atinge-70-milhoes-de-brasileiros>
- Aleluia, Í. R. S., Medina, M. G., Vilasbôas, A. L. Q., & Viana, A. L. D. Á. (2022). sUs management in interstate health regions: assessment of the government's capacity. *Ciência & Saúde Coletiva*, 27, 1883-1894.
- Alves, S. A. A., Silva, K. N. D., Machado, M. D. F. A. S., Cavalcante, E. G. R., Albuquerque, G. A., Bezerra, I. M. P., & Lopes, M. D. S. V. (2023). Cartilha digital sobre práticas sustentáveis para a promoção da saúde do adolescente. *Ciência & Saúde Coletiva*, 28, 2215-2226.
- Anéas, T. D. V., Lima, M. N. D., Braga, F. D. J. L., Oliveira, T. L. D., Menezes, N. T. D. A., Viana, M. M. D. O., & Santos, D. N. D. (2023). Gestão do trabalho e o cuidado na Atenção Primária à Saúde durante pandemia de COVID-19 no município de São Paulo (SP), Brasil. *Ciência & Saúde Coletiva*, 28, 3483-3493.
- Bazerghi, C., McKay, F. H., & Dunn, M. (2016). The role of food banks in addressing food insecurity: a systematic review. *Journal of community health*, 41, 732-740.
- Bezerra, T. A., Olinda, R. A. D., & Pedraza, D. F. (2017). Insegurança alimentar no Brasil segundo diferentes cenários sociodemográficos. *Ciência & Saúde Coletiva*, 22, 637-651.
- Bicalho, J. M. F., Guimarães, E. A. D. A., Magalhães, K. A., Menezes, M. C. D., Oliveira, C. D. L., & Lopes, A. C. S. (2023). Avaliação do Programa de Promoção da Alimentação Adequada e Saudável na Atenção Primária: pesquisa de métodos mistos. *Ciência & Saúde Coletiva*, 28(8), 2247-2260.
- Bortoli, M. C., Sanine, P. R., Araújo, B. C. D., Oliveira, C. D. F., Costa, M. I. S., & Tesser, T. R. (2023). Estratégias dos serviços de Atenção Primária durante a pandemia da COVID-19 no Brasil: uma revisão de escopo. *Ciência & Saúde Coletiva*, 28(12), 3427-3437.
- Brito, C., & Silva, L. N. D. (2022). População em situação de rua: estigmas, preconceitos e estratégias de cuidado em saúde. *Ciência & saúde coletiva*, 27, 151-160.
- Câmara, J. H. R., Varga, I. V. D., Frota, M. T. B. A., & Silva, H. P. D. (2024). Racism and food insecurity: misfortunes of a Quilombola community in the Brazilian Legal Amazon. *Ciência & Saúde Coletiva*, 29, e16672023.
- Campos, A. R., Campos, G. W. D. S., Gutiérrez, A. C., Costa, P. D. S. D., Anéas, T. D. V.,



- Rosa-Cómitre, A. C. D., & Nahoum, J. A. (2023). Investigação sobre Atenção Primária durante a pandemia em territórios vulneráveis de Campinas, São Paulo e Rio de Janeiro, Brasil. *Ciência & Saúde Coletiva*, 28(12), 3461-3470.
- Capodistrias, P., Szulecka, J., Corciolani, M., & Strøm-Andersen, N. (2022). European food banks and COVID-19: Resilience and innovation in times of crisis. *Socio-Economic Planning Sciences*, 82, 101187.
- Cheyne, K., Smith, M., Felter, E. M., Orozco, M., Steiner, E. A., Park, Y., & Gary-Webb, T. L. (2020). Peer reviewed: food bank-based diabetes prevention intervention to address food security, dietary intake, and physical activity in a food-insecure cohort at high risk for diabetes. *Preventing Chronic Disease*, 17.
- Cruz, W. G. N., Barros, R. D. D., & Souza, L. E. P. F. D. (2022). Financiamento da saúde e dependência fiscal dos municípios brasileiros entre 2004 e 2019. *Ciência & Saúde Coletiva*, 27(06), 2459-2469.
- Fernandes, L. T., Ayala, T. A. A., Firmato, R. M. D. A., Matos, T. D. S., Ferreira, F. D. O., Silvestre, C. C., & Paula, P. A. B. D. (2023). Consumo de medicamentos não padronizados na saúde indígena: uso racional? *Ciência & Saúde Coletiva*, 28(11), 3321-3332.
