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Submitted to the Coordinating Group of:

☐ Crime and Justice
☐ Education
☐ Disability
☒ International Development
☐ Nutrition
☒ Food Security
☐ Social Welfare
☐ Methods
☐ Knowledge Translation and Implementation
☐ Business and Management
☐ Other:

Plans to co-register:

☒ No
☐ Yes ☐ Cochrane ☐ Other
☐ Maybe

Date submitted: TBD
Date revision submitted: TBD
Approval date: TBD
Publication date: TBD
Background

As of 2018, 14.3 million households experienced food insecurity and 5.6 million households experienced very low food security at some time during the year in the United States. This census data was collected by the U.S. Department of Commerce, U.S. Census Bureau, 2018 Current Population Survey Food Security Supplement (Coleman-Jensen et al., 2019). This annual food security survey comprised a representative sample of 130 million households in the United States. The prevalence of food insecurity is thought to vary among these households with distinct demographic characteristics (race, ethnicity, income, area of residence, and geographic region). In 2018, the estimated rates of food insecurity were higher than the national average for Black non-Hispanic households (21.2%) and households with incomes below 185% of the federal poverty line (29.1%) (Coleman-Jensen et al., 2019).

In the United States, ethnic minority households often exhibit a greater risk of food insecurity, while African American households are estimated to be two to three times as likely to experience consistent food insecurity when compared to the general population (Kamdar et al., 2018; Laraia et al., 2009). A cross-sectional study, conducted in Baltimore, Maryland, recruited households from low-income, predominantly African American, neighbourhoods and found that the rate of food insecurity (41.6%) was 1.7 times that of households headed by Black individuals and three times the levels presented in the general U.S. population (Vedovato et al., 2015). These findings indicate that race is associated with food insecurity. African American populations have unique experiences and therefore the risk factors for food insecurity within this population may also be unique. Many individual- and group-level factors other than race have been investigated for an association with food insecurity. For example, group-level factors such as region (urban vs. rural) have been linked to the prevalence of food insecurity. Similarly, individual-level characteristics such as depression and obesity have been linked to the prevalence of food insecurity particularly among African Americans in the United States (Franklin et al., 2011; Meyers et al., 2019). Due to the increased of prevalence of food insecurity and its negative health outcomes, we propose to investigate factors that have been identified in the body of literature related to food insecurity within adult African American
populations. The results of this investigation will provide insights into understudied areas, which can inform future research. Further, the investigation will provide documentation where sufficient data are available to synthesize the research formally using systematic review methods to inform policy.

Current measures of food insecurity are diverse and often unclear when compared across the literature because some studies apply detailed questionnaires to measure food insecurity while others may refer to broad indicators based on hypothesized determinants presented in the literature (Jones et al., 2013). One of the most commonly used metrics is from the U.S. Department of Agriculture’s Economic Research Service which implements standardized questionnaires to measure food insecurity among households, adults, and children (ages 12 and older) in the United States. These questionnaires include the U.S. Household Food Security Survey Module (18 items), with Spanish and Chinese translation, the U.S. Adult Food Security Survey Module (10 items), the Six-Item Short Form of the Food Security Survey Module, the Self-Administered Food Security Module for Youths Ages 12 and Older, and the CPS Food Security Supplements Questionnaire (USDA, 2019). A few examples of non-USDA metrics include (1) the Food Insecurity Experience Scale (FIES), which serves as an experience-based food insecurity scale and contains four scales based on hunger and household access; (2) the Prevalence of Undernourishment (PoU) indicator, which is used to understand access to food in terms of dietary inadequacy; (3) the Household Dietary Diversity Score (HDDS), which collects household dietary diversity to serve as a proxy measure of household food access; and (4) the Food Consumption Score, which aggregates household-level data based on the diversity and frequency of food groups consumed over a period of time (FANTA, 2018; INDDEX Project, 2018).

One of the purposes of reviewing the literature is to identify sources of heterogeneity that might explain discordant findings. With food insecurity, the application of diverse food insecurity metrics might create differences in findings across studies that are attributable to varied measurements of the outcome of interest rather than differences in exposures. According to Ashby et al., “accurate measurement of food insecurity is imperative to understand the magnitude of the issue and to identify specific areas of need, in order to effectively tailor policies and interventions for its alleviation” (Ashby et al., 2016). For this reason, we will identify factors that have been evaluated for an
association with food insecurity and summarize the approaches to measuring food
insecurity among African American adults in the United States.

