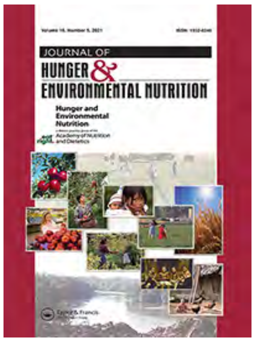

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Navigating Food Insecurity as a Rural Older Adult: The Importance of Congregate Meal Sites, Social Networks and Transportation Services

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ABSTRACT

To explore how older adults in rural communities navigate food insecurity, ten focus groups were held in Indiana, USA with 65 discussants. Recordings underwent inductive qualitative data analysis. Driving and transport remain a barrier to rural food access. Living alone is another contributor to food insecurity, while older adults' social networks are protective. Congregate meal sites are critical to maintaining nutrition and are underfunded; one-third of this region's meal sites closed in 2019. These must be maintained and expanded. Transportation to food outlets is needed. Mechanisms that reinforce older adults' social networks can build upon an existing asset.

KEYWORDS

Older adults; food security; food insecurity; rural areas; congregate meals; rural transportation; social networks; mental health

Introduction

Food insecurity is an upstream social and environmental determinant of health, referring to the lack of consistent access to enough safe, nutritious, and culturally appropriate food for an active, healthy life.[1,2] Especially among older adults, food insecurity is at once an adverse outcome and a risk factor for other markers of poor health.[3,4] Food insecurity is associated with numerous co-morbidities such as Type II diabetes and depression, and high-cost outcomes such as falls and medical and long-term care expenses.[5] The co-incidence of food insecurity and chronic conditions also is linked to increased medical costs.[6] Indiana, for example, spends over $1 billion per year on medical costs associated with food insecurity.[7] The Centers for Medicare and Medicaid Services now recommend screening for food insecurity during the routine medical care of Medicare and Medicaid participants.[8–10]

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Nationally, food insecurity among older adults (65 years and older) has increased in prevalence by 38% since 2001[11] such that 21% of food insecure households now include an older adult [Coleman-Jensen1] Among older adults who live below the poverty threshold, 30% are food insecure, as are 17% of those whose incomes are between 100% and 200% of poverty.[11]

Here we focus on food insecurity among rural older adults. Nearly one in four of the country's low-income older adults (23%) resides in a rural location.[12] Compared to suburban and urban places, rural communities are older and aging more rapidly as the older population expands.[12] Food insecurity is more prevalent in rural communities compared to urban and suburban (8.4% compared to 7.1% nonrural).[11] In North Carolina, researchers found 12% of rural older adults were food insecure but qualitative interviews proposed this number might underrepresent the rate of food insecurity due to potential bias within the survey questions and/or differences in perceptions of what it means to be food insecure among older adults compared to younger adults.[13,14] In Texas and the Midwest, rural residence has been associated with a greater likelihood of experiencing food insecurity and being food inescure more often compared to urban households [15–18,19, 20] Thus, rural older adults in the U.S. are vulnerable to food insecurity. Our research sought to expand this knowledge by exploring (1) the determinants of rural food insecurity for older adults and (2) the strategies rural older adults use to ameliorate their food insecurity.

Background: Patterns of Food Insecurity and Coping Techniques among Rural Older Adults

Rural older adults face unique challenges to maintaining food security. Spatial distances combined with transportation challenges result in reduced access to food.[21–24] Most rural communities have fragmented or absent public transportation services, forcing those who do not drive to rely on their personal networks to go to a food store and other services.[25,26] Immobility and isolation are further indicated by lower rates of community involvement and socialization among older adults in rural areas,[27] as well as by the 22% of rural older adults who live alone.[12] Because cooking and eating are often social acts,[28–30] isolation can contribute to food insecurity for older adults.[31,32] Of course, functional limitations associated with aging (e.g., fatigue, pain) and chronic disease can make it difficult or undesirable to shop, cook, or eat[33] and are also associated with food insecurity.[34] Chronic disease and disability are more prevalent among rural older adults compared to urban.[35]

