MedNEXT
Journal of Medical an Health Sciences

REVIEW ARTICLE

DOI: 10.54448/mdnt24402

Major considerations of food insecurity in the family and community medicine scenario: a systematic review

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DOI: https://doi.org/10.54448/mdnt24402
Received: 06-10-2024; Revised: 08-19-2024; Accepted: 08-28-2024; Published: 09-03-2024; MedNEXT-id: e24402

Editor: Idiberto José Zotarelli Filho, MSc., Ph.D., Post-Doctoral.

Abstract

Introduction: In the scenario of food insecurity (FI), food is a fundamental human right, and it is up to the State to ensure the permanence of public food policies. AI has worsened in Brazil, and hunger is even more present in the lives of Brazilians in 2022. According to data from the new National Survey on Food Insecurity in the Context of the COVID-19 Pandemic in Brazil, only 4 out of 10 families have full access to food in the country, and hunger already affects 33.1 million people. **Objective:** It was to highlight the major considerations of food insecurity in the family and community medicine scenario during the COVID-19 pandemic through a systematic literature review. **Methods:** The present study followed a concise systematic review model, following the systematic review rules (PRISMA). The literary search process was carried out from May to June 2024 and developed based on Scopus, PubMed, Science Direct, Scielo, and Google Scholar. The low quality of evidence was attributed to case reports, editorials, and brief communications, according to the GRADE instrument. The risk of bias was analyzed according to the Cochrane instrument. **Results and Conclusion:** It was founded 119 studies that were submitted to the eligibility analysis, then, 12 of the 27 total studies were selected for this systematic review. It was concluded that the implementation of actions for income generation and the promotion of adequate and healthy food are imperative, as well as the return of regulatory actions in the face of food inflation, with emphasis on the constitution of food stocks and the stimulus to production from diversified family-based agriculture. Public health-based policies and strategies are needed to identify the most vulnerable subgroups, strengthen and improve access to food assistance programs, and promote awareness of and access to healthy foods and beverages to improve food security, nutrition, and cardiovascular health. Still, food insecurity is associated with depression, diabetes, poor adherence to medication, and worse glycemic control.

Keywords: Food insecurity. Nutrology. Nutrition. COVID-19. Family. Community.

Introduction

In the context of food insecurity (FI), food is a fundamental human right, and it is up to the State to ensure the permanence of public food policies [1]. From this perspective, food security refers to access to quality food in sufficient quantities without compromising other basic needs, based on the principles of health promotion, sustainability, and cultural appreciation. The implementation of incentive policies, such as strengthening family farming, in parallel with income transfer programs, such as the Bolsa Familia Program (PBF), has been a successful approach to reducing hunger in Brazil [1].

According to the National Household Sample Survey (PNAD), conducted in 2013, approximately 52 million Brazilians do not have daily access to quality food in sufficient quantities. FI has worsened in Brazil, and hunger will be even more present in the lives of Brazilians in 2022 [1]. According to data from the new National Survey on AI in the Context of the COVID-19 Pandemic in Brazil, only 4 out of 10 families have full access to food in the country, and hunger already affects

33.1 million people [1]. In this context, the Brazilian Research Network on Food and Nutrition Sovereignty and Security (Rede PENSSAN) presents to Brazilian society the results of the II National Survey on AI in the Context of the COVID-19 Pandemic in Brazil (II VIGISAN) [2], fulfilling its commitment to contribute to the knowledge and scientifically based debate on the social reality of the country concerning the Food Security (FS) of the population.

The relevance of this contribution is even greater given the lack of official surveys with the frequency required to monitor this, which is a central condition for a dignified and healthy life [2]. Furthermore, in COVID-19, the health crisis has taken precedence over the economic and political crisis, thus requiring frequent monitoring of the food and nutritional status of the Brazilian population [2].

This need was demonstrated by the extent and speed with which the various manifestations of FI in Brazil worsened in early 2022, notably severe FI, which means living with hunger, when compared with the results of the 1st VIGISAN, released in April 2021. Thus, highlighting the different levels at which this worsening was observed among the various social segments – divided by gender, race/color, education level, and place of residence is, at the same time, complementing the information necessary for a better understanding and action in a society with high social inequalities such as Brazil [2].