Objectives

The purpose of this scoping review is twofold. First, we propose to identify which
factors have been investigated for an association with food insecurity among African
Americans in the literature. Knowledge of these factors will help identify research gaps
and highlight areas for future research. Second, we intend to describe how food
insecurity is measured in studies that have evaluated food insecurity in African
American populations in the United States. By understanding the dimensions of food
insecurity considered by authors, we propose to understand and provide guidance
about approaches to the synthesis of results from studies about food insecurity. This
scoping review will identify current data gaps that exist in the literature and inform
current understandings of food insecurity. This scoping review is motivated by the
following questions:

- Which factors or characteristics have been evaluated in the literature for an
  association with food insecurity among African American adults in the United
  States?
- How is food insecurity defined and measured among individuals in this
  population?
- Which dimensions of food insecurity are captured by the food insecurity metrics
  employed by authors?

Methodology

The methodology for our scoping review is informed by the article, *Systematic Review
or Scoping Review? Guidance for Authors when Choosing between a Systematic or
Scoping Review Approach*, by Munn et al. (2018). This citation describes the key
differences between systematic reviews and scoping reviews to provide clear guidance
for when a scoping review is an appropriate tool for evidence synthesis. Scoping
reviews determine the scope or coverage of a body of literature on a given topic while
systematic reviews utilize explicit methods to synthesize study results, minimize bias,
and inform future research (Munn et al., 2018). The aims of scoping reviews are:
To identify the types of available evidence
To clarify key concepts and definitions in the literature
To examine how research is being conducted
To identify key characteristics related to a concept
To identify knowledge gaps
To serve as a precursor to a systematic review

Scoping reviews do not produce critically appraised or synthesized results for a given research question. Therefore, an assessment of the methodological limitations or risk of bias of the evidence included within a scoping review is not required (Munn et al., 2018). Most definitions of internal validity involve an evaluation of the methodological characteristics of the relevant study through its design and conduct to prevent systematic errors or bias. Studies with more sound methodological characteristics are often more likely to produce results that are closer to the true result, as they are less prone to bias or distortions from the true value (Ryan et al., 2013). Scoping reviews do not require the consideration of outcome data, unambiguous criteria for interventions and comparators, potential adverse effects, study quality, risk of bias, or supporting judgements presented in the literature.

Eligibility Criteria and Study Designs

The following published studies will be eligible for inclusion:

- Primary research studies with a concurrent comparison group, as our interest is in factors associated with food insecurity. Therefore, designs of interest are observational studies (cross-sectional, cohort, and case control) and randomized controlled trials; however, we expect none of the latter.
- Primary research studies that have evaluated factors between time periods (before and after). We do not intend to exclude intervention studies.
- Studies published in English after 1995. The rationale for this starting point is that the USDA began collecting data annually regarding food access, food spending, and sources of food assistance in the United States in 1995. Therefore, this regulatory activity represents a reasonable starting point for relevant studies.
Eligible Participants of Interest

The participants of studies relevant to this scoping review are native born Black or African American adults. We consider adults to be 18 to 64 years of age. Ineligible participants include non-African Americans, children (individuals 17 years of age or younger), elderly adults (65 years of age or older), individuals who reside in other countries, and Black immigrant or refugee populations. If a study contains a subset of a sample that matches our population of interest, we will include the subset of participants for this scoping review if the data about that population can be extracted.

One possible source of ambiguity in our study population is the definition of Black African American populations. To differentiate between these populations, the population of interest for this scoping review is based on the individual characteristics of study participants (race, ethnicity, and immigration status). The U.S. Census Bureau adheres to the 1997 Office of Management Budget (OMB) standards on race and ethnicity, which includes five race categories: Asian, Black or African American, Native Hawaiian or Pacific Islander, American Indian or Alaska Native, and White (U.S. Census Bureau, 2018). This classification scheme emphasizes the geographic region of an individual’s ancestry, but it does not address ethnicity which can include cultural tradition, common history, religion, and a shared genetic heritage (Burchard et al., 2003). This distinction between race and ethnicity is relevant to our scoping review because we intend to include study participants who identify as African American in the available literature using the U.S. Census Bureau definition.

