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# Scientific literature on food and nutrition security in primary health care: A scoping review

Fernanda Cangussu Botelho <sup>a,\*</sup>, Ivan França Junior <sup>b</sup>, Lúcia Dias da Silva Guerra <sup>b,c</sup>, Samara Ferrari Rodrigues <sup>b</sup> and Larissa Vicente Tonacio <sup>d</sup>

<sup>a</sup>University of São Paulo – School of Medicine, Sao Paulo, Brazil; <sup>b</sup>University of São Paulo – School of Public Health, Sao Paulo, Brazil; <sup>c</sup>Anhanguera University Centre of São Paulo, Sao Paulo, Brazil; <sup>d</sup>Federal Institute of Education Science and Technology of São Paulo, Sao Paulo, Brazil

## ABSTRACT

There is a growing interest in the scientific community regarding Primary Health Care practices aiming at assessing and addressing Food and Nutrition Security. The focus is usually on outcomes, instruments and effectiveness, with no concern regarding theories or concepts. We aimed to map the theoretical frameworks regarding practices towards Food and Nutrition Security in Primary Health Care and describe its conceptualisations based on Ludwik Fleck's epistemological approach. We conducted a scoping review, including 14 databases. Within the 56 publications, the notion of Food and Nutrition Insecurity as a risk for health without further theorisations predominates. Other two minor theoretical frameworks coexist: Food and Nutrition Security as a social determinant of health and as the realisation of a human right. Few publications present Food and Nutrition Security conceptualisations. Of those who define it, there is great variability in the content and sources used. The most elaborated and homogenous conceptualisations are in the human rights group. This review exposes how the disputes surrounding a concept mostly built on policy and international relations penetrate the scientific field. When studying topics in the interface between science and health practices, notably those where controversies exist, researchers should explicitly express their theoretical and conceptual backgrounds.

## ARTICLE HISTORY


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## KEYWORDS


Food security; Primary care; Health services; Human rights; Review

## Introduction

Health care settings, particularly Primary Health Care (PHC), are potential scenarios addressing issues relating to the development, such as Food and Nutrition Security (FNS) (Walley et al., 2008). The American Academy of Pediatrics, for example, recommends that health professionals engage to promote FNS in this context (Council on Community Pediatrics, 2015). In the present research, we consider the expression practices towards FNS to comprise various types of actions, activities and strategies aiming at improving FNS. In PHC settings, practices towards FNS may encompass two key domains. The first one concerns the practices for the Food and Nutrition Insecurity (FNI) assessment, such as through a single question during a routine visit (Kleinman et al., 2007), using specific adapted instruments that also include other determinants of health (Garg

**CONTACT** Fernanda Cangussu Botelho  [fer.cangussu@gmail.com](mailto:fer.cangussu@gmail.com), [fernanda.botelho@usp.br](mailto:fernanda.botelho@usp.br)  University of São Paulo – School of Medicine, Dr. Arnaldo Avenue, 455, Cerqueira César, Sao Paulo/SP, 01246903, Brazil

\*This study was completed when Fernanda Cangussu Botelho was affiliated to the Program of Public Health of the School of Public Health, University of São Paulo.

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et al., 2015) or within food and nutrition surveillance systems (Pereira et al., 2012). The second scope of practices towards FNS refers to the interventions to promote FNS or mitigate FNI, e.g. the inclusion of an advocate in PHC clinics to link patients with community resources (Berkowitz et al., 2016), or the provision of supplementary infant formula, educational materials and connection with other existing programs for food-insecure families (Beck et al., 2014).

### **Conceptualisation of FNS**

There is a conceptual debate around FNS. The original term, Food Security (FS), was first used to define whether a country was self-sufficient regarding food, to meet the energy requirements of its population (Pinstrup-Andersen, 2009). Over time, other perspectives integrating the food availability, and then to access to enough food, were added to the possible FS conceptualisations (Pinstrup-Andersen, 2009). Even though the FS is the most disseminated expression, the Food and Agriculture Organization (FAO) recognises the use of the term FNS (with the word ‘nutrition’) as a broad way of defining the phenomenon (Food and Agriculture Organization [FAO], 2012). The inclusion of this adjective highlights the dimension of health and expresses the intersectoral view of FNS (Maluf, 2009).

We highlight the FAO role for the FNS conceptual improvement, involving the dialogue with governments and social movements (Bellows & Hamm, 2003; Pinstrup-Andersen, 2009). Considering the institution’s effort of gathering information and disseminating the issues regarding the nutrition, food and agriculture around the world (Phillips, 1981), we chose a FNS conceptualisation from FAO. The FNS exists

when all people at all times have physical, social and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life. (FAO, 2012, p. 8)

This definition is in accordance with the Human Right to Adequate Food (HRAF) and the fundamental right of everyone to be free from hunger, integrated to FNS concept since the first World Food Summit (FAO, 1996).

This is a broad definition, as it should be applicable to all States parties. Each country internalised FNS debates and conceptualisation considering the local context, its particularities and the internal disputes around its meaning (Maluf & Reis, 2013). It means that some adopted more comprehensive views of FNS, prioritising the inclusion of other dimensions. We highlight the case of Brazil, which points out the economic, social and environmental sustainability and includes food as a right in its definition (Brasil, 2006). Therefore, we recognise that FAO’s definition present limits. However, this is the most suitable for our study, which is a global view of scientific literature, rather than an analysis restricted to a particular country.