In the PNAD, FI was present in greater proportion in rural areas than in urban areas. Aspects related to the socioeconomic profile, such as low income and little education, are factors that determine the food and nutritional security of these families. The difficulty in accessing food outlets and public services is a relevant factor for FI in these areas [3]. It is in rural areas where the majority of the population without access to public services is concentrated. The national study demonstrated that FI was more prevalent in families with residents under 18 years of age compared to those made up only of adults. Children and adolescents are more vulnerable to FI conditions since they are in a period of growth and development, and adequate nutrition is an important factor for the health and maintenance of the nutritional status of this population [4]. Also, recent research has shown a significant increase in the percentages of obesity, which affects all age groups, including children and adolescents, favoring the development of other chronic diseases early [5-7].

Therefore, the present study aimed to highlight the main considerations of food insecurity in the context of the general health of the family and community and in times of the COVID-19 pandemic through a systematic review of the literature.

METHODS

Study Design

The systematic review rules of the PRISMA Platform (Transparent reporting of systematic review and meta-analysis-HTTP://www.prisma-statement.org/) were followed.

Data Sources and Search Strategy

The search strategies for this systematic review were based on the keywords (MeSH Terms): *"Food insecurity. Nutrology. Nutrition. COVID-19. Family. Community".* The search was conducted from May to June 2024 in the Scopus, PubMed, Science Direct, Scielo, and Google Scholar databases. In addition, a combination of the keywords with the Boolean terms "OR", "AND" and the operator "NOT" were used to target the scientific articles of interest.

Study Quality and Risk of Bias

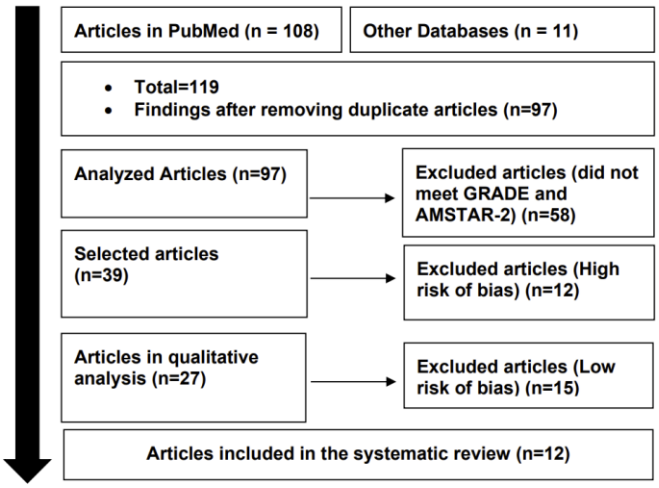
The quality of the studies was based on the GRADE instrument and the risk of bias was analyzed according to the Cochrane instrument.

Results and Discussion

Summary of Literature Findings

A total of 119 articles were found. Initially, duplicate articles were excluded. After this process, the abstracts were evaluated and a new exclusion was performed, removing the articles that did not include the theme of this article, resulting in 39 articles. A total of 27 articles were evaluated in full and 12 were included and developed in the present systematic review study (Figure 1). Considering the Cochrane tool for risk of bias, the overall assessment resulted in 12 studies with high risk of bias and 58 studies that did not meet GRADE and AMSTAR-2.

Figure 1. Flowchart showing the article selection process.



Source: Own Authorship.

Major Findings – Food Insecurity and Family and Community Medicine

In 2021, the Brazilian Research Network on Food and Nutrition Sovereignty and Security (Rede PENSSAN) conducted the National Survey on FI in the Context of the COVID-19 Pandemic in Brazil, the results of which were recently released. The results of the survey showed that in the three months before data collection, less than half of Brazilian households (44.8%) had residents in Food Security. Of the remaining households, 55.2% were in FI, with 9% living with hunger, that is, they were in a situation of severe FI, with this condition being worse in households in rural areas (12%) [1].