- Flores, T. R., Neves, R. G., Costa, C. D. S., & Wendt, A. (2023). Time evolution of advice on healthy habits in Brazilians with hypertension and diabetes: National Health Survey. *Ciência & Saúde Coletiva*, 28, 459-459.
- González-Torre, P. L., & Coque, J. (2016). How is a food bank managed? Different profiles in Spain. *Agriculture and Human Values*, 33, 89-100.
- Gurgel, A. G. S. R., Aragão, J. M. N., Vasconcelos, M. I. O., Magalhães, A. L. P., Cristino Filho, G., & Parente, J. R. F. (2023). Breast Cancer Care Network coordination: analysis in the light of the lean methodology for early diagnosis. *Ciência & Saúde Coletiva*, 28, 2313-2322.
- Ibarra, A. A. M., Castellanos, E. H., Núñez, C. B., Hernández, R. P. O., Preciado, L. L. S., Rodríguez, D. F., & Fuentes, E. N. (2019). Inseguridad alimentaria y caracterización de población beneficiaria de tres bancos de alimentos en Jalisco. *Revista Salud Pública y Nutrición*, 18(2), 16-22.
- Januário, T. G. F. M., Varela, L. D., Oliveira, K. N. D. S., Faustino, R. D. S., & Pinto, A. G. A. (2023). Listening and valuing clients: conceptions and practices in the care management in the Family Health Strategy. *Ciência & Saúde Coletiva*, 28, 2283-2290.
- Lopes, M. S., Martiniano, M. O., Freitas, P. P. D., Carvalho, M. C. R. D., Sales, D. M., & Lopes, A. C. S. (2022). Comércio de alimentos para consumo imediato no entorno do Programa Academia da Saúde: uma análise segundo desigualdades. *Ciência & Saúde Coletiva*, 27(08), 3283-3294.
- Luiz, O. D. C., Nisida, V., Silva Filho, A. M. D., Souza, A. S. P. D., Nunes, A. P. N., & Nery, F. S. D. (2024). Iniquidade racial na mortalidade por câncer de colo de útero no Brasil: estudo de séries temporais de 2002 a 2021. *Ciência & Saúde Coletiva*, 29(3), e05202023.
- Maravalhas, R. D. A., Santana, D. D., Salles-Costa, R., & Veiga, G. V. D. (2022). Mudanças



- na frequência do consumo de refeições em adolescentes residentes em área de vulnerabilidade social da região metropolitana do Rio de Janeiro, Brasil. *Ciência & Saúde Coletiva*, 27, 387-398.
- Martinelli, N. L., Scatena, J. H. G., Castro, M. D. L., Soares, N. R. F., Charbel, S. C., Souza, N. F. D. S., ... & Souza, D. P. O. D. (2023). Análise da estruturação da Rede de Atenção à Saúde no estado de Mato Grosso, Brasil, no contexto da Regionalização. *Ciência & Saúde Coletiva*, 28, 585-598.
- Martins, A. L. J., Souza, A. A. D., Fernandes, L. D. M. M., Oliveira, A. M. C., Cordeiro, J. C., Oliveira, A. F. D., & Magalhães Júnior, H. M. (2023). A interface entre as políticas públicas para a população em situação de rua: revisão integrativa. *Ciência & Saúde Coletiva*, 28, 2403-2416.
- Mattioni, F. C., & Rocha, C. M. F. (2023). Promoção da saúde na atenção primária: efeitos e limitações em tempos de neoliberalismo conservador. *Ciência & Saúde Coletiva*, 28(8), 2173-2182.
- MC-Br. Ministério da Cidadania do Brasil. 2020 [cited 2024 Apr 4]. Guia Operacional e de Gestão para Bancos de Alimentos. Available from: [https://www.mds.gov.br/webarquivos/publicacao/seguranca_alimentar/guia_banco_alimentos_16-10%20\(1\).pdf](https://www.mds.gov.br/webarquivos/publicacao/seguranca_alimentar/guia_banco_alimentos_16-10%20(1).pdf)
- Méllo, L. M. B. D. D., Costa, L. T. D. C., Santos, R. C. D., & Laurindo, A. D. M. (2024). Health education agents for the people: rebuilding participation in health. *Ciência & Saúde Coletiva*, 29, e19442023.
