

A Conceptual Model of Rural Household Food Insecurity

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A Qualitative Systematic Review and Content Analysis

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This systematic review explores experiences of household food insecurity in rural areas of developed countries. A search of 5 databases resulted in 32 peer-reviewed articles for inclusion. Data were analyzed using directed content analysis to broaden the understanding of rural household food insecurity. Elements of food security (ie, availability, accessibility, acceptability, adequacy, and agency) were exemplified across the literature. In addition, 4 key themes were found: exercising human capital, realizing social capital, coping with compounding stressors, and navigating complex systems. This review demonstrates the need for interventions that improve social connectedness, individual coping skills, and system navigation.

Key words: food insecurity, health disparities, qualitative research, rural health

FOOD SECURITY is the ability to access sufficient and nutritious food to live a healthy, active life.¹ In both low- and high-income nations, many people lack food security.^{2,3} At an individual or household level, food insecurity is related to having insufficient economic means to obtain food.¹ Individual nationwide measures show that 11.1% of Americans^{3,4} and 12.7% of Canadians⁵ experienced some level of household food insecurity in 2018. Food insecurity is linked to serious health issues such as hypertension, diabetes, hyperlipidemia, and depression in adults; as well as cognitive and behavioral issues in children; and limitations on daily activity in seniors.⁶ Several factors are associated with food insecurity in high-income coun-

tries, including: low income, employment, and education level; large family size; renting rather than owning a home; lack of transportation;⁷ reliance on social assistance;⁵ and perceived limited social capital.⁸ There are food assistance programs (eg, food banks), which provide basic needs in short-term, emergency situations, but are not intended to be a sustainable solution for food insecurity.⁹ Historically, the responsibility of providing food aid has fallen on these charitable and religious organizations, kept afloat by community donations of time, money, and food.¹⁰

Food insecurity is more prevalent in urban than in rural environments.⁷ However, these rates are not significantly different in rural (10.3%) versus urban (12.4%) areas in Canada,¹¹ or in the United States (13.2% in metropolitan areas, 12.7% in rural areas, and 8.9% in suburban areas).⁴ While prevalence rates are similar, there are additional barriers to obtaining food in rural versus urban areas, such as reliance on transportation,¹² distance to travel,¹² nutritious food cost,¹³ and healthy food obtainability.¹³ Previous reviews on food insecurity in high-income countries have highlighted aspects such as the quality of food aid,¹⁴ the role of food banks,¹⁵ and the use of traditional foods in remote indigenous populations.¹⁶ In addition, the sole review of qualitative studies synthesized experiences of food bank users and included only 2 rural studies.¹⁷

Despite being a global issue, there is no common definition of food security or food insecurity.¹ This review defines food security according to the 5 As¹⁸ necessary for its achievement: availability, accessibility, adequacy, acceptability, and agency, as outlined by the Ryerson University Centre for Studies in Food Security (see Supplemental Appendix Table 1, available at: <http://links.lww.com/FCH/A24>). In this review, food insecurity is defined as the absence

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of food security¹ and food security as the achievement of the 5 As.¹⁸ Therefore, in terms of the 5 As, one is food secure if they have food available, that is accessible (physically and economically), adequate (eg, nutritious), and acceptable (eg, culturally appropriate), and they also have agency (ie, policies and processes in place to achieve it).

The aim of this systematic review is to identify and synthesize qualitative research on household food insecurity in rural areas of developed countries. Specifically, this review answers 2 research questions: (a) How do the perspectives and experiences of household food insecurity among rural populations demonstrate the 5 As? and (b) What are the experiences and perspectives of rural, household food insecurity beyond the 5 As? To our knowledge, this is the first review to explore qualitative studies of rural perspectives and to do so through this lens.

METHODS

Five databases (GreenFILE, PAIS Index, PsycINFO, PubMed, and SCOPUS) were searched in August 2019. The search strategy aimed to identify peer-reviewed, primary, qualitative studies, published in English at any date, and included terms that describe the topic (eg, food security, food insecurity, and food bank) and the population (eg, rural and remote). The reference lists of included articles were reviewed to identify additional articles. An example search can be found in Supplemental Appendix Table 2 (available at: <http://links.lww.com/FCH/A25>). Abstracts were screened by 2 authors, independently, and a full-text assessment of each selected article was performed against the inclusion criteria. The third author was consulted in cases where an agreement could not be made.

Eligibility was determined by 5 inclusion criteria: (a) study conducted in a high-income country; (b) participants live in a rural setting;¹⁹ (c) participants self-identified as experiencing food insecurity, reported accessing food-related support programs, or researchers explicitly define food insecurity by household income; (d) data for the study were obtained through qualitative methods (eg, focus groups and interviews); and (e) firsthand perspectives of the study population, presented in first-person voice (ie, direct quotes from participants). Mixed-methods studies with a qualitative component that met all other criteria were also included. Articles were excluded if: (a) results did not differentiate between rural participants and those from other areas (eg, urban and suburban); (b) authors did not differentiate between food-insecure and food-secure participants; or (c) study population was food aid providers, stakeholders, or business owners.

Generally speaking, there is a lack of consensus in the literature regarding the most appropriate methods to determine the quality and rigor of qualitative studies,²⁰ and thus, a formal risk of bias and quality assessment was not performed. In lieu, an assessment of the reporting for each study was independently conducted by 2 authors via the Standard for Reporting Qualitative Research.²⁰ No studies were excluded based on reporting assessments, but they provided insight into the strength of reporting across studies.

Direct quotes from each study were extracted for analysis, synthesized, and underwent directed content analysis²¹ in NVivo (v. 12.5.0) software. First, the data were deductively coded by 2 authors, independently, into the 5 As, based on the operational definitions of each element (see Supplemental Appendix Table 1, available at: <http://links.lww.com/FCH/A24>). In phase 2, those data “uncategorized” in the first phase were inductively coded into new themes. Thematic maps were discussed and compared by all authors over multiple iterations before identifying final themes. The collective review of voices across the literature provides insight beyond what individual studies have been able to provide.