Research into how rural older adults navigate food insecurity emphasizes the importance of older adults' social networks as providers of food and transportation.[13,14,17] These networks encompass family, neighbors, members of the same house of worship, and friends, many of whom are inter-networked with one another.[36] An older adult may provide financial or in-kind compensation to some people within their network, to build relationships and reciprocity and express gratitude.[37] The World Health Organization emphasizes these forms of "interdependence as well as intergenerational solidarity (two-way giving and receiving between individuals as well as older and younger generations)" as core tenets of active aging (2002, 35). Yet research cautions against idealizing rural social networks as a substitute for formal services and networks.[38] Perhaps especially in rural places,[39,40] it is often only after individuals call on multiple coping strategies within their personal resources that they turn to external public services.[41]

Since the 1970s, the federal congregate meal program has been a signature public food assistance service of the Older Americans Act.[42,43] These donation-based group lunches are ranked by experts as high priority for older adults' food security[44] and are well-regarded and appreciated by older adults.[19,45,46] Nationwide, 34% of congregate meal program patrons are rural[47] and rural patrons may attend the meals more frequently than their suburban and urban counterparts.[48] This program provides on average 41% of a participant's daily calories, 46% of the protein and 43% of the vitamins and minerals[46] and increases food security.[49] If the program were unavailable, 42% of participants in a nationally representative evaluation said they would skip meals or eat less.[46] Participation in congregate meals even appears to keep older adults who might only need a low level of care out of the hospital, emergency room, and long-term care facility.[50] In instances where congregate meal sites expand, more participants may experience these health-protective effects. Meal site closure may have adverse effects on participants' levels of nutrition security and socialization, as when meal sites were closed and replaced with home-delivered or "grab-and-go" meal options during the COVID-19 pandemic of 2020–2021.[51,52]

Despite the congregate meal program's effectiveness, its federal funding has fallen to 48% from its 1990 level, adjusted for inflation.[53–55] It served 44% fewer meals in 2016 than in 1990,[50,56,57] even as the older population has grown. Many states have reduced investment even further, directing allocations away from congregate meals and toward home-delivered meals to frailer, generally homebound, adults.[34] In contrast, other states have redoubled investment in congregate meals by introducing various local, county and state funding mechanisms.[58] However, the result on balance is a growing gap in services for the 89% of rural, low-income older adults who the federal meals do not reach.[59] Research highlights the potential for medical referrals to increase the level of participation in congregate meal sites and other types of food assistance.[57,60]

This research responds to calls to better understand the determinants of food insecurity among rural older adults and the complex set of strategies used to procure food and mitigate food insecurity among low-income rural adults.[15,46] We explore the barriers to food security faced by older adults in rural Indiana, as well as the coping strategies they employ. These strategies include older adults' utilization of their own informal networks and formal food assistance programs.

Methods

We selected for the study region four contiguous counties in southern Indiana because this non-metro, non-adjacent, primarily rural region presented high poverty rates and large populations over the age of 65. Table 1 presents these and other socioeconomic characteristics of the region. Of the counties studied, Greene, Lawrence and Orange are considered by the U.S. Census Bureau to be "mostly rural" while Crawford County is considered "completely rural."[61] Mostly rural counties are those in which more than 50% of the population lives outside of urban areas, while the term "completely rural" is reserved for counties without urban areas. Figure 1 depicts the spatial and financial challenges county residents face in accessing food, according to the US Department of Agriculture Food Environment Atlas[62] (2019). One quadrant of Lawrence County has low vehicle availability and/or more than one-third of its population living over than 20 miles from a supermarket. Parts of Crawford and Greene counties are closer, but still far from supermarkets. Much of Crawford and Orange are low income.

To explore patterns of food insecurity among older adults and the ways they ameliorate food insecurity, we held a series of ten focus group discussions.[68] The protocol was approved by the Indiana University IRB, protocol number 10322. The focus group phase was planned as a rapid phase to launch, and generate hypotheses to test in, a larger mixed-methods study. Our protocol

Table 1. Socioeconomic characteristics of the study region relative to state and national patterns.