- Mendonça, M. H. M. D., Soares, M. U., Spadacio, C., Alves, M. G. D. M., Schenkman, S., Bousquat, A. E. M., & Giovanella, L. (2023). Iniciativas da sociedade e comunidades no apoio social a grupos vulneráveis no território: papel da ESF na pandemia. *Ciência & Saúde Coletiva*, 28(12), 3519-3531.
- Morais, D. D. C., Dutra, L. V., Franceschini, S. D. C. C., & Priore, S. E. (2014). Insegurança alimentar e indicadores antropométricos, dietéticos e sociais em estudos brasileiros: uma revisão sistemática. *Ciência & Saúde Coletiva*, 19, 1475-1488.
- Neves, R. G., Tomasi, E., Duro, S. M. S., Saes-Silva, E., & Saes, M. D. O. (2023). Complicações por diabetes mellitus no Brasil: estudo de base nacional, 2019. *Ciência & Saúde Coletiva*, 28, 3183-3190.
- Oliveira, A. D. S. B. D., Casemiro, J. P., Brandão, A. L., & Pinto, A. M. S. (2022). Monitoramento e avaliação da segurança alimentar e nutricional: um olhar sobre as publicações oficiais. *Ciência & Saúde Coletiva*, 27, 631-640.
- Pedraza, D. F. (2021). Estratégia Saúde da Família: contribuições das equipes de saúde no cuidado nutricional da criança. *Ciência & Saúde Coletiva*, 26, 1767-1780.
- Ricci, J. M. S., Romito, A. L. Z., Silva, S. A. D., Carioca, A. A. F., & Lourenço, B. H. (2023). Marcadores do consumo alimentar do Sisvan: tendência temporal da cobertura e integração com o e-SUS APS, 2015-2019. *Ciência & Saúde Coletiva*, 28(03), 921-934.
- Rodrigues, A. P. L. D. S., Lopes, I. D. S., & Mourão, V. L. A. (2024). Sobre ativismos e



- conhecimentos: a experiência de associações canábicas no Brasil. *Ciência & Saúde Coletiva*, 29, e18462022.
- Santana, D. D., Barros, E. G., Salles-Costa, R., & Veiga, G. V. D. (2021). Mudanças na prevalência de excesso de peso em adolescentes residentes em área de alta vulnerabilidade a insegurança alimentar. *Ciência & Saúde Coletiva*, 26(12), 6189-6198.
- Seligman, H. K., Laraia, B. A., & Kushel, M. B. (2010). Food insecurity is associated with chronic disease among low-income NHANES participants. *The Journal of nutrition*, 140(2), 304-310.
- Silva, S. N., Mello, N. F. D., Ribeiro, L. R., Silva, R. E. D., & Cota, G. (2024). Implementação de tecnologias em saúde no Brasil: análise de orientações federais para o sistema público de saúde. *Ciência & Saúde Coletiva*, 29, e00322023.
- Silva, T. C. D., Martins Neto, C., Carvalho, C. A. D., Viola, P. C. D. A. F., Rodrigues, L. D. S., & Oliveira, B. L. C. A. D. (2022). Risco nutricional e cardiovascular em idosos quilombolas. *Ciência & Saúde Coletiva*, 27, 219-230.
- Silveira, S. C. T., Ferreira Filho, H. R., Pontes, A. N., Lopes, H. D. S., & Manfrini, G. C. (2023). A pandemia da COVID-19 pelas lentes da logística humanitária. *Ciência & Saúde Coletiva*, 28, 749-759.
- Toledo, P. P. D. S., Santos, E. M. D., Cardoso, G. C. P., Abreu, D. M. F. D., & Oliveira, A. B. D. (2021). Prontuário Eletrônico: uma revisão sistemática de implementação sob as diretrizes da Política Nacional de Humanização. *Ciência & saúde coletiva*, 26, 2131-2140.
- Vasconcelos, J., Probst, L. F., Silva, J. A. M. D., Costa, M. V. D., Higashijima, M. N. S., Santos, M. L. D. M. D., ... & Carli, A. D. D. (2024). Factors associated with interprofessional collaboration in Primary Health Care: a multilevel analysis. *Ciência & Saúde Coletiva*, 29, e10572022.
- Vieira, M. D. S. N., Matias, K. K., & Queiroz, M. G. (2021). Educação em saúde na rede municipal de saúde: práticas de nutricionistas. *Ciência & Saúde Coletiva*, 26(02), 455-464.
- Yin, R. K. (2009). *Case study research: Design and methods* (Vol. 5). sage.