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## 1 **Review title**

2 Characteristics of food environments that influence food acquisition and diets of women in low-and  
3 middle-income countries: a scoping review protocol

## 4 **Abstract<level 1 heading>**

5 **Objective:** This scoping review aims to identify and map characteristics of food environments that  
6 influence food-acquisition practices and dietary intake of women of reproductive age in low- and  
7 middle-income countries.

8 **Introduction:** Due to the disproportionate burden of malnutrition on women of reproductive age in  
9 low- and middle-income countries, accelerated progress in improving women’s nutrition is required  
10 to achieve Sustainable Development Goal 2 “Zero hunger” by 2030. Food environments are  
11 increasingly recognized as the key interface between consumers and food systems; however, little is  
12 known about the characteristics that influence women’s food acquisition and diets in low- and  
13 middle-income countries, especially during physiological stages of heightened nutritional  
14 requirement, such as pre-conception, pregnancy, and breastfeeding.

15 **Inclusion criteria:** This review will consider quantitative, qualitative, mixed method, or review  
16 studies that report on the influence of food environment characteristics on food-acquisition  
17 practices and dietary intakes of women aged 15 to 49 years in any low- and middle-income country,  
18 as defined by the World Bank in 2021. Studies published in English, Spanish, Portuguese, or French  
19 from January 2010 onwards will be included.

20 **Methods:** Twenty-one databases across EBSCO, Web of Science Core Collection, and PubMed will be  
21 searched. Screening, selection, and data extraction will be performed in duplicate by 2 members of  
22 the team, with any discrepancies resolved by group discussion. The patterns of food-acquisition and  
23 dietary intake in relation to food environment characteristics will be charted, mapped, and  
24 summarized in tabular and graphical formats. Findings will inform the refinement of effective food  
25 environment conceptual frameworks for this nutritionally vulnerable group.

26 **Keywords:** diets; food environments; knowledge synthesis; low- and middle-income countries;  
27 women of reproductive age

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28 **Abstract word count:** 241

29 **Total manuscript word count:** 2520.

30 **Introduction<level 1 heading>**

31 Food environments that support healthy diets, a fundamental cornerstone of any individual's health,  
32 are critical for women of reproductive age (WRA) because inadequate nutrition affects not only a  
33 woman's own health across their life course,<sup>1</sup> but also the health, growth, and development of her  
34 children in utero and during breastfeeding.<sup>2</sup> At a biological level, WRA (15 to 49 years) are  
35 nutritionally vulnerable due to heightened nutrient requirements per unit of body mass compared  
36 with men and other age groups, especially during menstruation (pre-conception), pregnancy, and  
37 breastfeeding.<sup>2</sup> These inherent biological vulnerabilities are often exacerbated at the social level by  
38 lower social status and cultural norms, which limit access to sufficient nutrient-dense food,  
39 sanitation, and health care.<sup>3</sup>

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41 High rates of all forms of malnutrition (undernutrition, micronutrient deficiencies, and overnutrition)  
42 persist in women in low- and middle-income countries (LMICs). In 2019, 30% of WRA worldwide  
43 were affected by anemia, with rates in Africa, Oceania, and Asia (39%, 34%, and 33%, respectively)  
44 more than twice as high as in North America and Europe (15%).<sup>4</sup> The monotonous diets based on  
45 cereals, roots, and other starchy staple foods often consumed by women in LMICs result in low  
46 dietary diversity and inadequate micronutrient intake, especially among pregnant and lactating  
47 women.<sup>5</sup> A recent study conducted in 4 LMICs from Africa, Asia, and Latin America found that over  
48 80% of pregnant women in the Democratic Republic of the Congo, Guatemala, India, and Pakistan  
49 were at risk of inadequate intakes of folate, vitamin B12, and choline.<sup>6</sup> Subsequent malnutrition  
50 undermines the ability of women to live active, healthy lives. It is associated with greater maternal  
51 morbidity and mortality,<sup>3</sup> increased susceptibility to infections and prolonged recovery time from  
52 illness,<sup>7</sup> and reductions in cognition and economic productivity.<sup>8</sup>

53 The food environment is the interface that influences people's acquisition of food from the wider  
54 food system.<sup>9,10</sup> Urbanization, globalization, and income growth are driving food environment  
55 transformations and associated nutrition transitions. The resulting changes in food-acquisition  
56 practices and dietary intake are characterized by a shift towards increased consumption of highly  
57 processed foods, which are often low in micronutrients and high in energy, increasing the  
58 prevalence of diet-related chronic diseases among women, alongside a persistent burden of

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59 micronutrient deficiencies.<sup>11</sup> This “doubles” the health burden on WRA in LMICs, increases pressure  
60 on under-developed health systems, and hinders economic development due to ill-health and  
61 premature death.<sup>11</sup> Moreover, the mobility restrictions and economic fallout of the COVID-19  
62 pandemic has pushed an additional 320 million people into food insecurity, with women more than  
63 10% more likely to struggle to acquire a healthy diet compared with men.<sup>4,12</sup> Before the COVID-19  
64 pandemic, the world was not on track to meet the Sustainable Development Goals (SDGs) by 2030.  
65 Thus, accelerated progress on improving women’s ability to acquire and consume a healthy diet is  
66 required to achieve the SDGs for “Zero hunger,” “Good health and wellbeing,” “Gender equality,”  
67 and “Sustainable food production and consumption.”