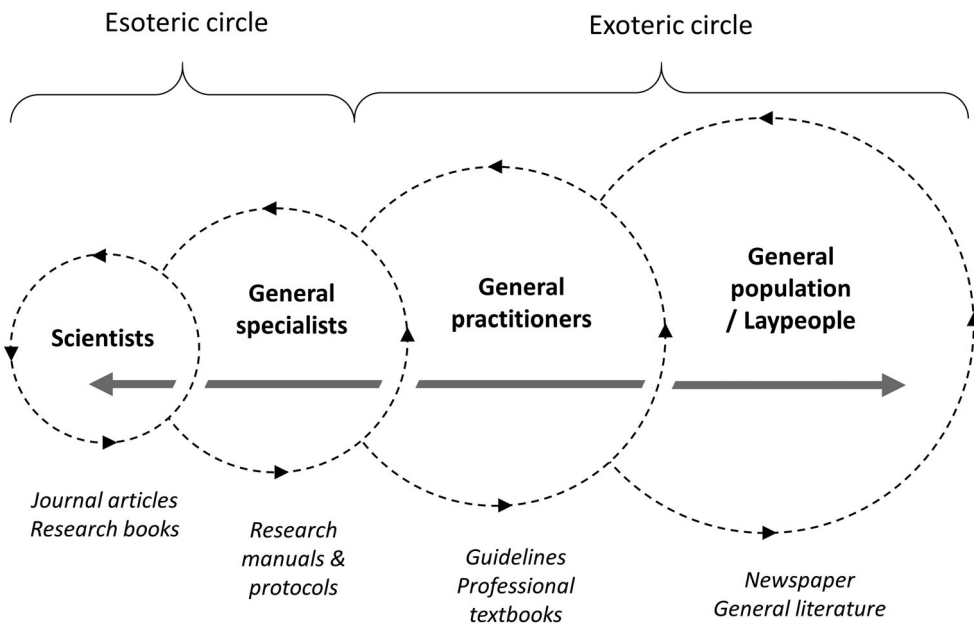
The main international treaty establishing adequate food as a human right is the International Covenant on Economic, Social and Cultural Rights (ICESCR) (United Nations, 1966). Even though international covenants and documents may lead to several actions at local level, they do not carry the weight of law (Bellows & Hamm, 2003). For this, each signatory country must ratify them nationally (Bellows & Hamm, 2003; Botelho & França Junior, 2018; Forman, 2019). The adoption of a human rights framework is an additional theoretical option to support practices towards FNS and it has been successful in promoting health, wellbeing and dignity (Chilton & Rose, 2009). Within this approach, adequate food is one of the interrelated and interdependent human rights, such as health, life, housing, education, work and information (United Nations, 2010). Additionally, the human rights theoretical framework demands that key elements of participation, equality and non-discrimination, attention to the legal and policy environment, and accountability should be covered (Ferguson et al., 2017). Human rights are closely connected and the level of provision of one, notably the health, relies on the provision of the others (Gru-skin et al., 2007).

### Practices towards FNS in PHC

Although this field is scarce of scientific evidence, there is a growing interest regarding practices towards FNS in PHC. Recently, two reviews and one protocol were published involving this topic (Andermann, 2018; Gottlieb et al., 2017; Marchis et al., 2018). All of them focus on describing or analysing the practices' outcomes, instruments for evaluation and effectiveness. By contrast, a summary of theories that support the scientific knowledge of practices towards FNS in PHC has not been proposed. Furthermore, considering that FNS conceptualisation impacts on the actions (Bellows & Hamm, 2003), a map of which understandings of FNS support the scientific knowledge would provide a more comprehensive overview of the field.

The understanding of the existing theoretical frameworks around this theme presumes a theory on how a scientific fact is built and how the scientific community is characterised. Thereby, our study utilises the theoretical framework elaborated by Fleck (Fleck, 1992). He understands the scientific knowledge as a collective activity, i.e. it depends on contributions from several people. Within the different fields, including the science, there are thought collectives. Thought collective is a community of persons that interact, exchange ideas and share similar position, ways of perceiving the reality and problems. In other words, the thought collective shares a specific thought style, which is the set of assumptions that support the construction of knowledge. The validation of a scientific fact is only possible within a thought style, by a collective with the same intellectual constitution and similar specific training.

Within the thought collective there are two circles of people: the esoteric and the exoteric. The esoteric circle is composed by general specialists, including a small group of scientists, who are the most specialised people within the thought collective. On the other hand, the exoteric circle includes general practitioners and laypeople, which are numerous. They form the public opinion. The genesis of a scientific fact occurs mostly in the esoteric circle, but there is a retroactive movement from the exoteric circle. According to Fleck (1992), the public opinion (exoteric circle) influences the production of highly specialised knowledge (esoteric circle). We present a schematic synthesis of the esoteric and exoteric circles in Figure 1.



**Figure 1.** Schematic design of knowledge circles, the circulation of ideas across them and the types of materials produced according to Fleck.

Applying the Fleck's theoretical framework to our study topic, the FNS concept was elaborated in the context of international relations, activism and public policies (exoteric circle). Researchers (esoteric circle) internalise FNS topic and its possible conceptualisations. Considering the conceptual diversity and debate around FNS, the comprehension regarding how the communication from the exoteric to the esoteric circle happens is still a gap in this field. Therefore, this study aimed: (1) to map the thought styles and collectives that produce the scientific knowledge regarding practices towards FNS in PHC; and (2) to describe FNS conceptualisations used in this literature.