Characteristic	Crawford, Greene, Lawrence & Orange counties	Indiana	USA
Poverty rate[a]	13–16%	12%	11%
Population age 65 + [a]	20–21%	16%	17%
Food insecurity[b]	13–15%	13%	12%
Median household income[c]	$43,000–59,000	$54,000	$62,000
20th percentile household income[c]	$18,000–22,000	$24,000	$25,000
Income inequality (ratio of 80th to 20th income percentiles)[d]	4–4.2	4.4	4.4
Race/ethnicity[e]	2% Latinx 1% Black 1% Mixed race 96% White	7% Latinx 10% Black 2% Mixed race 78% White	19% Latinx 13% Black 3% Mixed race 60% White
Population per square mile[a]	35–103	181	87
Disability: total population[f]	19%	14%	13%
Disability: over age 65 [f]	42%	35%	35%
Median age[g]	42–44	38	38

Sources: [a]:,[61] [b]: [Feeding,62] [c]:,[63] [d]:,[64] [e]:,[65] [f]:,[66] [g]: [67], [68],

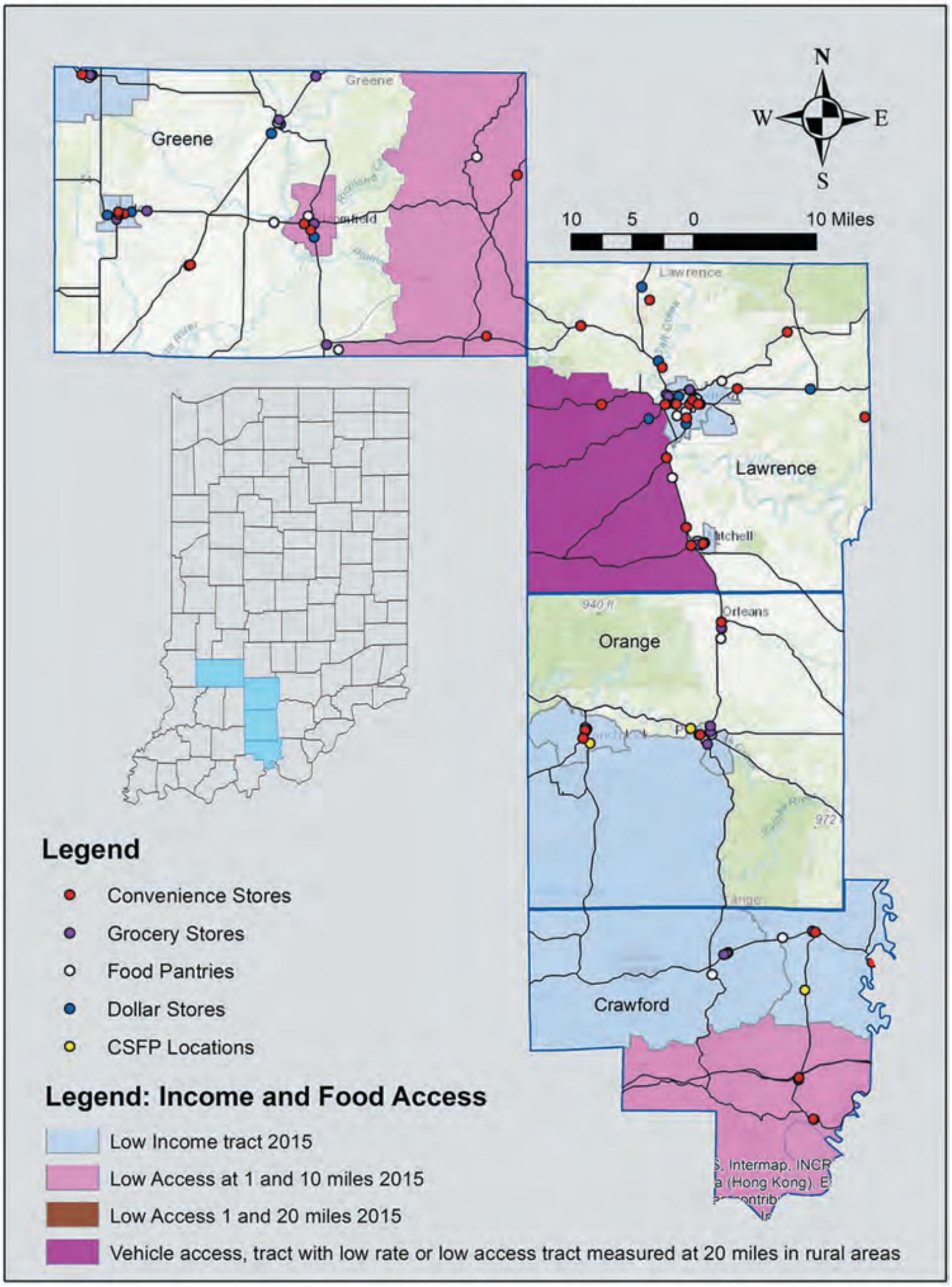

Figure 1. Map of Research Counties.