Of the total of 211.7 million Brazilians, 116.8 million lived with some degree of FI, of which 43.4 million did not have enough food and 19 million Brazilians faced hunger. It was observed that severe FI in household doubles in rural areas of the country, especially when there is no adequate availability of water. The survey shows an increase in hunger in Brazil to levels observed in 2004, in the PNAD (National Household Sample Survey), when moderate hunger was at 12% and severe hunger at 9.5%. In the current survey, the data show the first issue at 11.5%, and the second at 9% [2].

The I VIGISAN, conducted at the end of 2020 by the PENSSAN Network and partners, revealed that 55.2% of Brazilian households were in conditions of hunger and 9.0% lived with hunger. More than just the effects of the COVID-19 health crisis, such restrictions on access to food exposed a worrying picture of socioeconomic deterioration and deep inequalities in Brazilian society, before the pandemic and aggravated by it. This situation persisted in 2021, with high unemployment, job insecurity, loss of social rights, and a drop in purchasing power, while COVID-19 continued to claim hundreds of thousands of lives, reaching more than 660,000 deaths in April 2022 [2].

In addition, considering the already well-publicized deterioration in the social conditions of the Brazilian population, the main objective of the II VIGISAN is to maintain active monitoring of Food Security (FS) and FI levels, with broad dissemination of its results, providing transparency and emphasis on the emergency of hunger. This is a representative survey of the Brazilian population, covering the 5 macro-regions (rural and urban) and the 27 Federation Units [2]. The sample included 12,745 households, with face-to-face interviews with an adult. Data collection took place between November 2021 and April 2022, using a questionnaire containing the Brazilian Food Insecurity Scale (EBIA), in its eight-question version. The results reveal that 41.3% of households were in a situation of SA, while 28.0% were uncertain about access to food, in addition to the quality of food already compromised (mild FI). Quantitative food restrictions occurred in 30.1% of households, of which 15.5% lived with hunger (severe FI). In population terms, 125.2 million people are living in households with FI, and more than 33 million are in a situation of hunger (severe FI). Inequality in access to food is most evident in rural households, 18.6% of which face hunger in their daily lives. In geographic terms, 25.7% of families in severe FI live in the North region; 21.0%, in the Northeast. FI is also directly related to other conditions of inequality. Hunger is present in 43.0% of families with a per capita income of up to 1/4 of the minimum wage, and it affects families with women as heads of households and/or those in which the head of household is black or mixed race more [2].

In this sense, alarming levels of FI and hunger are part of the context of crises that continue to make a growing population vulnerable, now including segments of the middle classes that were previously more socially protected. On the other hand, the advance of this environment of social degradation has been compounded by the progressive processes of dismantling public policies and the weakening of institutions that form the social protection network, both in the area of food and in other conditions required for a dignified and healthy life [3,4]. The intensification of this wave of deformation of the State, ongoing since 2016, has impacted social, economic, and environmental rights, with a particularly serious impact on the Human Right to Adequate Food (HRAF). Poor public management of the pandemic in Brazil is an aggravating factor in this pre-existing scenario [1].

Also, in this context, a study by Hazzard et al. 2020 summarized the emerging evidence for the relationship between ED and eating disorder (ED) pathology. Thus, among adults, ED is cross-sectionally associated with higher levels of overall ED pathology, binge eating, compensatory behaviors, binge eating disorder, and bulimia nervosa. Evidence for similar relationships among adolescents has been less robust; however, compared with adult studies, there have been substantially fewer studies conducted in adolescents to date. Emerging evidence consistently indicates that ED is cross-sectionally associated with bulimic spectrum ED pathology among adults. The results emphasize the need for ED research to include marginalized populations that have historically been neglected in the ED field [8].

The authors Liu and Eicher-Miller, 2021, reviewed the current epidemiological evidence for the relationship between ED levels and cardiovascular disease (CVD) outcomes among US adults >17 years. Reduced food security was found to be associated with a decreased likelihood of self-reported good cardiovascular health

and increased odds of reporting CVD-related outcomes such as coronary heart disease, angina, heart attack, peripheral arterial disease, and hypertension. Existing evidence suggests a compelling association between each level of reduced food security and CVD risk, with a particularly strong association between very low food security and CVD risk [9].