## Methods

We conducted a scoping review. This method provides a map of the existing literature around a particular topic, including different methodological designs and not typically assessing the quality of the included studies (Arksey & O'Malley, 2005; Peters et al., 2020).

### *Literature identification*

The studies' identification included 14 databases from several fields, retrieving published and unpublished studies, with the terms presented in Table 1 in the Supplemental Material. The search fields were title, abstract, keywords and index terms, when available. We did not limit the period and location. The database search was conducted on 3rd July 2018. The full search strategy is detailed in the Supplemental Material.

### *Study selection*

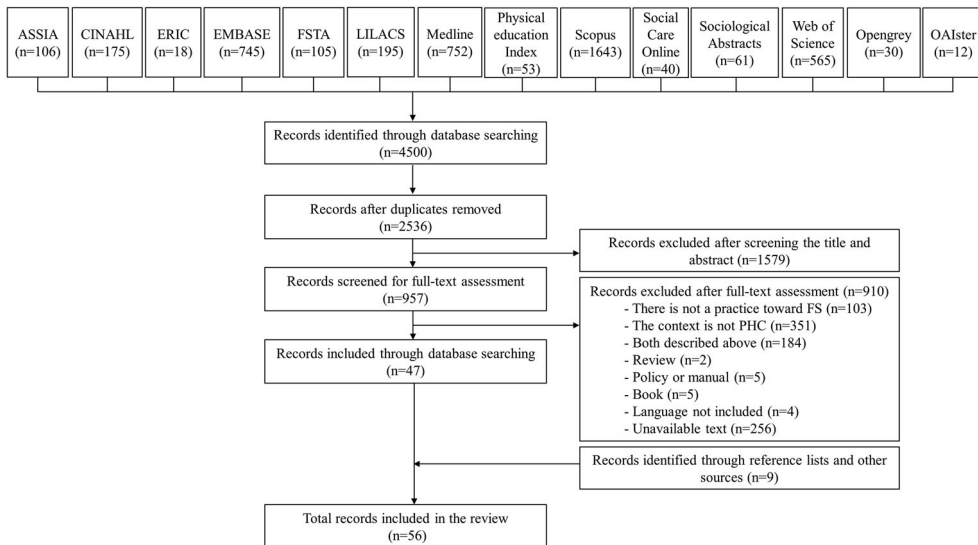
All titles and abstracts were initially screened and those that may meet the inclusion criteria were evaluated in full. Those without enough information for the initial screening were evaluated integrally as well. This stage used the following inclusion criteria:

- (A) Include at least one practice towards FNS (clearly stated with this terminology or similar);
- (B) PHC explicitly as the context of the practices towards FNS. The review did not include studies where PHC was merely the convenient setting for data collection;
- (C) Original studies, case reports, intervention reports, essays or comments.
- (D) Articles, thesis, dissertations or scientific events abstracts;
- (E) Publications in English, Spanish or Portuguese;

The entire study selection was performed by two independent reviewers. The disagreements that arose between the reviewers after comparison were resolved through consultation with a third reviewer in the title and abstract screening and through discussion in the full-text selection phase. Furthermore, once a study was selected for inclusion, we assessed each reference list to retrieve potentially relevant studies. [Figure 2](#) summarises the study selection stage.

### *Data extraction*

The year of publication was the first information retrieved. Second, we extracted the 'theoretical basis to address FNS'. For this category, we located the excerpts where the authors justified the FNS as an issue to be addressed in PHC, the arguments around this topic and its defence as a relevant problem. It included any possible additional information that could add to the comprehension of how authors understand FNS. We also retrieved the authors' affiliation institutions. The conceptualisations of FNS or any analogous term were extracted from the studies, when available, as the cited reference used for this.



**Figure 2.** Flowchart of study selection stage.

## Analysis

We evaluated the number of publications per year and presented them graphically. The category ‘theoretical basis to address FNS’, based on the type of arguments used by the authors, allowed us to build a map of the thought styles. We had already considered some possible thought styles to be used by the authors. The first was the human rights, based on the understanding of FNS as the realisation of the HRAF and its relation to the right to health (Chilton & Rose, 2009). The second thought style was that of charity, with an approach grounded on the needs of the populations (Chilton & Rose, 2009). The argument of FNS as part of life conditions within the social determinants of health, which is a well-defined theoretical framework in the public health field, was also predicted (Raphael, 2006). Finally, considering the epidemiology trajectory and the movement of managing health issues exclusively based on probabilistic associations without a theoretical framework (Krieger, 1994), the last thought styles considered was FNS was a risk factor for health. We have also sought the existence of some other unanticipated thought style. In addition, an isolated mention of a theoretical framework was not enough for a publication to be attributed to that thought style. We considered the complete argumentative structure around FNS. When necessary, during the data analysis, we returned to the original texts to connect our interpretation regarding the authors’ theoretical perspective with the text integrally, so as to avoid arbitrariness by designating them to one or another style of thought.