initially planned to convene eight discussions, one in each of the four counties for service providers, and one per county for older adults. We added two more discussions for older adults, in order to convene discussions in the region's six main towns. Discussants were purposefully selected as having insight into patterns of food insecurity among older adults.[69] We followed a snowball or chain recruitment procedure, detailed below, through which knowledgeable individuals and representatives of relevant organizations were referred to the focus groups by their peers. We held four discussions, one per county, with local service providers whose work addressed food security among older adults and six discussions with older adults.

To recruit service providers, we attended and presented our objectives at community food forums held in each county. These forums were the first ever convened by our regional food systems and rural engagement teams, which were recent initiatives of the university. The purpose of the forums was for service providers and community members to discuss ways to strengthen their county food systems[70] . We invited participants to sign up for a future discussion specific to food security among older adults, and/or to recommend other knowledgeable service providers. Service provider focus groups were held in each county during October and November 2019. Discussants represented local organizations such as food pantries, medical providers, soup kitchens, economic development corporations, community foundations, county extension, public housing, disability and aging social services, rural health services, social work, health departments, town governments, and others.

To identify older adults to invite to the second series of focused discussions, which took place in the region's six predominant towns, we asked participants in the community food forums and service provider focus groups to recommend people for participation. We also contacted local senior centers and senior public housing and asked them to place flyers with a sign-up sheet in their venues. From October to December of 2019, we held six focused discussions with older adults, one in each major town in our study area. We followed community leaders' advice on choice of venue and timing. Refreshments or lunch were served at all 10 discussions. Participants in the older adult discussion groups each received an incentive of a $30 gift card to a nearby supermarket. Every discussant provided written consent. One research team member facilitated every discussion, following a discussion guide, and departing from that guide to probe into content brought up by the group. Two other researchers were also present to set up the room to audio record the discussions, take notes, assist with consent forms, and clean up. Discussions lasted from one to two hours. Recordings verified the notes taken during discussions. The discussion guides are provided in the Supplementary Materials and followed five sections of questions: (1) Defining food insecurity; (2) What food insecurity looks like among older adults in your community; (3) Food routines; (4) Food assistance; and (5) Your ideas for responses and solutions.

A total of 39 older adults and 26 service providers participated in ten focus groups. While we did not collect participants' demographic information, every older adult was aged 60+ and the older adult groups were made up of about two-thirds women. Service providers represented a range of ages and were about half women. Given the racial/ethnic distribution of the region (see Table 1), participants were predominantly white with a few participants of color.

A team of three researchers collaboratively analyzed the qualitative data.[70] The researchers coded the same four transcripts, which were chosen at random, to develop a base codebook.[71] The second six transcripts were each coded by two researchers. The team used grounded theory, an inductive coding approach, to allow themes and conclusions to emerge from patterns found in the data.[72] Analysts wrote a draft codebook and added to and revised it throughout the coding process. Analysts used the qualitative data analysis software NVivo throughout,[73] meeting weekly to discuss their coding procedures, compare differences within the data, and revise the codebook as analysis progressed. The researchers each wrote an analytic memo after coding a - transcript[69] to reflect on its content and relate it to the broader analysis. Memos were then discussed during coding meetings. Analysts compared their coding results to identify the most frequently coded themes according to: (1) barriers to food security, (2) informal coping strategies to facilitate food security, and (3) older adults' use of formal food assistance services. We provided the preliminary findings of the discussion group series to the participants and their communities by publishing a web page , emailing a one-page summary to service providers, and issuing a university news release whose reach was tracked as 98,000 people throughout the region plus the audience of one AM radio station that featured the story.

Results

The themes from the focus groups with service providers and focus groups with older adults were consistent, with one exception, which was that they diverged on the value of older adults living in intergenerational households. We highlight this disagreement below under "Sociocultural factors" and otherwise integrate the service providers' and older adults' comments in our presentation of the results to reflect their general agreement.

(1) Barriers to Food Security

Common barriers to food security among rural older adults included physical and financial limitations, aloneness, and sociocultural factors.