Immigration status is another key factor that may impact the definition of the study population of interest. The U.S. Census Bureau defines native born population members as individuals who were born in the United States, Puerto Rico, a U.S. Island Area (Guam, the Commonwealth of the Northern Mariana Islands, and the U.S. Virginia Islands), or abroad to a U.S. citizen parent or parents. (U.S. Census Bureau, 2019). The term “foreign born” refers to all individuals born outside of the United States, which includes naturalized U.S. citizens, lawful permanent residents (immigrants), temporary migrants (foreign students), humanitarian migrants (refugees), and unauthorized migrants (U.S. Census Bureau, 2019). We will exclude foreign born Black and African adults from our eligible participants of interest. We will include studies that measure variables among study participants who identify as
“Black” Americans living in the United States even if the term “African American” is excluded from the text. The rationale for these exclusion criteria is that the issues related to food insecurity likely differ by age, ethnicity, race, and immigration status. Our scoping review is not intended to serve as a comparison of age, ethnicity, race, or immigration status but to investigate the single population of interest i.e., African American adults.

**Eligible Outcomes of Interest**

We anticipate that some authors may use the following terms to describe food insecurity: food availability, food accessibility, food utilization, food supply, food intake, undernourishment, food deprivation, hunger, malnutrition, and use of Food Assistance Programs. We will include these proxy variables of food insecurity (food availability, accessibility, and utilization) as outcomes of interest due to the variety of measures identified in the literature. For this review, our primary outcome of interest is food insecurity. Food insecurity is defined as “the limited or uncertain availability of nutritionally adequate and safe foods, or the limited or uncertain ability to acquire foods in socially acceptable ways” (USDA, 2019). In 2006, the USDA introduced new labels to describe varying levels of food insecurity that range from (1) high food security, no reported indications of food-access limitations, to (4) very low food security, reports of multiple indications of disrupted eating patterns and reduced food intake, with (2) marginal food security and (3) low food security serving as intermediate ranges (USDA, 2018).

**Eligible Exposures of Interest**

Our intention is to determine the risk factors that researchers are investigating related to food insecurity in our study population of interest. We acknowledge that risk factors or correlates of food insecurity identified in this review may have a null or protective association. Based on our preliminary search, we anticipate that exposure measures or risk factors for food insecurity may include individual characteristics such as age, gender (social), sex (biological), ethnicity, religion, socioeconomic status (SES), income, education, employment status, marital status, family structure (single- vs. multi- parent), number of dependents, ability or disability status, mental health status, fruit and vegetable intake, Body Mass Index (BMI), smoking status, chronic disease status, and access to care (child, elder, or other dependent). Additional factors of
interest may include group-level characteristics such as region, neighbourhood type, number of food stores near residence, residential infrastructure, car ownership, primary mode of transportation, and proximity to public transportation. Also, we will identify all exposure characteristics or risk factors for food insecurity and categorize these terms into three domains (availability, accessibility, and utilization) which are identified in the four hierarchical dimensions of food insecurity: food availability, food accessibility, food utilization, and food stability (FAO, 2008). According to Ashby et al. 2016, "food availability" refers to a reliable and consistent source of enough quality food for an active and healthy lifestyle. "Access" acknowledges the resources required in order to obtain and put food on the table; this could be economic or physical. "Utilization" refers to the intake of safe food and the human resources required to transform food into meals. "Stability" recognizes that food insecurity can be transitory, cyclical, or chronic (Ashby et al., 2016). Ultimately, food stability can be achieved when all three domains (availability, accessibility, and utilization) become sustainable over an extended period. For this reason, we will exclude this dimension from the categorization of individual-level and group-level exposure characteristics.

In addition to the categorization of risk factors into food insecurity dimensions, we will identify whether a risk factor appears to be a “cause” or “consequence” of food insecurity or “both.” For example, a study participant’s income could serve as a risk factor that increases their risk of experiencing food insecurity due to lack of food accessibility, while malnutrition could serve as a “consequence” of experiencing food insecurity. If a risk factor identified in the study serves as “consequence” of food insecurity, we will not categorize this term into the food insecurity dimensions for risk factors (availability, accessibility, and utilization). If the risk factor falls into either the “cause” category or “both”, we will categorize the risk factor based on the three food insecurity dimensions described above. For example, a study participant’s mental health status or “depression score” could serve as both a “cause” of food insecurity due to lack of food accessibility or it could serve as a “consequence” of experiencing food insecurity due to lack of food utilization. For this review, we are only interested in evaluating studies that assess the causes or risk factors of food insecurity or food insecurity proxy measures (food availability, accessibility, and utilization), where food insecurity serves as the outcome in the study. We are not interested in evaluating
studies that examine consequences of food insecurity, or where food insecurity serves as the exposure variable of interest.