Authors’ affiliations institutions were used to characterise the thought collective. The institutions were classified according to the designation provided in the name. When the name of the institution was insufficient to categorise it, we visited its official website or contacted the correspondence author. Institutions were classified as universities, health services, social services, non-governmental organisations (NGOs), food banks, research centres, health policy and programme consultancy, and the senator’s office. Health services linked to universities, such as university hospitals, and government health departments were classified by the term health services. The institutions were also analysed according to the country of origin.

The FNS conceptualisations were detailed according to the central point of the definition and the elements used to qualify the concept. We classified the type of bibliographic source used in FNS conceptualisation as follows: scientific paper, local government document, UN or linked institution (e.g. FAO) document, local legislation and religious institution document.

## Results

Our scoping review retrieved 56 publications. The Supplemental Material presents the list of all included publications. The numbers given in square brackets after each finding match the reference numbers. Publications regarding this topic are increasing, with the highest amount in 2017 (Figure 3).

### Thought styles and collectives

We identified three thought styles that support practices towards FNS in PHC: FNI as a risk factor for health; FNS as a social determinant of health; and FNS as the realisation of a human right. The charity notion is absent in the publications.

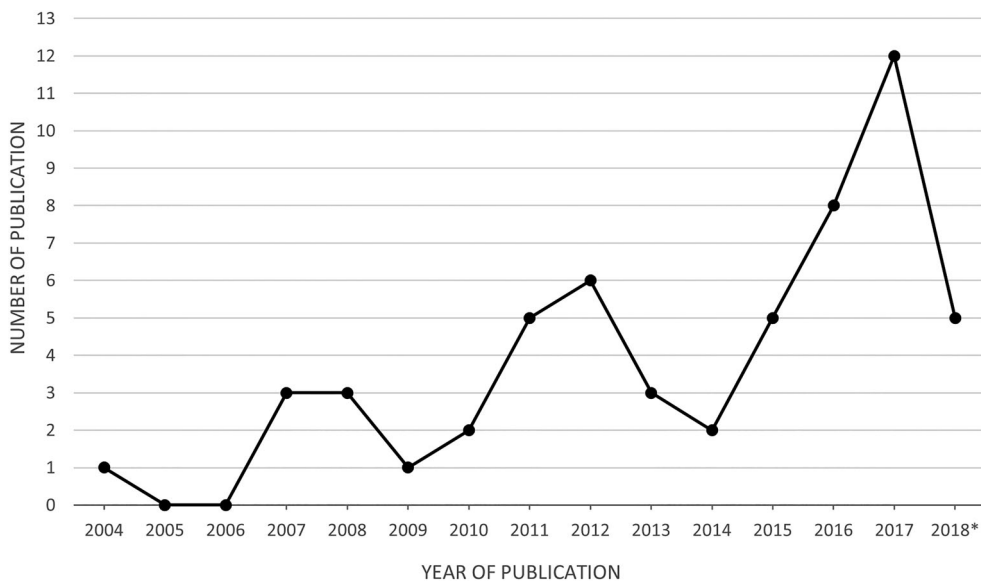
#### *FNI as a risk factor for health*

The thought style of FNI as a risk factor for health (here and after referred as risk thought style) predominates [5,9,10,13,14,16–20,23–25,27–32,34–38,40,42–45,47,48,50–53].

Within these 35 publications, FNI is considered a risk for health, consequently, it should be addressed in PHC. They converge in the legitimation of the practices exclusively based on epidemiological information regarding the association between FNI and negative health outcomes or on the high prevalence of the phenomenon. The absence of a well-defined theory to argue around FNS marks this thought style. A typical argument of this thought style can be found below:

Adverse health consequences of inadequate access to food are apparent throughout the lifespan. Insufficient resources for food leads to individuals developing poor dietary habits and choosing less expensive, more filling, less healthy food options (Drewnowski, 2010; Rao et al., 2013). Analyses of data from the National Health Examination and Nutrition Examination Survey (NHANES) reveal that food insecurity is associated with hypertension, hyperlipidemia, and diabetes (Seligman et al., 2010; Seligman et al., 2007). Food insecurity is an independent risk factor for poor glycemic control in diabetes and nearly half of diabetics in safety-net clinics were food insecure (Seligman et al., 2012). [52, p. 134,135]

Furthermore, 28 publications include at least one information that denotes the authors' understanding of FNS [5,9,10,13,14,16–20,24,25,27,29–32,34,37,38,40,42,43,45,50–53]. In these cases, the



**Figure 3.** Number of publications per year. \*The number of publications in 2018 is partial, since the literature identification search was conducted on 3 July 2018.

notions of needs, social problems, social determinants of health and association with poverty or low income, e.g. are occasionally mentioned. However, none of them discusses a theoretical framework and its mechanisms to justify practices towards FNS in PHC or to explain the roots of FNS.

The risk thought collective includes authors mainly from the United States of America (USA) institutions [5,9,10,14,16–20,24,27,29–32,34–38,40,42,43,45,48,50–53]. The exceptions are four publications from Australia [13,25,23,47], one from Brazil [44] and one from Tanzania, Kenya, Canada and USA [28]. Regarding institution types, there is great variability, but university authorship prevails. Nine publications are produced solely by universities [13,14,17–19,24,36,44,51], four by health services [9,10,29,48] and one by a health policy and programme consultancy authors [45]. In the remaining 21 publications, besides universities, there are concomitantly authors affiliated to health services [16,23,25,27,30–32,35,37,42,43,47,50,52,53], health services and non-governmental organisations [5,20,34], health services and food bank [38], health services and research centre [40] and research centre and non-governmental organisations [28].