RESULTS

Review statistics

The search returned 10 708 titles; after title screening, 457 unique articles were retained. After abstract and full-text screening, 34 articles remained eligible (Figure 1). Two articles were removed during analysis as they focused solely on youth. The final sample included 32 articles, summarized in Table 1.

Articles originated from the United States (75.0%),^{22-24,26,27,30,31,34-41,43,46-53} Canada (18.7%),^{25,28,29,32,42,44} and Australia (6.2%).^{33,45} Common recruitment criteria included: identification with a specific indigenous (18.7%)^{24,28,42,44,47,49} or ethnic group (12.5%);^{34,37,39,41} participation in a social or food assistance program (34.4%),^{22,23,29,31,32,43,48,49,51-53} and family status (34.4%).^{23,25,36,39,40,45-47,50,53} The studies represented 1481 rural voices, with number of participants per study ranging from 7 to 326. Women’s voices were represented most often; 21.8% of studies included only women.^{22,23,25,36,39,40,46}

Study design, theory, and qualitative methods varied across the studies. Interviews (65.6%)^{23,25,27-30,32,35,36,38-42,45,46,48-52} and focus groups (34.4%)^{22,24,26,28,31,33,34,37,43,47,53} were the data collection methods used most often. Surveys (34.4%)^{29,33,35,38,40,41,46-48,50,53} and

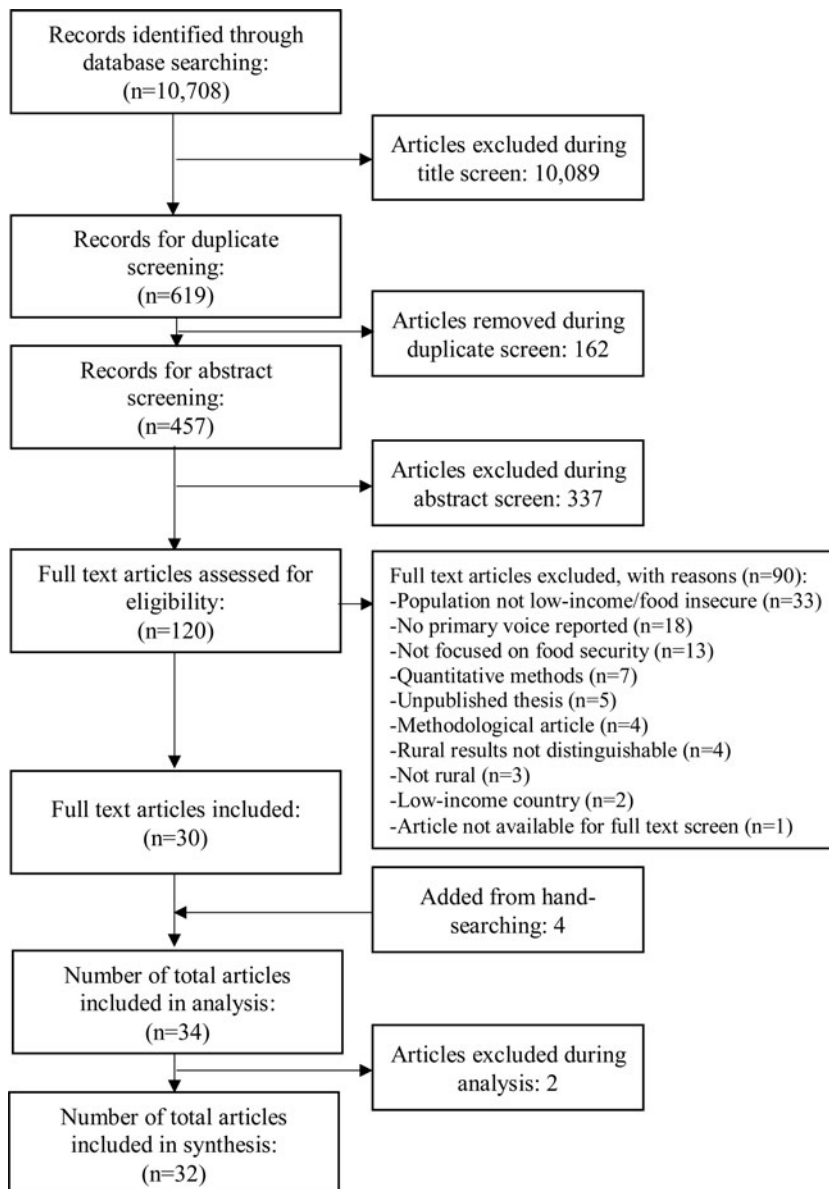


Figure 1. PRISMA flow diagram of study selection on experiences of rural household food insecurity.

other quantitative measures were found in mixed-methods studies; 50.0% of studies used multiple data sources.^{24,28,29,32,33,35,38,40,41,46-51,53} Where indicated, analysis of data was done using constant comparative (21.8%),^{23-26,31,41,52} thematic analysis (31.2%),^{22,28,32-34,36,38,42,46,51} or content analysis (18.7%)^{22,25,27-29,43} methods. Regarding reporting quality, the median number of reporting standards covered was 17 of the 21, ranging from 10³⁰ to all 21.⁴² Individual assessments for each article are found in Supplemental Appendix Table 3 (available at: <http://links.lww.com/FCH/A26>).

Directed content analysis

Representation of the 5 As appeared across the data with accessibility in all articles (100%), followed by acceptability (84.4%), agency (84.4%), availability (75.0%), and adequacy (62.5%). Each element of food security is explored further next, and example quotes can be found in Table 2.