**Existing scoping reviews**

Based on a preliminary search of the literature, there appear to be no existing scoping reviews or systematic reviews available that summarize factors investigated for an association within food insecurity in adult African American populations. We conducted a search through the Web of Science™ (Core Collection) to identify food security and food insecurity scoping reviews. The results of this search, which did not apply limits to languages, years, and document types, can be found in (Table 1).

Relevance screening was conducted by one author, (ED), who identified nine potentially relevant reviews (Figure 1) although upon evaluation of the full text none were duplicative of the proposed scoping review.

*Table 1: Preliminary Search for Existing Food Insecurity Scoping Reviews.*

<table>
<thead>
<tr>
<th>Set Number</th>
<th>Results</th>
<th>Search Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>139</td>
<td>#4 AND #1</td>
</tr>
<tr>
<td>4</td>
<td>31,641</td>
<td>#3 OR #2</td>
</tr>
<tr>
<td>3</td>
<td>27,681</td>
<td>(ts = “food security”)</td>
</tr>
<tr>
<td>2</td>
<td>7,481</td>
<td>(ts = “food insecurity”)</td>
</tr>
<tr>
<td>1</td>
<td>27,646</td>
<td>(ts = “scoping review”)</td>
</tr>
</tbody>
</table>
### Search Strategy and Methods

One author (ED) explored the literature to identify relevant key terms. After consulting with a librarian (NT), additional key terms were identified for the main concepts “food insecurity” and “African Americans” in Appendix A (Table 3). We did not limit the results to study methodology because this will result in missing relevant studies due to a large variety of terms used to describe study types; many authors also do not mention methodologies in title and abstracts. The search strategy was checked against the *PRESS Peer Review of Electronic Search Strategies Guidelines* (McGowan et al., 2016).

<table>
<thead>
<tr>
<th>No.</th>
<th>Reference</th>
<th>Title</th>
<th>DOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Schwartz et al. (2019)</td>
<td>Disability and food access and insecurity: A scoping review of the literature. DOI: 10.1016/j.healthplace.2019.03.011</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Maynard et al. (2019)</td>
<td>The Experience of Food Insecurity Among Immigrants: A Scoping Review. DOI: 10.1007/s12134-018-0613-x</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>De Marchis et al. (2019)</td>
<td>Identifying Food Insecurity in Health Care Settings: A Systematic Scoping Review of the Evidence. DOI: 10.1097/FCH.0000000000000208</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>McKay and Gahagan (2018)</td>
<td>Food Insecurity Among Older Adults in Canada and Considerations for Gendered Analysis: A Scoping Review. DOI: N/A</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Misselhorn and Hendriks (2017)</td>
<td>A Systematic Review of Sub-National Food Insecurity Research in South Africa: Missed Opportunities for Policy Insights. DOI: 10.1371/journal.pone.0182399</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Ashby et al. (2016)</td>
<td>Measurement of the Dimensions of Food Insecurity in Developed Countries: A Systematic Literature Review. DOI: 10.1017/S1368980016001166</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Morais et al. (2014)</td>
<td>Food Insecurity and Anthropometric, dietary and social indicators in Brazilian studies: A Systematic Review. DOI: 10.1590/1413-81232014195.13012013</td>
<td></td>
</tr>
</tbody>
</table>
On November 18, 2019 a comprehensive literature search for relevant studies was conducted using six databases: Pubmed (US National Library of Medicine), EBSCO databases (CINAHL Plus, MEDLINE, PsycINFO, Health Source: Nursing/Academic Edition), and Web of Science. Pubmed and MEDLINE (EBSCO) contain the same information but they differ in their search interfaces. To ensure that we capture the most evidence as possible, we changed the search strategies slightly. For example, Pubmed does not handle proximity searching and truncation is limited to the first 600 variations; Medline (EBSCO) interface allows (1) for greater flexibility in constructing the search strategy using proximity operators and truncation, and (2) for a better balance between precision and sensitivity of results (Duffy et al., 2016). Search strategies for each database and corresponding results are shown in Appendix B (Table 4; Table 5; Table 6). Results were restricted to publication year 1995-2019, English language, and peer reviewed publications. The rationale for this restriction is that the USDA began collecting data annually regarding food access, food spending, and sources of food assistance in the United States in 1995. Therefore, this regulatory activity represents a reasonable starting point for relevant studies. Reference lists of the included primary articles and retrieved systematic reviews will be examined to identify any relevant publications. DistillerSR software will be used for article screening and data extraction.

**Data Management**

Search results will be uploaded into Endnote Desktop and duplicate records will be removed. The total number of articles, number of duplicates, and number of eligible studies will be reported through PRISMA Flow chart.