### ***FNS as a social determinant of health***

The second most frequent thought style is the FNS as a social determinant of health (here and after referred as the social determinants thought style) [1–4,7,12,15,21,22,26,33,39,41,49].

In the 14 publications, the authors argue that FNS should be addressed in PHC because it is part of the conditions or circumstances of birth, growth, life and work that impact health. Here, the social determinants of health theoretical framework explicitly guide the authors, as presented in the following example:

‘This model (the intervention described in the paper) focuses specifically on social determinants of health, described by the U.S. Centers for Disease Control and Prevention (CDC, 2014) as circumstances into which people are born, live, and work and the systems that are put in place to deal with illness and disability. These circumstances are shaped by economics, social policies, and politics (CDC, 2014). In contrast, traditional health care delivery models generally overlook non-medical determinants of health – focusing exclusively on biomedical determinants.’ [26, p. 1] and ‘Consider, for example, poverty-induced hardships such as food insecurity, utility shut-offs, and substandard housing or homelessness – all of which clearly have the potential to negatively impact a family’s health.’ [26, p.2]

The idea of needs is mentioned in all publications. Most authors mention at least one mechanism of the genesis of FNI and health problems, such as poverty [2,3,12,15,22,26,33,39,41], the economic and social context [3,4,12], financial constraints [49] e and political scenery [26]. Additionally, most authors add the association between FNI and negative health outcomes to their argumentation [1–4,7,12,15,22,33,39,49].

This thought collective is composed by authors affiliated with USA [1–4,7,12,15,21,22,26,33,39,41] and Australian institutions [49]. There is also an institutional diversity, but with a slight prominence of health services. Out of 14 publications, two are carried out by authors linked exclusively to health services [4,39] and 10 include, besides health services, authors from universities [7,12,15,21,22,41], food bank [3], non-governmental organisation [33], universities and food bank [1] and universities and a research centre and a senator’s office [2]. In only two institutions are universities [26,49].

### ***FNS as the realisation of a human right***

The least prevalent thought style is that of FNS as the realisation of a human right (here and after referred to as human rights thought style), with seven publications [6,8,11,46,54–56].

These seven publications recognise food as a human right explicitly. Concomitantly, five consider its articulation with other human rights, notably health [11,46,55,56] and one indicate FNS concurrently as a component of the right to health [8]. In the human rights thought style, there is a theoretical framework that underlies the authors’ arguments. An example is presented below:



‘Although in Australia, access to food is considered a fundamental human right (Australian Human Rights Commission 1976), food insecurity affects urban Aboriginal and Torres Strait Islander people between three- and six-fold more than their non-Indigenous counterparts (Foley et al. 2010; Department of Health 2011; Australian Bureau of Statistics 2015a, 2015b).’ [8, p. A] and ‘These experiences of urban Aboriginal and Torres Strait Islander food insecurity are driven by structural factors including lack of affordable and adequate housing, low income and educational attainment (Browne et al. 2009).’ [8, p. B]

Six publications indicate FNI’s generating structures: poverty [11,46,56], life conditions [6,54], socio-economic vulnerability [54], and low income, poor access to education, lack of adequate housing, and colonisation and discrimination processes [8]. One publication does not present the roots of FNI [55]. In four publications, PHC is conceived as a setting for strengthening rights awareness, addressing inequality, and overcoming FNI situations [6,11,46,55]. Additionally, two publications reinforce the importance of the phenomenon from its high prevalence [6,56].

Authors affiliated to Brazilian institutions produce six publications [6,11,46,54–56] and the remaining one is published by Australian authors [8]. There is little variability regarding the type of institution in this thought collective. All Brazilian institutions are universities [6,11,46,54–56]. In the Australian publication, the institutions are one university and health services [8].

**FS/FNS conceptualisations**

Out of 56 publications, only 21 present explicit definitions of FS/FNS [1,3,7,8,10–12,32,34–36,38,42,43,45,46,49,52–54,56] (Figure 4). At the centre, it is the FS (without the ‘nutritional’) concept, mostly used by the authors.

In the risk thought style, there are 11 publications that define FS. These conceptualisations are based on three different, mutually exclusive pillars. For those using the access-based conceptualisation [10,34,35,36,42,43,45,52], there is a huge fragmentation in the elements to qualify this access. There is no common element in the eight publications focused on this pole. Additionally, in this thought style, there is a more concise conceptualisation based on the availability of food [32,53] and another more rudimentary from food sufficiency [38]. Authors used local governmental documents [34,35,38,45,53], scientific papers and local governmental documents at the same time