Consistent with the 5 As, occurrences of accessibility were further categorized into financial access and physical access. Participants felt they did not have enough money to purchase the food that was available,^{29,40,42} or they experienced barriers

TABLE 1. Summary of Qualitative Articles With Studies on Rural, Food-Insecure Households

Citation	Country, State/Province (Area type)	Data Collection Methods ^a	Other Data Collection Methods ^b	Number of Participants (% Female)	Participant Characteristics	Ages, y	Subject of Qualitative Inquiry
Andress and Fitch ²²	USA West Virginia (rural)	Focus groups	...	30 (100%)	Enrolled in the Special Supplemental Nutrition Program for Women, Infants and Children	≥21	Perception of the food environment and ability to access healthy food
Bove and Olson ²³	USA New York (rural)	Interviews	...	28 ^c (100%)	Participating in a program that serves low-income families; at least 1 child <12 y at home	...	Perception of weight, social, environmental, and economic factors contributing to obesity; and association between food insecurity and disordered patterns of eating
Brown et al ²⁴	USA Multistate (rural)	Focus groups	Key informant interviews (n = 7)	31 (87%)	American Indian; self-identified primary household shopper; at least 1 school-aged child at home	≥18	Perceptions of social-contextual food environments and associated factors that influence food purchases
Buck-McFadyen ²⁵	Canada Ontario (rural)	Interviews	...	7 (100%)	Have children at home	30-50	Experience of food insecurity
Byker Shanks et al ²⁶	USA Montana (rural)	Focus groups	...	33 (...)	...	≥50	Factors that influence food choices from a food environment perspective
De Marco et al ²⁷	USA Oregon (rural, urban)	Interviews	...	14 rural, 11 urban (72%)	Participated in survey from the larger study	21-64	Experiences of people around food security, food insecurity, and the role of social support
Ford and Beaumier ²⁸	Canada Nunavut (rural-remote)	Interviews, focus groups	Key informant interviews (n = 19); mapping	66 (...)	Inuit; permanent resident of study area	≥18	Nature and experience of food insecurity; and conditions and processes that limit the access, availability, and quality of food <i>(continues)</i>

TABLE 1. Summary of Qualitative Articles With Studies on Rural, Food-Insecure Households (Continued)

Citation	Country, State/Province (Area type)	Data Collection Methods ^a	Other Data Collection Methods ^b	Number of Participants (% Female)	Participant Characteristics	Ages, y	Subject of Qualitative Inquiry
Ford et al ²⁹	Canada Nunavut (rural-remote)	Interview	Surveys	94 (44%)	Accessed community food programs	≥ 18	Utilization and the food security experience of users of Community Food Programs
Gross and Rosenberger ³⁰	USA Oregon (rural)	Interview, case study	...	66 (...)	Challenges faced and the strategies developed to increase food security
Hege et al ³¹	USA North Carolina (rural)	Focus groups	...	24 (...)	Accessed church food pantry or attended the weekly church community meal	Adults	Barriers to health and well-being Perspectives regarding health challenges in their neighborhoods
Lardeau et al ³²	Canada Nunavut (rural-remote)	Interviews, photovoice	...	8 (63%)	Accessed community food programs	≥ 18	Factors that affect food security status at an individual level
Lé et al ³³	Australia Tasmania (rural)	Focus groups	Survey (n = 364)	45 (80%)	...	21–98	Understanding of the issue of food security
Murimi et al ³⁴	USA Texas (rural)	Focus groups	...	13 ^d (60%)	Hispanic	≥ 35	The household experience of food insecurity, coping strategies, and modifiable factors to inform interventions
Quandt et al ³⁵	USA North Carolina (rural)	Interviews	Survey (n = 145)	145 (61%)	...	≥ 70	The meaning of food insecurity and the measurement of food insecurity among rural elders
Quandt et al ³⁶	USA North Carolina (rural)	Interviews	...	33 (100%)	Mothers; at least one 2- to 5-y-old child living at home; in a farmworker family	...	Nutritional strategies that can address childhood obesity

(continues)

TABLE 1. Summary of Qualitative Articles With Studies on Rural, Food-Insecure Households (Continued)

Citation	Country, State/Province (Area type)	Data Collection Methods ^a	Other Data Collection Methods ^b	Number of Participants (% Female)	Participant Characteristics	Ages, y	Subject of Qualitative Inquiry
Ramadurai et al ³⁷	USA Texas (rural)	Focus groups	...	86 (52%)	Members of the 3 racial/ethnic groups: non-Hispanic whites, African Americans, and Hispanics	24-86	Health disparities
Rodriguez and Grahame ³⁸	USA Pennsylvania (rural)	Interviews	Survey (n = 11); food price comparison	11 (55%)	Primary household decision-maker regarding food preparation and choice	20-77	Making food choices
Sano et al ³⁹	USA California, Michigan, Oregon, Iowa (rural)	Interviews	...	7 ^e (100%)	Latinx immigrant families; at least 1 child > 12 y	≥ 18	Diversity of food security statuses in the context of the levels of the ecological framework
Sano et al ⁴⁰	USA Washington (rural)	Interviews	Survey (n = 55)	17 (100%)	At least 1 child < 13 y living at home ≥ 50% of the time	≥ 18	Shaping of children's food experience, and negotiating food parenting practice in the context of rural poverty
Schoenberg ⁴¹	USA Florida (rural)	Interviews	Survey (n = 1126)	41 (61%)	African American; elderly	65-89	Contextual and experiential pathways that place individuals at nutritional risk
Skinner et al ⁴²	Canada Ontario (rural-remote)	Interviews	...	51 (47%)	First Nations; living on-reserve	21-60	Perceptions of food security and adaptive strategies used at an individual and household level, and coping strategies and suggestions to improve food security in the community
Smith and Morton ⁴³	USA Minnesota and Iowa (rural)	Focus groups	...	57 (65%)	Accessed food assistance program or community-based project	≥ 18	Access to food, safety net services available, food availability, social norms and behavior, and civic structure (continues)

TABLE 1. Summary of Qualitative Articles With Studies on Rural, Food-Insecure Households (Continued)