Physical Barriers

Physical barriers included challenges associated with aging, health, and mobility. Changes common to the aging process complicated food security in routine ways. Vision loss made it difficult to read labels and expiration dates, and to drive. Reduced senses of smell and taste contributed to lowered appetites, as did difficulty chewing. Some also noted difficulty opening containers, standing, cooking, and shopping due to a loss of strength and mobility. Disabilities and chronic diseases (e.g., type II diabetes, renal disease, hypertension, and heart disease) limited mobility and could require special diets that were viewed as financially and/or locally inaccessible due to the low variety of foods in local venues. Some older adults discussed how food allergies and the development of intolerances limited their food options. Lastly, cognitive problems such as memory loss and dementia were also discussed as barriers to food preparation and consumption.

Transportation Barriers

The absence of transportation services was a structural barrier to food access. Only one community in this region offered public transportation. Thus, adults who no longer drive needed to look to their personal networks to go get food. Family and neighbors sometimes tire of driving someone for free and ask to be paid. Older adults said it could cost $8-$20 to pay someone to drive them on errands, even to just one store. This price of hiring a driver was viewed as expensive. No adults mentioned using a private rideshare service (e.g., Uber, Lyft). Private meal and grocery delivery services were either not available or cost too much.

Financial Barriers

The major financial barriers to food security included income constraints and the cost of healthy foods. Older adults discussed expenses that force them to make budgetary tradeoffs in which food became the last priority. The highest priorities for spending their fixed incomes included utilities, housing, and medications/health care. For some, this meant little money was left for food each month.

> *I have a lady friend that lives on $528 a month. If it wasn't for her two children that make sure she has food, she couldn't survive. By the time she pays her medication and utilities, she has about $18 a month. She has insurance, but some medication is that high. She has to pay the [heating] gas to put in the tank, and she . . . doesn't get heating assistance. I told her children to ask for help for her, but she'd have a fit if they did. She's got a lot of pride in her. [Participant 7]*

Participants also negatively discussed the fact that income had remained stagnant as living costs and food prices rose. Foods such as fresh fruits and vegetables and protein were viewed as expensive and financially difficult to access: "*you have the $1 fries versus the $4 salad* [Participant 2]." Lastly, participants discussed the winter months as being particularly difficult as the costs to heat their homes and holiday gift-giving placed additional burdens on finances. Furthermore, it was harder for discussants to access foods in the winter due to difficulties getting around in poor weather conditions and the seasonal loss of produce from farm stands and neighbors' gardens.

Aloneness

Widowhood and separation from family (e.g., children moving away) left some older adults living alone and lacking companionship, social support, or anyone to take them shopping or prepare meals for them. Living alone and loneliness were reasons why older adults did not feel like or enjoy cooking and eating. Furthermore, living and eating alone motivated participants to eat convenience foods, such as a sandwich, can of soup, or prepared meals, so they did not have to put a lot of effort into cooking and cleaning up solely for themselves. Convenience and processed foods also prevented food waste for older adults who live alone, as they are more shelf-stable than fresh foods. Isolation combined with the spatial distances of a rural environment further limited access to food, as some older adults explained the difficulties of getting groceries, cooking, and eating without help from family, neighbors or friends. Lastly, one-third of the region's federally funded congregate meal sites were closed in 2019, the year of these discussions, contributing to isolated food experiences among older adults.

Sociocultural Factors: Multi-generational households and self-sufficiency

Household composition and a desire to be self-sufficient were also factors associated with food insecurity. Service providers and older adults generally agreed on the findings we present, but they diverged on the value of multi-generational households. Service providers viewed multi-generational households as financially burdensome for older adults due to descendants living off of the older adult's income. Providers described observing older adults in the challenging situation of raising their great-grandchildren on a fixed income and/or residing with adult descendants who contribute little income to the household: "*Three generations living on social security income in one home and the young adults aren't working*" [Participant 60]. In contrast to these service providers' views, several older adults said that living with their children or grandchildren helped with their food security, as described in the next section under "Adaptations to aloneness."

Several discussants, older adults and providers, observed that the desire to be self-sufficient kept older adults from using assistance programs. Having to "*ask for help*" with food is a step that moves one from independence and toward dependence – a step many are reluctant to take: *"If I can't find food, then maybe I can't take care of myself [Participant 19]."* Some viewed assistance as "*a handout*" and were unwilling to accept help when needed. Others simply viewed themselves as less in need than others.