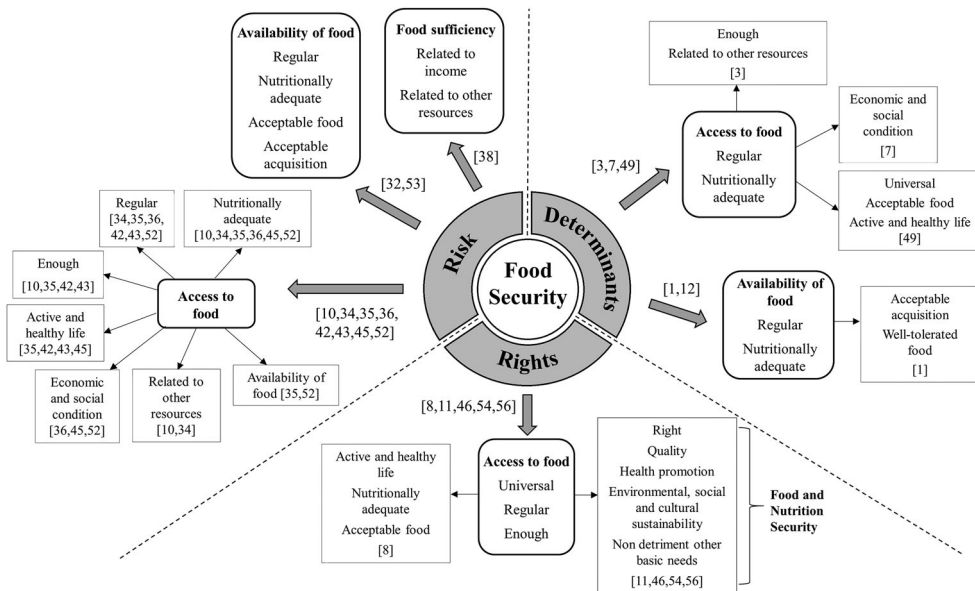


Figure 4. Elements used to conceptualise FS/FNS by the authors.

[10,42,43,52], or scientific papers only [32] as reference to define FS. One publication does not include the source used [36].

Those in the social determinants thought style [1,3,7,12,49] define FS through access to food [3,7,49] and availability of food [1,12]. Here, the authors use slightly more uniform definitions, as there are common elements at both poles. This thought collective uses scientific papers [1,12], scientific papers and local governmental documents [3,7], and a FAO document and religious institution document [49] to define FS.

Regarding the human rights thought style, the definitions are more uniform. The access to food, which is qualified as universal, regular and enough, is the foundation of all the conceptualisations [8,11,46,54,56]. Moreover, there is a conceptual segment that includes the adjective nutritional, i.e. sustained in FNS concept [11,46,54,56]. These conceptualisations incorporate greater complex features. These definitions are based on local legislation [11,46,56], local legislation and scientific paper [54], and FAO document [8].

## Discussion

Here we expose an overview of the thought styles and collectives present in the scientific literature regarding practices towards FNS in PHC and describe the FNS conceptualisations based on Fleck's epistemological approach. This review includes numerous databases and a broad search strategy, so it was possible to retrieve different theoretical perspectives. Even though all publications share the idea of FNI as a problem that should be overcome and as an issue to be addressed in PHC, the arguments around this issue manifest three different thought styles.

The amount of publications in the risk thought style denotes the field's theoretical rarefaction. Within this thought style, there is no theory clearly stated. Even though some authors mention aspects that denote how they understand FNS, these are minor issues. Authors build their arguments based on probabilistic associations as protagonists. We do not intend to diminish the validity of epidemiological studies, but to emphasise how their arguments are constructed. The so-called black box epidemiology emerged as a paradigmatic response when previous analytical approaches were insufficient to elucidate the increase of chronic diseases (Susser & Susser, 1996). The risk factor framework tends to oversimplify the mechanisms behind health problems and their implications for public health, due to the absence of an explanatory theoretical model of the identified associations (Krieger, 1994). This model has been criticised for decades, however this thought style keeps its rarefaction, leaving behind theoretical and methodological relations with other types of knowledge (Ayres, 2011), also relevant to the FNS in PHC.

The risk thought collective is composed mostly by authors linked to USA institutions. Accordingly, modern epidemiology, based on probability and the notion of risk, conforms mainly within USA public health institutions (Ayres, 2011; Krieger, 1994). The remarkable presence of universities as the main authors' institutions is consistent with the fact that epidemiology is a way of formalising scientific knowledge. Its development within the academic community may lead to its prominence in this thought collective.

On the other hand, the social determinants thought style does present theoretical arguments. Within this framework, FNS belongs to the list of material living and working conditions that influence health and result from the social, economic and political dimensions. The inclusion of upstream determinants of health (Braveman et al., 2011) is manifested at the argumentative level, and future studies should analyse whether the practices conducted seek indeed to address the FNI generating issues. Additionally, most authors used probabilistic associations with negative health outcomes to strengthen their argument. This is related to the social epidemiology perspective within this theoretical framework, traditionally concerned about providing 'hard evidence', through statistical formalisation (Raphael, 2006). The most important contribution of this framework is the inclusion of environments, social conditions and political context in the epidemiological studies, beyond the analysis of traditional biomedical and behavioural risk factors (Raphael, 2006).

The social determinants of health framework are not in opposition to the human rights perspective. On the contrary, human rights can provide legal and moral guidance to act on the social determinants of health (Raphael, 2006). However, in the present study, the two theoretical frameworks appear separately. We highlight that the discourse here follows a fragmented logic of social determinants of health, rather than an understanding of health inequalities as consequences of the dominant classes' actions (Navarro, 2009). This is not the critical epidemiology movement, such as Breilh's model (Breilh, 2013), which indicates that capitalism is structurally incompatible with health and that the existing social processes determine the epidemic profiles. The social determinants thought style identified in the present scoping review is far from claiming the rupture of capitalist structures in favor of emancipatory practices towards FNS.