Citation	Country, State/Province (Area type)	Data Collection Methods ^a	Other Data Collection Methods ^b	Number of Participants (% Female)	Participant Characteristics	Ages, y	Subject of Qualitative Inquiry
Socha et al ⁴⁴	Canada Ontario (rural-remote)	Talking circle	...	18 (61%)	First Nations; living on-reserve	Adults ^f	Experiences on healthy eating and food security
Spurway and Soldatic ⁴⁵	Australia West Kimberley (rural)	Interviews	...	16 (...)	Family who support disabled family members or Aboriginal people who self-identified as disabled	...	The relationship between low socioeconomic status and disability
Swanson et al ⁴⁶	USA Multistate (rural)	Interviews	Survey	326 (100%)	Mothers with at least 1 child ≤12 y	...	Use of and perspectives about formal government food assistance programs and informal social supports
Tomayko et al ⁴⁷	USA ... (rural, urban)	Focus groups	Survey (n = 450)	15 rural, 16 urban (...)	American Indians; caregivers with children aged 2-5 y living at home	...	The correlates of food insecurity and the relationship between food insecurity and diet
Vaterlaus et al ⁴⁸	USA Montana (rural)	Interviews	Survey	12 (50%)	Users of the food pantry	19-70	Experiences, circumstances, and obstacles of rural food pantry customers
Ward et al ⁴⁹	USA Montana (rural)	Interviews	Secondary data, director interviews (n = 25)	40 (...)	Residents of the First Nations study area; recipients of food assistance	...	Experiences of food assistance programs and the impact of recent welfare reforms

(continues)

TABLE 1. Summary of Qualitative Articles With Studies on Rural, Food-Insecure Households (Continued)

Citation	Country, State/Province (Area type)	Data Collection Methods ^a	Other Data Collection Methods ^b	Number of Participants (% Female)	Participant Characteristics	Ages, y	Subject of Qualitative Inquiry
Webber and Dollahite ⁵⁰	USA New York (rural, urban)	Interviews	Surveys, food acquisition records	11 rural, 17 urban (89%)	Primary responsibility for household food purchases; at least 1 child <18 y at home	...	Acquiring fruits and vegetables and the mainstream local food movement
Whitley ⁵¹	USA Washington (rural)	Interviews	Ethnography/observational data, case study	65 (68%)	Accessed the food pantry	21-82	Food security and access in a changing rural county; strategies to access food resources
Wolfe et al ⁵²	USA New York (rural, urban)	Interviews	...	25 rural, 16 urban (78%)	Elderly; clients of subsidized housing programs (urban only), food pantries or a home meal delivery program	60-89	Perspective on experience of food insecurity
Yousefian et al ⁵³	USA Maine (rural)	Focus groups	Surveys (n = 48)	48 (80%)	Parents with ≥1 child enrolled in MainCare program	≥18	Food shopping habits, barriers faced when trying to obtain food, where food is obtained and perceptions of healthy food

^aPrimary qualitative method used to collect the data in this review (primary voices of respondents with food insecurity or low income).

^bOther methods used within the study.

^cPartners present for 1/2 of interviews.

^dStudy also included 7 food-secure participants.

^eStudy also included 3 consistently food-secure participants.

^fOne child was also present.

TABLE 2. Representative Quotes of the 5 As From Reviewed Literature and Percent of Studies Covered

The 5 As (% of Studies)	Representative Quotes
Availability (75%)	<p>“It’s easier as the adult to go without than to have them [the children] say they’re hungry.”^{23(p66)}</p> <p>“Cuz I wanted my kids to have food. I feed everybody first. If there is some left over, I eat it. If not, I won’t. I constantly have to tell the kids that they can’t eat so that you can make it last. It is hard. Then they say, ‘I’m hungry,’ and I say, ‘I’m sorry.’ I don’t know what to do.”^{27(p1018)}</p> <p>“... it’s almost a point to where it can become an obsession because you’re so worried about having the food there.”^{25(pp141,e142)}</p> <p>“Sometimes the children would ask for food because they wanted to eat,” [but food ran out too quickly] “because we are too many.”^{39(p118)}</p> <p>“As far as food, we never have a shortage of food ... What we have a shortage of is money.”^{52(p97)}</p>
Accessibility (100%)	<p>“We don’t have a choice, we don’t have money to buy food”^{29(p5)}</p> <p>“It’s too expensive to shop around there.”^{40(p120)}</p> <p>“Lower cost of food would be nice so all people can afford, especially welfare recipients.”^{42(p7)}</p> <p>“Maybe an all-season road will help to have more food in cupboards, like winter time.”^{42(p8)}</p> <p>“But if you can’t afford to pay the price of the food that they have in town, then you probably can’t afford to drive to another town to pay cheaper prices, so you’re kind of stuck either way you look at it.”^{43(p182)}</p> <p>“And that’s something people who live in other parts of the state don’t understand because everything is available to them, even though you are only 10 minutes away of Branxholm, it is a matter of getting to Branxholm and the average cost in getting there.”^{33(p18)}</p> <p>“It’s [grocery store] probably what, 45 min? About a half an hour, 45 min just one way.”^{22(p152)}</p> <p>“not unless I want to walk 6 or 7 miles ... or have to cross the highway. Scary with kids.”^{38(p181)}</p> <p>“[We] have to drive to 30 or 50 miles to, you know, to buy groceries.”^{37(p800)}</p>
Adequacy (63%)	<p>“I think a lot of the issues are not just education but the fact that the foods that you can afford are foods that are not healthy for you. Your ramen noodles, your white bread, and your white rice. Stuff like that, it fills up the stomach but its not good quality food. It’s all calories, no nutrition.”^{30(p61)}</p> <p>“A lot of their meat is really freezer burned and their fresh stuff is slimy and really overripe. Unless you can get there early enough ... to get the stuff.”^{48(p1900)}</p> <p>“... The kids are getting tired of commodities. They want fresh fruit and vegetables.”^{49(p268)}</p> <p>“I hate that we can’t eat better because we live all the way out here. I know how we eat affects our health, but at the same time we are just trying to get by. I wish we would have never come to this area.”^{51(p48)}</p> <p>“I can understand why a lot of people buy junk food, because junk food is cheaper than vegetables, but it is awfully expensive for vegetables today for kids.”^{53(p8)}</p>
Acceptability (84%)	<p>“The [health professionals] go on the radio and say ‘eat traditional foods, they are good for you/ But I shout at the radio and say I would love to eat traditional foods if there were any, I don’t have any. That is the problem, we have no traditional foods.”^{28(p47)}</p> <p>“Traditional foods are healthier compared to the nontraditional. But traditional foods are harder to obtain than nontraditional foods because you can’t just go to the store.”^{44(p7)}</p> <p>“We always come here because we feel accepted, good and safe here...and we can eat country foods.”^{32(p7)}</p> <p>“[It] was a major cultural shift I had to make when I came here. It was an adjustment because I was used to ... having the Vietnamese and Greek delis and all the lovely fresh produce dripping with water. [When I came] here and I had to start to come to terms with using canned products, packets, mixes or going to [major regional center] or [Capital city].”^{33(p9)}</p> <p>“And it feels like everyone just keeps kicking, kicking, kicking, kicking! It’s like, “Just let me try [to] get back up and try to get back on my feet”, and it’s hard ... I feel like no one listens to me when I go there to see them ...”^{45(p1123)}</p>