**Study Selection Strategy**

Title/abstract and full-text screening for eligibility will be performed by two authors in a review management software program, DistillerSR®. All reviewers will receive training prior to the screening process using piloted forms and discussion until agreement about interpretation is reached. We propose to pilot the forms with at least 100 records. The proposed questions are as follows:
**Title and abstract screening:** Title/Abstract screening will be performed using the following questions, with response options “yes”, “no”, or “unclear”:

1. Is the title/abstract available in English?
   a. Yes, include and proceed to next question;
   b. No, exclude and specify language _____________

2. Is the primary research study describing food (in)security metrics among African American adults in the United States?
   a. Yes, include and proceed to full-text screening;
   b. No, exclude
   c. Unclear, proceed to full-text screening;

**Full-text screening:** Full-text screening will be performed using the following questions, with response options “yes” or “no”:

1. Is the full text available in English?
   a. Yes, include and proceed to next question;
   b. No, exclude and specify language _____________

2. Does the full-text article describe a primary research study?
   a. Yes, include and proceed to next question;
   b. No, exclude;

3. Does the full-text article include the population of interest (African American adults in the United States)?
   a. Yes, include/proceed to next question;
   b. No, exclude;

4. Does the full-text article evaluate individual/household food security?
   a. Yes, include and proceed to next question;
   b. No, exclude;

5. Does the full text evaluate food (in)security or potential metrics of food insecurity such as availability, supply, intake, deprivation, utilization, or use of Food Assistance Programs?
   a. Yes, include and proceed to next question;
   b. No, exclude;

6. Does the study design have a comparison group?
   a. Yes, include and proceed to next question;
b. No, exclude;

7. Does the study assess individual- or group-level factors associated with food insecurity?
   a. Yes, proceed to data extraction;
   b. No, exclude;

Relevant text publications will be acquired through available University of Maryland and Iowa State University library resources.

**Data Extraction Strategy**

The following information will be extracted from each study by two reviewers working independently.

1. **General Study Characteristics:**
   - Publication year

2. **Study Population:**
   - State and region (urban or rural) in which the population of interest resides
   - Age distribution of the population of interest
   - Number of participants of the population of interest in the study

3. **Study design**
   - **Observational Studies:**
     a. Case control: studies which enrol participants based on food insecurity status and then compare exposures measured concurrently or retrospectively.
     b. Cohort (or longitudinal): studies which enrol a population at risk of being food insecure and follow the participants over time to compare the risk of the outcome at the end of follow-up. Participants may be enrolled based on a particular risk factor or population-based approach.
     c. Cross-sectional: studies which enrol using a population-based approach at a single point. These studies determine the prevalence of food insecurity
at enrolment and then compare the prevalence of food insecurity for exposures measured concurrently or retrospectively.

d. **Controlled Before-and-After (CBAs):** studies that involve a single population, where a characteristic is changed at a single time point (either calendar or characteristics-based), then the prevalence of food insecurity is compared before and after the change. An example of this study design may include the prevalence of food insecurity before and after the introduction of a new bus service or supermarket in a neighbourhood. A characteristic-based event might be a study that looks at food insecurity in individuals before and after purchasing a car. In the bus example, the exposure happens at the same time on the calendar for all individuals; however, for the car example, the purchasing of the car is an individual event.

- **Ecological:** studies that investigate factors or exposures among members of an entire population, defined geographically or temporally, but do not determine a relationship or association between the exposure and outcome of interest. An example of this study design may include the proportion of households within a neighbourhood that experience food insecurity, but the association between a given households' access to supermarkets and the outcome are not evaluated.

- **Randomized controlled trials (RCT):** studies that randomly assign study participants to two or more groups, to reduce bias, and then measure or compare findings presented in each group. An example of this study design may include two groups of participants, one receiving weekly grocery deliveries from a local food bank and the other receiving none, that measure BMI and level of food insecurity at the start and conclusion of the study.
4. **Outcomes Investigated:** We will identify all metrics of food insecurity reported by the authors and extract the level at which the metric is calculated and the authors' exact definition of the food insecurity metric. The outcomes used by authors are of interest to our review and part of the discovery process; however, we anticipate that metrics of food insecurity will include the common metrics from agency groups such as the following:

- **USDA Metrics:**
  - the U.S. Household Food Security Survey Module
  - the U.S. Adult Food Security Survey Module
  - the Six-Item Short Form of the Food Security Survey Module
  - the Self-Administered Food Security Module for Youths Ages 12 and Older
  - the CPS Food Security Supplements Questionnaire