68 Despite the scale of the nutrition challenge in LMICs, a comprehensive understanding of  
69 characteristics that influence women’s food acquisition and diet is lacking, especially during  
70 nutritionally challenging physiological stages<sup>9,10</sup> and in LMICs.<sup>4,5,16,13,14</sup> The majority of food  
71 environment research has been concentrated on formal markets in high-income countries. This has  
72 resulted in a limited understanding of how food environments influence food-acquisition practices  
73 and diets in LMICs,<sup>4,3,14,15,16</sup> particularly for women in rural or peri-urban contexts, who often acquire  
74 food from varied sources, including home production, non-cultivated or wild sources, and both  
75 formal and informal markets.<sup>9,4,3,14,15,16</sup> Although explicit food environment evidence is sparse in  
76 LMICs, available evidence highlights the influence of community-level availability and accessibility of  
77 food on nutrition and health.<sup>17,18</sup> Emerging primary evidence also characterizes food environment  
78 aspects associated with food-acquisition practices in LMICs.<sup>4,6,14</sup>

79 In recent years, progress has been made in conceptualizing and standardizing food environment  
80 definitions and frameworks.<sup>9,10,4,3,14,15,16,19,20</sup> However, the factors that influence intra-household food  
81 access and contribute to variation between the diets of different household members (such as  
82 gender dynamics<sup>4,6,14</sup>) are not directly articulated in most food environment frameworks, impairing  
83 progress on targeted actions within food environments to support healthy diets for WRA. Turner et  
84 al.<sup>9</sup> define the food environment as comprising 2 inter-related domains (the external and personal)  
85 that share a set of physical, economic, and sociocultural dimensions. The recent food environment  
86 typology by Downs et al.<sup>4,3,15</sup> outlines the importance of foods that are socially, economically, and  
87 environmentally sustainable. Herforth and Ahmed,<sup>4,4,16</sup> Turner et al.,<sup>9</sup> and Raza et al.<sup>20</sup> include  
88 personal food environment factors, while Swinburn et al.,<sup>19</sup> HLPE,<sup>10</sup> and Downs et al.<sup>4,3,15</sup> emphasize  
89 external factors. Raza et al.<sup>20</sup> consider the food environment characteristics that influence child and  
90 adolescent nutrition. Despite this breadth of perspectives, there is no published framework that

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91 includes characteristics unique to women’s food acquisition and dietary intake in LMICs, which differ  
92 to those of other population groups due to cultural norms and lower social status.<sup>3</sup>

93 To address malnutrition in LMICs, we require increased understanding of the key drivers of food  
94 acquisition practices and dietary intake, especially in nutritionally vulnerable groups.<sup>4,5,13,15</sup>

95 Therefore, the aim of this scoping review is to identify and synthesize the available evidence on food  
96 environment characteristics that influence the food-acquisition practices and dietary intake of WRA  
97 in LMICs. This review is intended to inform the development of a comprehensive conceptual map of  
98 food environments of WRA in LMICs. The research questions of this review align with five of the six  
99 scoping review indications<sup>24</sup>, confirming a scoping review to be the most appropriate method to  
100 answer these objectives.

101  
102 A preliminary search of the Cochrane Database of Systematic Reviews, *JB* Evidence Synthesis,  
103 PROSPERO, Campbell Collection, and Open Science Framework was conducted and no current or  
104 planned systematic reviews or scoping reviews on the topic were identified. One review on food  
105 environments and nutrition and health outcomes in LMICs is in progress, focusing on school-aged  
106 children and adolescents (5 to 19 years).<sup>25</sup> Our study is differentiated from that study by its focus on  
107 WRA and food-acquisition practices and diets. Our examples of food environment characteristics  
108 (Table 1) are a starting point based on current food environment dialogues.<sup>9,10,12,14,15,15,19,20,26</sup> This  
109 review aims to inductively identify other characteristics pertinent to food acquisition and dietary  
110 intake of WRA in both rural and urban settings. This contrasts with the approach of Westbury et  
111 al.,<sup>18</sup> which deductively synthesized associations between interventions in food environments and  
112 nutrition and health outcomes of urban populations.