(continues)

TABLE 2. Representative Quotes of the 5 As From Reviewed Literature and Percent of Studies Covered (Continued)

The 5 As (% of Studies)	Representative Quotes
Agency (84%)	<p data-bbox="317 299 1205 378">"Well, she [social worker] said, 'How can you not know how many hours [you work] on a farm?' You can't, you know?! But she made me cry. I was crying when I left there, and I told my husband, 'I will go without before I go and ask them for food stamps.'"^{50(p196)}</p> <p data-bbox="317 388 1205 490">"The commodity programme has really improved. They get fresh fruits and vegetables but it's only during a certain time of the month that you can get it when their truck comes in. So again it's like with the EBT [electronic benefit transfer; i.e. SNAP dollars] if you don't get there then you're not going to get any."^{24(p5)}</p> <p data-bbox="317 502 1205 550">"We get \$400 in food stamps per month. We spend \$300 at the beginning of the month and then use the rest for eggs and milk and fresh stuff."^{30(p54)}</p> <p data-bbox="317 562 1205 641">"... And even though they were giving me \$30 to \$60 or \$180, you know, it would help even though it was just \$50, but now we have to struggle even for that to make our take home pay stretch out to get what we need for food."^{46(p682)}</p> <p data-bbox="317 653 1205 701">"Our school district has snack packs that they send home and I think that helps a lot of parents too."^{47(p7)}</p> <p data-bbox="317 712 1205 761">"The food bank is very helpful, especially having 2 small kids who don't understand there is no food."^{29(p5)}</p> <p data-bbox="317 772 1205 877">"Any food that I get comes from [the food pantry]. And there are certain things that you can't really get that you miss. ... I'm lucky if I can get milk. I need lactose-free milk. So if it's not there, it's not there ... and for those of us who have to watch our sodium all the canned stuff is not an option. I get it and eat it, and do it really sparingly so I can keep my numbers down."^{48(pp1898,1899)}</p>

to travel to food outlets (eg, distance or lack of transportation).^{22,23,38} The 2 subcategories of accessibility were related in that food found within, or close to, rural communities was said to cost more,^{40,42} and choosing to leave the community for affordable food required that respondents have access to a vehicle.^{33,43}

Acceptability was predominantly reflected in relation to indigenous communities where traditional foods were considered vital to cultural identity and food security.^{28,32,44} It was also evident in the experiences of fear, stigma, and shame when receiving food aid, which acted as a barrier to accessing food.^{26,27,31,45,50}

Participants' accounts of food insecurity exemplified the relationship between availability and economic accessibility in describing that, while food seemed available for purchase, they could not afford it.^{39,52} To cope with a lack of sufficient food, parents across the studies talked about eating last, and going hungry so that their children could eat,^{23,27} and the mental stress of not having food available.²⁵

Agency was demonstrated in the experience of relying on safety net support programs (eg, Special Supplemental Nutrition Program for Women, Infants, and Children,³⁴ Supplemental Nutrition Assistance Program^{24,31}), food aid such as local food pantries,^{31,48,51} and food stamps^{30,46} to afford food. Participants found the aid received helpful, such as

school snack packs,⁴⁷ but at times the aid was hard to get,³⁴ insufficient,⁴⁶ and not nutritious.⁴⁸

Participants described a lack of adequacy in the food available to them. They expressed health-related concerns around food, such as the high amount of sodium in canned food provided at food banks⁴⁸ and the limited amount of fresh fruit and vegetables available.^{24,49,51} Respondents contrasted the short supply⁴² and high cost⁵³ of fresh, healthy food with cheaper junk foods,⁵³ which are remarked as empty calories.³⁰

Thematic analysis of uncategorized data

The experience of living with food insecurity in rural areas is dynamic and involves reacting to changing and uncertain conditions, which is illustrated by 4 interacting themes: human capital, social capital, complex systems, and compounding stressors. These themes are explained in the following section with exemplifying quotes in Table 3.

Human capital is exercising individual means such as education, experience, skills, and opportunities, to manage while experiencing food insecurity. Participants described creative ways of procuring food such as gardening,³⁷ hunting, and foraging.⁵³ Food literacy, which includes both nutrition knowledge and food skills, was reflected in activities like cooking from scratch,^{26,30} making use of leftovers,²⁷ and storing and preserving food,³⁵