(2) Personal Coping Strategies to Improve Food Security

Rural older adults adapted to the barriers they encounter through social and personal strategies including informal transportation networks, stretching their food budgets, and cooking, eating, and living with others.

Adaptation to transportation barriers: Informal transportation networks

The only formal transportation services available to adults in the discussions was one town bus service and Medicaid cab, which is limited to medical appointments. Older adults adapted to the absence of services by forming networks of drivers and riders to go together to the store or food assistance site, or to go on one another's behalf. Discussants described people driving to pick food up for others and waiting in line for others when necessary. Sometimes these networks involve exchanges of money.

> *[She] takes us once a month shopping . . . . Sometimes you can pay her $3 and she'll go wherever [Participant 3].*

> *I have a lot of neighbor ladies that they'll want to go to the gas store or Walmart. I don't ask for nothing but they'll usually give you ten or twenty dollars [Participant 31].*

Relationships built on driving exchanges tended to dissolve over time, as drivers tire of providing the service or themselves become unable to drive.

Adaptation to financial barriers: Stretching food budgets

Many participants economized on food through store sales and coupons. They would stock up on nonperishables and perishables that they could then preserve at home: *"She took me to Sav-a-Lot and I got five or six packages of meat for $20. It's not frozen, so you can separate it at home and freeze it. But you've got to go all the way to town" [13 miles away]* [Participant 22].

Adaptation to aloneness: Cooking, eating, and living together

Some discussants adapted to widowhood or the out-migration of loved ones by making friends and getting to know neighbors, including, for example, floormates in senior public housing. One person explained how she and two neighbors ate meals together *"Almost every night. We pitch in. Each night we'll figure out what we want to eat and bring it. Last time, we had 'sketti sauce. She got hamburger and sauce. I brought noodles and another sauce, and we ate all together. I hate eatin' by myself„* [Participant 4]. Living in multi-generational households was another alternative to living alone. In contrast to service providers' critical views of multi-generational households, older adults described how the companionship and division of expenses and labor (including child care, cooking, and shopping) across multiple people strengthens their food security. For example, more than half of the participants in one older adults' discussion group lived in three-generation households, each with a daughter and an adult grandchild. One of these older adults said, "*My daughter lives with me and she cooks and I do the dishes. We made a deal*" (Participant 40) and another explained, "*My daughter halves all the bills*" (Participant 41).

(3) Rural Older Adults' Use of Food Assistance Services

The Numerous Benefits of Congregate Meals

At ten sites across these four counties a hot, congregate lunch is served on weekdays at public housing complexes or Senior Centers. The meals are provided by contractors to Area Agencies on Aging through the federal Nutrition Services Program of the U.S. Department of Health and Human Services. For many older adults, eating together is the most attractive aspect of the meal. Even though discussants did not praise the quality of the food, the meal provides a major part of the daily fare: "*We eat in at the Senior Center, and then you're not hungry at night*" (Participant 33). Private institutions such as churches, nursing homes, or nonprofits may serve additional congregate meals on a monthly or even weekly basis. Events held at meal sites, such as bingo and dances, provide more opportunities to eat, socialize and build community. Discussants appreciated the social value of these gatherings as well as their low cost (requested donation of $1, versus $5-9 for a restaurant meal): *"The cost helps, but we like to visit with one another. That gets us out. After [my husband] passed, I didn't want to go out, but my daughter got me to" (Participant 46)*. Furthermore, going to the lunch requires physical activity and leads to even more community interaction: *"While you're out, you go other places"* [Participant 9].

Agency on Aging subcontractors provide home-delivered meals to older adults who are unable to get out due to mobility or transportation barriers, illness, or disability. None of the participants in our discussions received home-delivered food. Even so, participants mentioned that meal delivery services have shifted to delivering frozen food, and on a less frequent basis, qualities that discussants viewed negatively.

Some discussants utilized local food pantries, and some picked up monthly deliveries of free nonperishable foods from the Commodity Supplemental Food Program ("*senior commodity box*" was the local term).[74] Few participated in the Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamps Program, which provides supplemental income to purchase foods.[75] Both SNAP participants and non-participants viewed the low level of SNAP benefits for older adults (at $7-16 per month) as scarcely worth the hassle to apply for the program and re-certify on a regular basis.