Within this thought collective, authors affiliated to USA institutions also are the majority. This theoretical framework has been gaining momentum among USA researchers, among other factors, as a way of identifying why USA health indicators are significantly worse than other countries', notably Europeans (Berkman, 2009; Raphael, 2006). In addition, we also observe the variability in the type of institutional affiliation of the authors. Health services stand out among the other types of institutions. Possibly, the notion that economic and social conditions affect health is more evident among those in the health care practice. Therefore, we hypothesise that knowledge producers who experience health services daily tend to accept, adopt and defend more this theoretical framework.

The human rights thought style has low permeability in the literature on this topic. Here, the causes of FNI range from more obvious issues, such as poverty, to the discrimination and colonisation processes. Additionally, authors legitimate the topic based on the high prevalence of FNI, to a lesser extent. However, the human rights theoretical framework is not concerned if the phenomenon is more or less frequent in the population, which denotes an incongruity within this collective. Considering the universality principle (United Nations, 1948), if a single individual or community does not have his, her or its rights respected, protected and fulfilled, this is already a problem of interest for the human rights field.

We consider the little permeability of the human rights framework counterproductive. This theoretical framework could help in addressing FNI situations and informing health professionals about how to act as agents for transformation at the local level (O'Hare et al., 2016). Obviously, we are considering here the emancipating potential of this theoretical framework, although historically human rights have been also used for the interests of the dominant groups (Santos, 2002). The human rights framework can be used to address the FNS from a critical perspective (Chilton & Rose, 2009), when conceived as an instrument of emancipation and discussion of social inequalities involved in food problems in PHC (Botelho & França Junior, 2018).

In this thought collective, most authors are from Brazilian institutions. In Brazil, FNS has been historically linked to the demand for HRAF, mainly by social movements, achieving important legal and political advances (da Silva et al., 2018). Between 2002 and 2015 there was slightly more governmental permeability to the demands of the social movements, contributing to the improvement of this theoretical framework (Vasconcelos et al., 2019). Brazil is a country strongly marked by human rights violations, which is related to its colonialist and slavery past and its position of submission in relation to the interests of the central capitalist countries (Netto, 2009; Panizza & De Brito, 1998). The low importance given to human rights realisation in the country becomes even more explicit with the strengthening of the neoliberal agenda, as in current days (Alston, 2017). Considering that human rights emanate from the demands of life in society and results from a historical construction (Bobbio, 1996), it is consistent that Brazil is at the forefront of this thought style.

In addition, part of Brazil's scientific community engages in activism towards HRAF. Accordingly, universities are the only type of affiliation institution in Brazilian publications. Australia is the other country in this thought collective. It may be related to the fact that food policy has been historically important in the country, including debates around the opposition between the interests of the food industry and those of public health and rights (Coveney, 2003). Also, Australia ratified

the ICESCR in 1975. In contrast, we can hypothesise an explanation regarding the absence of authors from USA institutions in this thought collective. To date, this country has not ratified yet the ICESCR, although it has been published over 50 years ago (United Nations, 1966), i.e. USA has not legally committed to this and other social rights yet (Bellows & Hamm, 2003; Forman, 2019). The same can be said about the Convention on the Rights of the Child, which mentions the provision of adequate food and health (Forman, 2019; United Nations, 1989). The US legal context (exoteric circle) limits the FNS conceptualisations among USA scientists (esoteric circle).

Considering the expected thought styles, the notion of charity was the only one not identified. This is a surprising finding since the charitable model was historically present in food actions (Raine et al., 2003). Nevertheless, our scoping review is specifically restricted to the context of PHC. Possibly, the theoretical dispute involving charity is stronger in settings such as food banks or school-feeding programs (Raine et al., 2003; Riches, 2011).

The FS/FNS conceptualisations used by the authors manifest the variability (FAO, 2012; Gibson, 2012) *intra* and *inter* thought collectives. The rudimentary FS definitions (notably in the risk, but also in the social determinants thought style) denote incomplete interpretations of the phenomenon at the historical moment in which they were produced. The oldest publication dates to 2004. The World Food Summit, central to the FNS conceptual improvement, occurred in 1996 (FAO, 1996). Therefore, we consider that the use of such definitions is not a historical lapse, but rather an epistemological choice. We hypothesise that the adoption of conceptualisations that excludes important dimensions of FNS may lead to less comprehensive practices, with limited potential of social transformation. On the other hand, in human rights thought style, the FS/FNS definitions are more homogeneous and concomitantly include more qualifying elements. In addition, there is a pole that includes elements that are not used in other thought styles, such as the notion of sustainability, non-detriment of other needs and that of rights. Potentially, it happens because in these cases the authors conceptualise FNS, which in itself is an integrated view of FS and nutritional security, i.e. this concept is intrinsically multidimensional (FAO, 2012).

The inclusion of the adjective 'nutritional' expresses the health dimension within the concept developed in Brazil (Maluf & Reis, 2013). The contemporary scenario of nutritional transition, marked by the obesity as a global public health issue and an epidemiological emergency, elicits the importance of health and nutrition in the theoretical and conceptual discussions within the FNS (Paiva et al., 2019). We emphasise that obesity, as well as hunger and malnutrition, are different expressions of FNI. Within the scope of FNS, the notion of health extrapolates biological or biomedical components. By contrast, it is connected to the social, economic, cultural and ecological circumstances that should integrate the notion of adequacy (Maluf, 2009; Maluf & Reis, 2013). In this sense, in the Brazilian local construction, the nutritional component transposes notion of dietary requirements and food safety. Furthermore, we emphasise that when conceived as a human right, the notion of adequate food implies its direct relationship with other rights (Gruskin et al., 2007). This is related to the mention of the non-detriment of other basic needs in the definitions of FNS, exclusively in the human rights thought style.