TABLE 3. Representative Quotes of the Themes From Reviewed Literature

Theme	Representative Quotes
Human capital	<p>“We’re trying to save as much as we can so that, if work runs out or if there isn’t any [money], we’ll have something saved up so we can buy things for our children. Now, we make more salads and try not to eat that much meat—more beans, rice, and soup.”^{36(p10)}</p> <p>“I budget it out. I always put rent first then food.”^{48(p1899)}</p> <p>“What I usually do is get enough ingredients to make a large pot of something that will last a few days instead of making individual meals each day. Yeah, I’ll have chili one night, then childdogs, and then, you know, stuff like that. Pretty much every meal is leftovers.”^{27(p1015)}</p> <p>“My husband does a lot of part time jobs that add to his job, in our house to have enough to pay our bills, to put food on the plate. I mean he does a lot of other stuff and it helps other people but he is also making a little bit of money to help us! We just try whatever we can.”^{34(p11)}</p> <p>“A lot of people have gardens. That’s what really you have to do unless you want to drive somewhere and get something. Most people around here grow a spring garden.”^{37(p799)}</p> <p>“I know that if my kids didn’t pick their fruit when it is fruit season, I wouldn’t be able to afford it now. They get out there and they pick their own strawberries, they pick their own blueberries.”^{53(p6)}</p> <p>“I love foraging foods. I do stinging nettles a lot.”^{26(p516)}</p> <p>“We hunt deer, we fish the lakes and the ponds and I mean anything that you can put in the freezer for winter. When things get bleak in the middle of January and February and you don’t have two pennies to rub together, it is kind of nice to fall back on”^{53(p5)}</p>
Social capital	<p>“There are some who fall through the cracks, but for the most part there is a pretty good sense of sharing in the community, where needs are and what kinds of needs there are. That’s what makes this [community] different.”^{43(p182)}</p> <p>“There’s a guy next door, and I bring him hot soup. He’ll come over and ask for it, and I’ll give him some bread. We call it ‘hunt and gather,’ to give it more dignity.”^{26(p516)}</p> <p>“I can’t really get that much access to traditional foods. Like my mother-in-law would invite us over sometimes but like where I really see a lot of it is in the communities, but there is also women whose husbands go out regularly and they get it regularly. But with us, it’s once in awhile when we buy it or if someone gives it to us.”^{44(p9)}</p> <p>“My mother will go to ... the warehouse (store), so she’ll have big cases of like soups and rice. She’ll say ‘Go shopping at my house.’ That means get a grocery bag, and I can go through and get what I want. That’s really helpful sometimes.”^{46(p686)}</p> <p>“Food problems? What kind of food problems would we have? No, everyone watches out for everyone out here.”^{51(p45)}</p> <p>“I ran out of food and didn’t know how I was going to get it, but the lady down on second floor, she always tries to help me when I get that way.”^{35(p367)}</p>
Navigating systems	<p>“I don’t really know the DHS [Department of Human Services] system, I’m kind of nervous to get involved with anything else. I can’t afford to go down there and twiddle my thumbs for an hour and wait for them to tell me if I’m eligible or not.”^{27(p1015)}</p> <p>“It is hard for me to meet their requirements. I have no vehicle, and I have to get the childcare to go do my hours. You have to do a lot just to get food stamps, and then they don’t even last all month.”^{49(p263)}</p> <p>“Especially in ... County because the state didn’t agree for federal funding. Is that right? For the Medicaid. To a certain income group. Who gets hurt by this is the poorest of the poor. The rest of the folks have some options, but the others have nothing that is available to them.”^{31(p248)}</p> <p>“Even though at the time I wasn’t working when I applied for [food stamps] they didn’t hurry about it at all and it took me a month to get them.”^{38(p183)}</p> <p>“The paperwork usually has to be in before we can get an appointment. Like right now, I have to wait until way after the first to get an appointment. We will have to hustle around for food for two weeks. After the appointment, you still have to wait five to seven working days to get your food stamps.”^{49(p262)}</p>

(continues)

TABLE 3. Representative Quotes of the Themes From Reviewed Literature (Continued)

Theme	Representative Quotes
Coping with compounding stressors	"It is hard to have food in the house when there is no house." ^{29(p6)}
	"On account of these bad knees, with the arthritis in them, I can't hardly stand to be at the stove no more. So, I'll fix me a piece of bread with some lunch meat for my supper and that's about what I can take, with these knees you should have seen me years ago, making all this good food!" ^{41(pp239,240)}
	"Kids around. Always want too many things. Yeah, they like different foods, and then I got 2 grown and 2 small ones. They want pizza and we want squash. You know, they are always different. So I always end up cooking 2 meals." ^{43(p180)}
	"I don't know anybody I could ask. I just don't get around, I just sit around at home because I can't afford to do anything or go anywhere. I don't have any family left. They're all gone." ^{27(p1019)}
	"The gambling is a big problem. I noticed a young family just playing gambling with their money instead of providing food first for the children. She goes to the gambling house right away before buying groceries and that is a big problem." ^{28(p54)}
	"So just like a lot of the cooking is a lot more—takes a lot more time. But I think it's easier for us because we have a big family just to put a pizza in with fries and stuff. So it is kind of hard like challenging, well, different ways and how much time you have to cook if we're busy that day." ^{24(p5)}
	"Quality is a very hard qualifier in our household. I would love to feed my kids the best meat and best vegetables and the best fruits and everything; however, if I want to pay the light bill or if she needs new shoes for school, then this week it's potatoes because they're on sale. Next week we'll live on rice and chicken." ^{53(p7)}
	"If things get too hard, I myself have to sell one of my jackets or my boots." ^{28(p47)}
	"If we had daycare, he could get a job. To get the job, he has to have the daycare. To get the daycare you have to have the subsidy. To get the subsidy he's got to have the job. So where's the starting line there?" ^{25(pe143)}

which allow limited resources to be stretched. Elements of financial literacy were also reflected in accounts of price matching,²² shopping for sales,²⁶ budgeting,³⁶ and financial planning.

Beyond individual strengths, realizing social capital was a common theme, which means using social networks to obtain food. Receiving assistance from friends,²⁷ family,^{23,46} and neighbors²⁶ was a positive and welcomed experience for many respondents. The reverse role of exhibiting social capital was demonstrated in accounts of sharing food with neighbors and family,^{26,42} and volunteering at the local food pantry,⁵¹ giving assistance to others was important to the respondents. Having positive social connections allowed for ease of sharing^{25-27,41,42} and trading⁴⁷ practices, which meant that, through community, they were able to make more with fewer resources. Sharing was seen as a necessary community endeavor by food-insecure groups.^{43,51}

The third theme, compounding stressors, involves occurrences that are additive to the challenging state of living with food insecurity and has 2 subthemes, managing aggravating factors and subsisting. Poor physical^{41,43} and mental health,^{27,28,32} isolation and stigma,^{23,26,31,51} lack of

time,^{24,33,37} family responsibilities,^{36,40,48} and unexpected expenses^{27,30} were discussed as aggravating factors while living with food insecurity. Individual accounts of insecure employment^{27,48,49} and insecure housing^{29,39,51} exacerbated the situation. Subsisting was discussed as making sacrifices or going without, to prioritize basic needs such as shelter,⁴⁸ and heat³⁵ above food.