- **Non-USDA Metrics:**
  - the Food Insecurity Experience Scale (FIES)
  - the Prevalence of Undernourishment indicator (PoU)
  - the Household Dietary Diversity Score (HDDS)
  - the Food Consumption Score (FCS)

We also expect that some researchers will only report single metrics or unique combinations of single metrics rather than the standardized measures listed above. For example, some authors might ask “How often do you skip meals?” and use a threshold value as a single metric for food insecurity. These outcome metrics might then be used at the individual level to represent the experiences, behaviours, or conditions of an individual or a single household (Coleman-Jensen et al., 2019). Alternatively, these metrics might be aggregated to represent a group at the ecological or group level. For example, a study might report the proportion of households in a region that skip meals more than twice in one week or the proportion of households in a neighbourhood with a cut-off listed in the USDA 18-item questionnaire.

5. **Exposures Investigated:** We will extract all exposures investigated among adult African American populations identified in the literature. This report will identify factors that are investigated at the individual- and group-level. As this is a scoping review, and the goal of the review is to identify the diversity of
factors authors are investigating, we only intend to provide examples of what we might extract.

- **Individual-level**: examples might include age, gender (social), sex (biological), religion, socioeconomic status (SES), income, education, employment status, marital status, family structure (single- vs. multi-parent), number of dependents, ability, mental health status, Body Mass Index (BMI), smoking status, chronic disease status, car ownership, and access to care (child, elder, or other dependent).

- **Group-level**: examples might include region, neighbourhood type, number of food stores near residence, residential infrastructure, primary mode of transportation, and proximity to public transportation.

Table 2: Categorization of Risk Factors into Dimensions of Food Insecurity

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Availability</th>
<th>Accessibility</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region (urban/rural)</td>
<td>Age</td>
<td>Fruit and vegetable intake</td>
<td></td>
</tr>
<tr>
<td>Number of food stores near residence</td>
<td>Sex (biological) and Gender (social)</td>
<td>Use of food assistance programs</td>
<td></td>
</tr>
<tr>
<td>Residential infrastructure</td>
<td>Socioeconomic status (SES)</td>
<td>Use of food banks and pantries</td>
<td></td>
</tr>
<tr>
<td>No supermarket within 5 miles</td>
<td>Income and Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low supermarket density</td>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood type</td>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of dependents</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ability status</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Mental health status</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Body Mass Index (BMI)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Chronic disease status</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access to care</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Car ownership</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proximity to public transportation</td>
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</tbody>
</table>

For this review, we will identify potential risk factors of food insecurity and categorize them based on three of the four hierarchical dimensions of food insecurity: food availability, food accessibility, and food utilization (Ashby et al., 2016). In addition to the categorization of risk factors into these dimensions, we will identify whether a risk factor appears to be a “cause” and/or “consequence” of food insecurity in the literature. This information will enable us to comment on how comprehensively authors are
capturing factors associated with food insecurity in study populations and identify important gaps in the literature. Also, we intend to map these factors at the individual or group level. For example, income and car ownership are individual risk factors that could impact accessibility i.e., the food is available but not accessible due to income. At the group level, lack of public transportation and high crime rates could impact accessibility, while lack of supermarkets in one’s neighbourhood or area of residence is a group-level variable that could impact availability. We do not anticipate that each exposure will map to only one dimension. For example, a risk factor such as chronic disease might be considered to result in food insecurity due to both accessibility due to the inability to shop or utilization due to both accessibility and inability to prepare food.

We will also identify risk factors that appear to not fall into any of the three proposed domains of food insecurity. An example of the output is provided in Table 2.

**Critical appraisal**

As this is a scoping review, we will not conduct a critical appraisal of the literature.

**Results**

We will generate a summary of study characteristics, study designs, study population characteristics, exposures and outcomes investigated, food insecurity definitions, and food insecurity measures. Figures and tables will be used to report results of the scoping review. These figures will tabulate the frequency of areas of evaluation, study types, and the timeline of investigation. This scoping review will provide a synthesis of primary research investigating factors linked to food insecurity, how food insecurity is being measured among African American adults in the United States, and the domains of food insecurity investigated. Results from this review can be used to clarify key concepts and definitions linked to food insecurity, indicate how food insecurity research is being conducted, indicate how this outcome is being measured among African American adults, and present knowledge gaps that exist in the literature. By understanding the dimensions of food insecurity, we propose to understand and provide guidance about approaches to the synthesis of results from studies about food insecurity.
References