Moreover, when conceptualising the FS/FNS, the scientific community (esoteric circle) uses the knowledge produced in other instances (exoteric circle). This movement is different in each thought style, since each thought collective chooses distinctly through which types of exoteric circles transit. The risk thought style dialogues more with local government instances, as the most widely used sources are the documents of these institutions. These have no normative or legal value and are subject to many variations, especially in accordance with momentary political interests. On the other hand, the social determinants thought collective prefers to remain in the esoteric circle itself, since the sources for conceptualising FS are predominantly scientific papers. According to Fleck (1992), the knowledge disseminated through journal papers (esoteric circle) is greatly provisory, personal, and unstable to changes and disputes. Local government documents also have some permeability in this collective. Finally, the human rights thought collective chooses to conceptualise FNS strongly based on local legislation, which derives from local construction and international

treaties (Forman, 2019). We suppose that when a phenomenon reaches the value of law, it has already undergone through extensive discussion and is less volatile to changes. In the Brazilian case, this process was permeable to the popular demands, since there was a structure for social participation regarding the FNS issues (da Silva et al., 2018). Thus, we hypothesise that these definitions are more solid and complete, even though they still carry the existing societal conflicts and contradictions. Therefore, the risk and social determinants thought collectives are anchored in more transitory sources to conceptualise the FS, whilst the human rights thought collective are mainly supported by consolidated references. We highlight the scarce use of FAO documents in general, which is impressive, given its role in the development of the concept (Bellows & Hamm, 2003). Finally, considering this conceptual diversity, the 35 publications in the three thought styles in which the authors chose not to explain how they conceive the FNS or any analogous term are noteworthy. When studying topics where controversies exist, researchers should explicitly express their theoretical and conceptual backgrounds.

Even though our study focuses on the theoretical and conceptual characteristics of this scientific community, instead of presenting the practices conducted, we can expect that being part of one or another thought collective may influence health care strategies, notably in the case of interventions proposed by researchers. Considering the argumentative structure, we hypothesise that health care practices within the risk thought style emphasise actions for individuals on behavioural and biomedical dimensions (e.g. prescription of nutritional supplements). This type of intervention may be effective if the analysis concentrates on biological outcomes, such as malnutrition, but do not modify the FNI's generating structures. For the social determinants thought style we can expect practices with some level of intersectoral articulation, notably with social assistance sector. However, we should consider the logic of simple referral, without a joint action to contribute to social problems resolution, as a possible limitation within this thought style. For the human rights thought style we presume practices that consider the health professionals as agents of local transformation and users as citizens with rights. Although these practices are potentially more comprehensive, they possibly demand much more time to be effective. We highlight that, at this stage, these are hypothetical considerations. We suggest for future studies an understanding of how the different thought styles identified relate to the approaches used in practices. Further reviews may understand deeply how the authors' theoretical perspective dialogue with the types of strategies used, the roles of the subjects involved in the actions, and the types of outcomes of interest.

Finally, scientific literature on this topic is expanding, indicating the need for a further review in the future. We point out as limitation the number of records not retrieved for full-text selection stage, which might have resulted in loss of additional literature on the topic. We attribute the difficulty in accessing the full papers to the fact that no filters were used in the databases and no temporal clipping was made. Therefore, we hypothesise that this loss refers to older and unavailable online materials. Future reviews may advance to include printed materials. Anyway, to the best of our knowledge, this is the most extensive and complete map ever performed on practices towards FNS in PHC. Moreover, Fleck's epistemological approach is an opportune and promising strategy for analysing a scientific field, notably in theoretical dimensions.

## Conclusions

We conclude that the scientific literature on practices towards FNS in PHC is supported by three thought styles: FNI as a risk factor for health; FNS as a social determinant of health; and FNS as the realisation of a human right. This scientific community conceives FNS mainly as a risk factor for health, which denotes the field's theoretical rarefaction. Additionally, this scientific production is concentrated in specific countries. The USA predominates in the risk and social determinants thought collectives. Brazil is the main exponent of the human rights thought collective. Australia is present in all thought collectives.

Few publications present explicit FNS conceptualisations, regardless of the existing disputes and debates surrounding it. Of those who define FNS, there is great variability in the content and the sources used to conceptualise the phenomenon according to each theoretical framework. Within the three identified thought styles, we conclude that there is greater conceptual homogeneity and complexity within the one that considers FNS as the realisation of a human right. This finding reinforces the importance of the human rights framework to more comprehensive health practices.

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## ORCID

Fernanda Cangussu Botelho  <http://orcid.org/0000-0003-1103-9181>

Ivan França Junior  <http://orcid.org/0000-0002-7004-7301>

Lúcia Dias da Silva Guerra  <http://orcid.org/0000-0003-0093-2687>

Samara Ferrari Rodrigues  <http://orcid.org/0000-0003-3031-9066>

Larissa Vicente Tonacio  <http://orcid.org/0000-0002-9974-8347>

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