Finally, complex systems refer to the pathways to receiving food aid or the money to obtain food. Participants discussed barriers such as transportation,³¹ eligibility requirements,^{27,49} language,³⁹ caregiving,^{25,49} complicated paperwork,^{27,49} wait times,³⁸ and staff that behave as gatekeepers.⁴⁹ While there are services available for those who live with food insecurity and low income, these systems require knowledge and skills to access.

DISCUSSION

This review synthesized the perspectives and experiences of household food insecurity in rural areas through the 5 As. This is the first review of this kind to focus on rural populations. The 5 As provide direction on what is necessary for people to be food secure; however, they do not capture the full

experience of food insecurity within the rural context. Data within this review describe living with food insecurity as a balancing act wherein availability, accessibility, adequacy, acceptability, and agency are not static, and people harness their human and social capital to manage food insecurity and mitigate compounding stressors. Through their skills, knowledge, and supportive social networks, respondents had an advantage despite their food-insecure status. Concurrently, the structures and services meant to assist those in need were found to be complex, often difficult to navigate within the described circumstances. A number of compounding stressors interact with food insecurity status, adding complication to an already stressful act of obtaining food. This review, and subsequent conceptual model, highlights the inconsistency of food security status and the elements that impact it. The idea that there is a complex path to and from food insecurity is reflected in a study by Daly et al,⁵⁴ who used quantitative measures from cross-sectional survey data (n =17 682) to model the factors that preceded and followed occurrences of respondents running out of food. Factors related to income, spending, food, and health status were probable predictors of food insecurity and were intricately related to one another.⁵⁴ A similar level of complexity is seen in the qualitative data found across the literature.

In the proposed conceptual model from this review (Figure 2), the dynamic experience of rural, household food insecurity is depicted as a seesaw. The 5 As are shown along the lever, and at any point in time they are present to differing extents. For example, in rural environments, while food may be

available at the store, it may not be physically accessible or nutritionally adequate; in another example, the food may be fresh and healthy, but not financially accessible. At food banks, food may be accessible but not obtained in ways that preserve dignity and, thus, not acceptable. In the conceptual model, the rural household sits as a ball on this beam, and its location is dependent upon which factors are currently weighing the beam down, either toward food insecurity or toward food security. On one side, the weight represents the compounding stressors that tip the household toward food insecurity, while on the other end, this is counteracted by human capital and social capital that tip it back toward food security. At the fulcrum of the balance are complex systems, depicted as a triangle upon which the rest of the model sits. No one part of the balance can change or move without affecting the rest.

The systems at the base of the model include social safety nets and food aid organizations whose goal is to provide money and food to steady households at risk for food insecurity. The support provided in these systems is insecure. Social safety nets are not keeping people out of food banks,⁹ and emergency food aid organizations have administrative barriers to use such as eligibility criteria, and paperwork⁵⁵ along with the fear of stigma by users would benefit from them.¹⁷ One systematic review of food bank studies (n = 20) in developed countries found that food banks are used by food-insecure households on a regular basis, rather than as an occasional emergency measure.¹⁵ They also found that food banks were not able to provide enough fresh foods such as fruits, vegetables, and dairy products for a healthy diet.¹⁵ In another review of

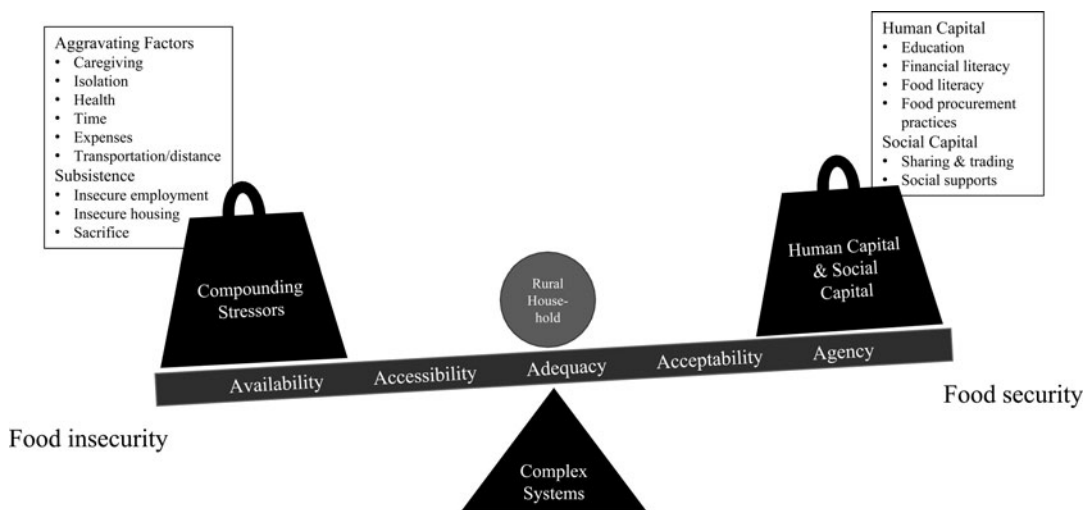


Figure 2. Conceptual model—the dynamic experience of rural food insecurity.

randomized control trial studies of food subsidy recipients ($n = 14$), it was found that food subsidy programs increase nutrient intake and may mitigate some health issues; however, further research is needed.¹⁴ A study of 326 rural mothers found that formal government food programs were helpful and well attended (80% of families), but not protective against food insecurity; the authors concluded that, although these programs met some needs, they were simply not enough.⁴⁶ Navigating support systems is difficult and especially discouraging when the outcome is still not enough.