DOI:10.1017/S1368980015002888
Scoping Review authors

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- **Methodology**: Dr. Annette O'Connor and Dr. Elizabeth Kristjansson
- **Content**: Dr. Donna Winham
- **Search Methodology**: Nedelina Tchangalova
- **Review Team Lead**: Elizabeth Dennard
- **Information retrieval**: Elizabeth Dennard and Dr. Sarah Totton

Sources of Support

Elizabeth Dennard receives financial support through her ORISE fellowship in the Office of Applied Research and Safety Assessment with the FDA. The Oak Ridge Institute for Science and Education is managed by ORAU, a university consortium of PhD granting academic institutions and a 501(c)(3) non-profit corporation. The review team will receive support from Dr. Annette O'Connor, Dr. Sarah Totton, Nedelina Tchangalova, Dr. Donna Winham, and Dr. Elizabeth Kristjansson.

Declarations of Interest

We do not have any conflicts or declarations of interest that could impact the execution of this scoping review.

Plans for Updating the Review

Elizabeth Dennard will be responsible for updating the review at least once every 5 years as required by the Campbell Collaboration.
## Appendix A: Search Terms

*Table 3: Search Terms*

<table>
<thead>
<tr>
<th>Food insecurity related terms</th>
<th>Population</th>
<th>Limit to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>access to food</td>
<td>African American*</td>
<td>adults</td>
</tr>
<tr>
<td>dietary inadequacy</td>
<td>Black</td>
<td>adult</td>
</tr>
<tr>
<td>food access</td>
<td></td>
<td>aged</td>
</tr>
<tr>
<td>food accessibility</td>
<td></td>
<td>elderly</td>
</tr>
<tr>
<td>food afford*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food assistance</td>
<td></td>
<td>Age: 19-65</td>
</tr>
<tr>
<td>food availability</td>
<td></td>
<td>1995-2019</td>
</tr>
<tr>
<td>food choice</td>
<td></td>
<td>English</td>
</tr>
<tr>
<td>food consumption</td>
<td></td>
<td>Peer reviewed</td>
</tr>
<tr>
<td>food deprivation</td>
<td></td>
<td>United States</td>
</tr>
<tr>
<td>food desert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food hardship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food insecurity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food insufficien*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food intake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food poverty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food scarcity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food security</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food sufficien*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>food utilization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fruit and vegetable intake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hunger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>malnutrition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nutrition security</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nutritional status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>supermarket access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>undernourishment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Truncation was used at the end of the word in all databases except for Pubmed to retrieve all variations of terms. Double quotes were used to search for specific phrases. Terms were combined with Boolean logic commands (AND, OR) and proximity operators (N5) depending on the database feature availability.*
Appendix B: Search Strategies

Search performed across all databases: 11/18/2019

For the PRISMA Flow diagram: Records identified through database searching (n=3,796)