Effects of congregate meal closures

A major lament from older adults and service providers was the recent closure of congregate meal sites. In 2019 alone, these communities lost four of their fourteen meal sites. A fifth site had closed in 2017. Service providers who ran these sites attributed the closures to low participation or funding cuts.[76–78] In some cases, entire Senior Centers were shut down. In others, services were cut from a Senior Center, including meals and the transportation once provided to those meals. Specific to the closure of transportation services, one provider explained,"*Nobody wants to own the vehicle and insure a driver and ensure food safety*"[Participant 14]. The loss of transportation affected adults who are unable to drive, and especially those who live outside of town. Even for sites that stayed open but lost services, discussants observed that staffing cuts reduced the centers' capacity to publicize programming and coordinate information, resulting in fewer activities, and thus even less opportunity to eat together. Because of the congregate meals' combined value for nutrition and social life, discussants emphasized the need to preserve the sites that still exist and restore transportation to these meals. "*Socialization is really important; we eat to meet people. If we didn't have that, we wouldn't go out, at our ages*" [Participant 2].

Recommendations to Improve Food Assistance: Publicity and New Program Models

Discussants recommended more deliberate publicity of all services, for example food pantries. "*Food pantries are available for most anybody, but a lot of people don't know the process or the availability to get to it*" [Participant 31]. Word of mouth is the most common way of getting information. A challenge is that communities have lost local newspapers and other news outlets. Further, „*a lot of elderly can't afford to buy the paper*" [Participant 38] or acquire internet access. Internet may be unavailable in certain rural areas or too expensive (a rate of $10 per month was mentioned). *"Too much is on the internet„* [Participant 39], discussants said, recommending instead public service announcements on the radio and television.

Novel Programs. Discussants suggested creating novel program models to suit older adults' needs. These models included pop-up food stands at places where older adults already go or mobile pantry deliveries to these sites, more partnerships with medical providers, stocking healthy food in convenience and dollar stores (they mentioned fruit, salad, yogurt, and food that isn't fried), providing fresh produce and healthy snacks at events that serve refreshments, delivering group educational classes such as Dining with Diabetes,[79] and creating local Food Policy Councils.

Discussion

Our findings suggest that living alone paired with the variable functional and cognitive declines of aging can make procuring and preparing food challenging, especially for older adults in rural places.

Need for transportation

While two-thirds of U.S. drivers are still driving at age 70, most are not driving by age85.[80] Older rural drivers are twice as likely as older urban drivers to say that driving cessation will have a high impact on what they need to do.[81] Without public transportation, rural residents, and especially older adults who no longer drive, need a ride to the store or food assistancesite.[15] In our study, financial barriers such as difficulties paying others for rides or for food delivery services (which are not common in ruralareas[82]) rule out other ways of securing food where public transport is unavailable. In a study of Indiana's public transportation infrastructure, three of our four study counties are ranked as having the highest needs in the state and very low accessibility to goods and services.[25] In another study conducted in Indiana, 100% of rural food assistance agencies described local public transportation as nonexistent, versus 40% of urban agencies.[24] A review highlights how unmet transportation needs are associated with rural older adults' reduced access to food, services, medical care, as well as with lower likelihoods of participating in one's community and socializing.[21] These studies' findings converge with our own to indicate a need for ride-share services or other transportation interventions tailored to older adults in rural spaces,[10,81,83] and especially a need for transport to congregate meals. Even once-a-month transportation services could substantially assist rural older adults in meeting their basic needs and food security.[23] Transportation services will not only serve to increase food security for rural older adults but will also support their social interaction and community-building.[84]

Social networks: Critical to older adults' food security

Our study highlights two patterns linking rural older adults' food insecurity to their interactions with other people. On the one hand, discussants emphasized the risks of aloneness. Older adults who lived alone or who lacked social support, such as those whose family members have moved away or those who have lost congregate opportunities, were viewed as more likely to feel isolated, lonely, and be food insecure. Aloneness has been documented as a risk factor for poor nutrition and food insecurity among the elderly.[33,85,86]As other studies have found,[14,31,87] the older adults in this study who lived alone did not enjoy or desire shopping, cooking, or eating as much as they did when they had companions to share these experiences.