Those living in rural areas face physical access constraints while also paying a higher price for transportation¹² and food.¹³ In one study respondents felt food access was limited, citing physical and social environment factors such as the absence of competitive food vendors, lack of variety and choice, and issues with food quality.⁴³ An example of this is found in one study of food-insecure individuals in rural Pennsylvania, where there was a significant difference between what participants reported they wanted to purchase and what they actually purchased. The main barriers preventing them from obtaining those desired foods were cost of food and distance to food stores.³⁸ The relationship between poverty and food access is clear,⁵ and additive financial stressors, such as insecure employment, insecure housing, and unexpected expenses, exacerbate the situation.⁷ Additive to the access constraints are health implications, which are discussed across the literature as coexisting with food insecurity.^{7,56} The direction of the relationship between food insecurity and health implications is debated.⁷ There are examples of health issues leading to food insecurity, for example, when health-related physical limitations get in the way of food procurement practices like going to the store and gardening, or when they make preparing food more difficult.⁴¹ There are also examples where food insecurity creates or worsens existing health issues, as seen in one study that emphasized the psychological toll that living with food insecurity can have on single mothers.⁵⁷ In this study, the shame felt because of the inability to provide quality food for their families led to mental health struggles.⁵⁷ The nutritional quality of food available and accessible could also lead to health issues.

Social capital is a fundamental part of rural living.³⁷ In one longitudinal study, 3 forms of informal (nongovernmental) support were considered: emergency food assistance, meal sharing, and food assistance from family and friends.⁴⁶ Of those who mentioned these supports ($n = 187$), 41.0% used at least 2 of them and they were found to be protective against food insecurity.⁴⁶ There is a sense of

gratitude¹⁷ and a willingness by those who experience food insecurity to help others that are also in need. Sharing food with family is a common and important practice when food is scarce.^{42,46} However, research on urban and rural food deserts shows that, while food-sharing practices are more common in rural rather than urban food insecure populations, these practices are not entirely protective against food insecurity⁵⁸ and thus more needs to be done. Those who have low perceived social capital are also more likely to report food insecurity than those who are connected.⁹ Those who experience food insecurity may feel simultaneously connected with others who are in a similar situation and also alienated from the rest of the community.⁵⁹

Employing individual skill sets is key to living with food insecurity. Through food knowledge and proficiencies, individuals are able to use what is available efficiently, and to understand which foods to purchase with limited funds. Gardening should also be used as a means to obtain healthy foods that are not offered by food banks or are too expensive at the local stores. Gardening as a practice is seen more often in rural than in urban households and while it is found to increase fruit and vegetable intake, it does not result in decreased instances of food insecurity.⁵⁸ In Aboriginal communities, using skills such as hunting, preserving, and other traditional food practices is demonstrated⁴² though there is a reported loss of some traditional knowledge, which makes these practices less relevant.⁴⁴ Financial literacy plays a role in counteracting the stress experiences with unexpected expenses and insecure employment. Common interventions directed at those with financial insecurity, who are at risk for food insecurity, include lessons on cooking healthy on a budget and making food stretch. In an American study by Rivera et al,⁶⁰ those food-insecure households who participated in an education program, which included nutrition and budgeting, were more likely to be food secure one year after the program than the control group. Beyond these strategies, parents demonstrated making sacrifices so that others can eat,^{23,27} this can result in a situation where adults report food insecurity but their children do not, as was shown in one study of American households where 14% more adults than youth reported personal food insecurity.⁵⁷ It is important that all family members have access to enough food and this data has demonstrated that this is not the reality.

Limitations

Despite the novelty of this review and applicability of its findings, several limitations should be noted. First, it is recognized that people from low-income countries with food insecurity have their

own unique perspectives and experiences, which this review does not include. While these accounts are important and meaningful, they are beyond the scope of this review. This review does not include gray literature (ie, non-refereed sources such as government reports) and instead focuses on peer-reviewed journals with standards for reporting qualitative methods. The respondents in these studies represent a vulnerable population. Working in rural, isolated, areas creates the potential that participants will feel marginalized and may not participate, and only those willing and able to speak to researchers are represented in the literature.

Adults were the focus of this review, and though young people have less autonomy over food acquisition and choice, they still adjust to cope with food insecurity when their household does not have enough. In their study of youth in focus groups (n = 46), Mott et al⁵⁹ found that youth understood and expressed how factors in their environment influenced their food insecurity status, with themes such as limited employment opportunities for their parents and a lack of community connections. There is a demonstrated need for more research on the perspectives of children and youth; the potential physical consequences of nutrient deficiency during a time of rapid physiological development are great, and although adults tend to make sacrifices to account for this, they should not have to. Most studies focused on the United States. Of the few studies from Canada and Australia, most were from remote areas; there is a need for more research in these diverse rural settings. While this review and subsequent model focuses on rural settings, application in nonrural areas should be considered in future research.

CONCLUSION

For those living with food insecurity in a rural context, emergency food and social assistance exist but they are not enough, and changes need to be made to improve their efficacy. Easing system navigation, encouraging social connectedness, and enhancing human capital should be priority areas for those working directly with this population group. Reaching households that are in need of services may require creative planning especially in small, sparsely settled areas where eligible participants may be unserved. For example, a community food bank could include transportation considerations as an integral part of program planning, or a government agency could provide those living in rural areas access to a system navigator who is familiar with their local services.

Taken together, these experiences and perspectives demonstrate that there is not currently one sin-

gle solution to food insecurity for rural households. Intervening factors allow the respondents to survive and create the dynamic picture seen in the conceptual model. Considering how the individual, social, and contextual aspects interact with the household enhances our understanding of rural household food insecurity. This leaves space for continued research on the various aspects of the model, how they interact, and also for the development of interventions that address multiple elements. For example, a multicomponent study of a community-wide intervention that promotes food literacy and food sharing, while at the same time provides increased access to affordable food.

The synthesized themes reflected across the literature can be used to incite governments to take action, and support those who are living with, and vulnerable to, food insecurity in rural areas. Researchers must continue to engage small rural populations in community-based research and provide a platform for these voices to be heard. Various organizations and social programs are currently working to meet the needs of people in their communities; however, it is clear that a system-wide, sustainable solution is necessary, one that guarantees food is available, accessible, adequate, and acceptable for all.

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