Table 4: Pubmed Search Strategy

<table>
<thead>
<tr>
<th>Search</th>
<th>Query</th>
<th>Items found</th>
</tr>
</thead>
<tbody>
<tr>
<td>#6</td>
<td>#5 Filters: Publication date from 1995/01/01 to 2019/12/31; English; Adult: 19+ years; Young Adult: 19-24 years; Adult: 19-44 years; Middle Aged + Aged: 45+ years; Middle Aged: 45-64 years</td>
<td>738</td>
</tr>
<tr>
<td>#5</td>
<td>#3 NOT #4</td>
<td>1,600</td>
</tr>
<tr>
<td>#4</td>
<td>&quot;Animals&quot;[Mesh] NOT (&quot;Animals&quot;[Mesh] AND &quot;Humans&quot;[Mesh])</td>
<td>4,639,963</td>
</tr>
<tr>
<td>#3</td>
<td>#1 AND #2</td>
<td>1,829</td>
</tr>
<tr>
<td>#2</td>
<td>(&quot;African Americans&quot;[Title/Abstract] OR &quot;African American&quot;[Title/Abstract] OR Black[Title/Abstract]) OR African Americans[MeSH Terms]</td>
<td>182,988</td>
</tr>
<tr>
<td>#1</td>
<td>&quot;food supply&quot;[MeSH Terms] OR &quot;access to food&quot;[Title/Abstract] OR &quot;dietary inadequacy&quot;[Title/Abstract] OR &quot;food access&quot;[Title/Abstract] OR &quot;food accessibility&quot;[Title/Abstract] OR &quot;food afford*&quot;[Title/Abstract] OR &quot;food assistance&quot;[Title/Abstract] OR &quot;food availability&quot;[Title/Abstract] OR &quot;food choice&quot;[Title/Abstract] OR &quot;food consumption&quot;[Title/Abstract] OR &quot;food deprivation&quot;[Title/Abstract] OR &quot;food desert&quot;[Title/Abstract] OR &quot;food hardship&quot;[Title/Abstract] OR &quot;food insecurity&quot;[Title/Abstract] OR &quot;food insufficien*&quot;[Title/Abstract] OR &quot;food intake&quot;[Title/Abstract] OR &quot;food poverty&quot;[Title/Abstract] OR &quot;food scarcity&quot;[Title/Abstract] OR &quot;food security&quot;[Title/Abstract] OR &quot;food sufficie*&quot;[Title/Abstract] OR &quot;food supply&quot;[Title/Abstract] OR &quot;food utilization&quot;[Title/Abstract] OR &quot;fruit&quot;[Title/Abstract] AND vegetable intake&quot;[Title/Abstract] OR &quot;fruit intake&quot;[Title/Abstract] OR &quot;vegetable intake&quot;[Title/Abstract] OR hunger[Title/Abstract] OR malnutrition[Title/Abstract] OR &quot;nutrition security&quot;[Title/Abstract] OR &quot;nutritional status&quot;[Title/Abstract] OR &quot;supermarket access&quot;[Title/Abstract] OR undernourishment[Title/Abstract]</td>
<td>151,265</td>
</tr>
</tbody>
</table>
Table 5: EBSCO Databases

<table>
<thead>
<tr>
<th>Databases</th>
<th>Limiters</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CINAHL Plus</td>
<td>1995-2019, English</td>
<td>1,091</td>
</tr>
<tr>
<td>MEDLINE</td>
<td>1995-2019, English, Peer reviewed</td>
<td>744</td>
</tr>
<tr>
<td>PsycINFO</td>
<td>1995-2019, English, Academic journals</td>
<td>498</td>
</tr>
<tr>
<td>Health Source: Nursing/Academic Edition</td>
<td>1995-2019, English, Peer reviewed</td>
<td>327</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>2,660</strong></td>
</tr>
</tbody>
</table>

**EBSCO Search strategy:**

( (dietary N5 inadequacy) OR (food N5 (access OR accessibility OR afford* OR assistance OR availability OR choice OR consumption OR deprivation OR desert OR hardship OR insecurity OR insufficien* OR intake OR poverty OR scarcity OR security OR sufficien* OR supply OR utilization)) OR ((fruit OR vegetable) N5 intake) OR hunger OR malnutrition OR "nutrition security" OR "nutritional status" OR (supermarket N5 access) OR undernourishment )

AND

( "African American*" OR Black* ) AND ( adults OR adult OR aged OR elderly )

Table 6: Web of Science Search Strategy

<table>
<thead>
<tr>
<th>Search</th>
<th>Query</th>
<th>Items found</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>(TI=(( &quot;access to food&quot; OR &quot;dietary inadequacy&quot; OR &quot;food access&quot; OR &quot;food accessibility&quot; OR &quot;food afford*&quot; OR &quot;food assistance&quot; OR &quot;food availability&quot; OR &quot;food choice&quot; OR &quot;food consumption&quot; OR &quot;food deprivation&quot; OR &quot;food desert&quot; OR &quot;food hardship&quot; OR &quot;food insecurity&quot; OR &quot;food insufficien*&quot; OR &quot;food intake&quot; OR &quot;food poverty&quot; OR &quot;food scarcity&quot; OR &quot;food security&quot; OR &quot;food sufficien*&quot; OR &quot;food supply&quot; OR &quot;food utilization&quot; OR &quot;fruit and vegetable intake&quot; OR &quot;fruit intake&quot; OR &quot;vegetable intake&quot; OR hunger OR malnutrition OR &quot;nutrition security&quot; OR &quot;nutritional status&quot; OR &quot;supermarket access&quot; OR undernourishment )) AND TS=(( &quot;African American*&quot; OR Black* ))) NOT SU=(&quot;Veterinary Sciences&quot; OR Agriculture OR Entomology OR Fisheries OR Forestry OR &quot;Plant Sciences&quot; OR Zoology))</td>
<td>398</td>
</tr>
</tbody>
</table>

**Limiters:**

LANGUAGE: (English)

DOCUMENT TYPES: (Article)