Silverman et al. 2015 conducted a randomized clinical trial to assess whether FI may play a role in poor diabetes control and determined the relationship between food security status and depression, diabetes, medication adherence, and glycemic control. Participants had poorly controlled type 2 diabetes (A1c ≥ 8.0% at eligibility screen), household income <250% of the federal poverty level, and were between 30 and 70 years of age. The prevalence of FI was 47.4%. Chi-square tests revealed that participants with FI were more likely to be depressed (40.7% vs. 15.4%, p<0.001), report diabetes distress (55.2% vs. 33.8%, p<0.001), and have poor medication adherence (52.9% vs. 37.2%, p=0.02). Based on the linear regression model, those with FI had significantly higher mean A1c levels (β=0.51; p=0.02) after adjusting for sex, age, race/ethnicity, language, education, marital status, BMI, insulin use, depression, diabetes distress, and poor medication adherence [10].

In 2022, authors Andersen et al. 2022 studied that negative affect and EA have been proposed to impede adherence to weight loss interventions, examining the role of these variables in dietary adherence using Ecological Momentary Assessment (EMA). A total of 50 participants (19 male participants; age = 49 [SD 14] years) participated in an outpatient dietary study. Lean participants (n = 22; BMI ≤ 25 kg/m2) received a weight maintenance energy requirement diet (WMEN), and obese participants (BMI ≥ 30) were randomized to receive a WMEN diet (n = 14) or a 35% calorie-reduced diet (n = 14). EA was measured, and twice daily EMA captured real-time assessments of affect and adherence. Between-person (trait-level) and within-person (state-level) scores were calculated. Higher trait-level EA and negative affect were associated with reduced adherence (p = 0.0015, p = 0.0002, respectively), while higher trait-level positive affect was associated with greater adherence (p < 0.0001). Significant interactions between effect and EA revealed an association between higher trait positive affect and greater adherence at lower levels of EA. Higher trait negative affect was more strongly associated with decreased adherence in participants with higher levels of EA [11].

Finally, a study by Myers et al. 2021 found that EA moderated patient responses to highintensity lifestyle-based obesity treatment. Relative to patients with AS, patients with EA showed smaller reductions in body weight over 24 months. Future research should identify the mechanisms (e.g., psychological, physiological) underlying this impaired response. This study has implications for clinicians and healthcare professionals working to address the growing obesity epidemic among adults. Furthermore, screening for AI can also identify patients who face barriers (e.g., poor nutrition and diet quality, reduced medication adherence) and medical complications (e.g., emergency department visits, and hospitalizations) that may compromise chronic disease management [12].

Conclusion

It was concluded that it is imperative to implement actions to generate income and promote adequate and healthy nutrition, as well as to reinstate regulatory actions to address food inflation, with an emphasis on building food stocks and encouraging production from diversified family-based agriculture. Public health-based policies and strategies are needed to identify the most vulnerable subgroups, strengthen and improve access to food assistance programs, and promote awareness and access to healthy foods and beverages to improve food security, nutrition, and cardiovascular health. Furthermore, food insecurity is associated with depression, diabetes, low medication adherence, and worse glycemic control.

CRediT

Author contributions: **Conceptualization -** José Joaquim Portilla Ramos; **Data curation -** José Joaquim Portilla Ramos; **Formal Analysis -** José Joaquim Portilla Ramos; **Investigation -** José Joaquim Portilla Ramos; **Methodology -** José Joaquim Portilla Ramos; **Project administration -** José Joaquim Portilla Ramos; **Supervision -** José Joaquim Portilla Ramos; **Writing - original draft -** José Joaquim Portilla Ramos; **Writing- review & editing-** José Joaquim Portilla Ramos.

Acknowledgment

Not applicable.

Ethical Approval

Not applicable.

Informed Consent

Not applicable.

Funding

Not applicable.

Data Sharing Statement

No additional data are available.

Conflict of Interest

The authors declare no conflict of interest.

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Peer Review Process

It was performed.

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