On the other hand, discussants frequently mentioned exchanges within their personal networks that supported their food security and provided them with meaning and relationships.[88] This set of findings is consistent with those of a nationally representative quantitative study of U.S. older adults, in which indicators of social and emotional support were protective against food insecurity.[89] To avoid food insecurity, older adults in our study relied on family, neighbors, and friends to exchange food, cook or eat together, and to share rides. Similar to other studies,[14,23,37] rural older adults' informal networks were an asset for their nutrition and an interactive life around food. For example, Morton and colleagues ,found higher levels in rural areas than urban of reciprocal exchanges of food among friends, family members, neighbors and other community members outside a formalized setting.[17] Informal networks are thus an asset for intervention models and clinical care to recognize. Since living alone was a risk factor for food insecurity, food security programs should incorporate opportunities for socializing and connecting, and clinicians should view rural older adults who live alone with particular care. One clinical approach would be to screen vulnerable patients for food insecurity, and to develop health services processes to refer them for food assistance, as we present next [Pooler, Hartline-Grafton, DeBor, Sudore, & Seligman, 2019;.[90,8–10]]

Congregate Meal Sites and the Potential for Clinical Referrals

Older adults emphasized the value of congregate meals for their nutritional and social lives. They lamented the one-third of public congregate meal services in this region that closed or reduced their level of service in 2019. Some of these meal sites also used to provide transportation to the meals. An absence of transportation is a gap in services that prevents participation in congregate meals.[90,91] Rural models for providing transportation to congregate meals are needed. The closure of meal sites and service reductions are in part attributable to states shifting priority to providing home-delivered meals to predominantly homebound adults.[34] As public congregate meal services erode, private local organizations continue to meals, but on afar less frequent basis than the Monday through Friday public meals. A nationwide evaluation of public meal sites found that patrons make good use of the meals, with 42% attending them five days per week, 83% attending for longer than a year, and evidence that rural patrons attend them the most frequently.[46,48] While some research has found a lack of evidence linking congregate meals to improved health,[45]Mabli and colleagues found that compared to non-participants, congregate meal participants ate statistically significantly more fruit, vegetables, dairy, and grains, and that these dietary improvements were even greater among low-income participants. This same study also emphasized the opportunity medical providers have to support their patients' nutrition security by referring them for congregate meals. Only one percent of congregate meal patrons in the national evaluation were referred to the meals by a medical provider.[46] Most patrons instead learned about congregate meals through their informal networks. This gap suggests an opportunity for medical providers to refer patients to congregate meals. Other research concurs, recommending that primary care providers and discharge coordinators refer to congregate meals [Pooler et al., 2019;[92].] Such a referral may simultaneously direct older adults to an effective intervention for food insecurity and bolster local numbers at the meals.

Limitations: Our research employed one qualitative data collection method. Its objective was thus exploratory and place based. We aimed to generate rather than confirm hypotheses during this first phase of a larger research project. A second limitation is that the findings reflect the pre-COVID-19 reality of 2019. Circumstances for the older adults and service providers we studied were soon disrupted. Yet the substance of this article remains as or more relevant now that a COVID-19 vaccine is widely available. Older adults' social and transportation networks continue to be critical to their food security. The value of congregate meal sites for older adults' nutrition, food security, and mental health will be perhaps even more apparent.

Conclusions

This study utilized focused discussion groups to collect perspectives from older adults and service providers on the navigation of food insecurity in rural Indiana. Discussants emphasized transportation difficulties faced by adults who no longer drive. Loneliness was also a common theme within conversations of food security barriers. In contrast, older adults' personal networks emerged as an instrumental resource in supporting their food security in numerous ways. We conclude and highlight congregate meal sites and senior centers as necessary infrastructure within these rural communities.

In terms of potential solutions, discussants called for rural institutions to establish private or public ride share services tailored to rural spaces, which presently do not exist in this region. Discussants also highlighted the value of the people in older adults' personal social networks in securing their access to food and nutrition, and the satisfaction of sharing shopping, cooking and eating with others. As a safeguard against aloneness, food insecurity, and linkages between them, there is a clear need to maintain and grow networks around older adults. Finally, discussants were clear that congregate meals nourish them in a range of ways, from nutritional to social, and are one way that older adults continue to derive meaning from food and eating routines.[93] We thus see the maintenance and expansion of senior citizen centers and congregate meal sites as central to older adults' wellbeing.[94]

Ethics approvals

This study was approved by the Indiana University Institutional Review Board, protocol #10322

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