113 **<insert Table 1 here>**

114 Food environment research in LMICs is in its infancy, especially research that considers food access  
115 for rural and peri-urban populations and how these are impacted by external drivers and nutrition  
116 transitions.<sup>12,45,13,16,21</sup> Our review seeks to refine and enhance understanding of food environment  
117 characteristics by synthesizing multidisciplinary evidence of factors that influence WRA’s food  
118 acquisition and dietary intake in different contexts.<sup>22</sup>

## 119 **Review questions<level 1 heading>**

- 120 i. What evidence exists on characteristics of the food environment that influence the food-  
121 acquisition practices and dietary intake of WRA in LMICs?

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- 122 ii. How are food environment characteristics conceptualized, operationalized, and analyzed in  
123 the literature?
- 124 iii. How are food environment characteristics associated with food-acquisition practices and  
125 dietary intake?

126 **Inclusion criteria<level 1 heading>**

127 As per scoping review guidelines, the research questions and inclusion and exclusion criteria were  
128 formulated according to the PCC tool for scoping reviews (Table 2).<sup>27</sup>

129 *Participants<level 2 heading>*

130 This review will encompass studies that include pregnant women, lactating women, and non-  
131 pregnant and non-lactating WRA (15 to 49 years) as the population of interest, as defined by the  
132 World Health Organization for LMICs. All studies that present data for female participants, including  
133 those of the female sex or participants that identify as female gender (eg, transgender), will be  
134 considered. Quantitative studies that include sexes/genders other than female will be retained if the  
135 data are disaggregated by sex/gender. If a quantitative study contains females outside of the target  
136 age range, the study will be retained if the female data are disaggregated by age (ie, enabling  
137 extraction of data for the target population) and/or if the proportion of the females outside of the  
138 target age range is less than 10% of the total sample size. For qualitative studies, the study will be  
139 retained if WRA participated (eg, in a focus group discussion or interview). Qualitative studies that  
140 only interview other sexes/genders or age groups (eg, only male key informant interviews or women  
141 older than 50 years) will be excluded.

142 *Concept<level 2 heading>*

143 This review will consider studies that describe at least one food environment characteristic and  
144 report on its influence on at least one food-acquisition practice or dietary intake measure for WRA  
145 (see the examples in Table 1 based on current food environment framework  
146 dialogues).<sup>9,10,13,14,15,16,19,20,21,26</sup> We will exclude studies that do not report specifically on outcomes for  
147 WRA, including those which report on outcomes at a household level. We will not extract data  
148 relating to the influence of food environment characteristics on other outcomes, such as health or  
149 nutritional status.

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150 *Contexts<level 2 heading>*

151 This review will consider studies conducted in any LMIC as defined by the World Bank for the fiscal  
152 year 2021.<sup>28</sup> If a study includes both LMICs and high-income countries, then the study will only be  
153 retained if the data for LMICs is disaggregated, enabling data extraction for the countries of interest.

154 *Types of studies<level 2 heading>*

155 This scoping review will consider quantitative, qualitative, and mixed method study designs. In  
156 addition, reviews that meet the inclusion criteria will also be considered, depending on the research  
157 question. Gray literature (eg, unpublished literature, opinion pieces, conference proceedings or  
158 abstracts, and books) will be excluded due to resource limitations.

159 *<insert Table 2 here>*

160 **Methods<level 1 heading>**

161 The proposed scoping review will be conducted in accordance with the JBI methodology for scoping  
162 reviews<sup>22, 27</sup> and Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for  
163 Scoping Reviews (PRISMA-ScR).<sup>23</sup>

164 *Search strategy<level 2 heading>*

165 Recent food environment reviews have focused on studies that explicitly apply food environment  
166 concepts, and have synthesized findings deductively, using existing food environment  
167 frameworks.<sup>45,13,18</sup> In contrast, we will employ wide search criteria to capture all articles reporting on  
168 women's food acquisition and dietary intake to inductively identify food environment characteristics  
169 represented. By employing a "wide net" approach in our search strategy, this review aims to identify  
170 all pertinent food environment characteristics, especially in low-income countries where explicit  
171 food environment research is less common.<sup>45,13</sup>

172 An academic librarian (MS) guided the selection of databases, and the development and refinement  
173 of the search criteria. The search strategy aims to locate published articles in peer-reviewed journals,  
174 utilizing a 3-step strategy. An initial limited search of Web of Science Core Collection was undertaken  
175 to identify articles on the topic. The text contained in the titles and abstracts of relevant articles, and  
176 the index terms used to describe the articles were used to develop a full search strategy for Web of  
177 Science Core Collection (see Appendix I). This search strategy will be adapted for each included

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178 database and information source under the guidance of an academic librarian. Finally, the reference  
179 list of all included sources of evidence will be screened for additional studies. The search will include  
180 6 databases from the Web of Science Core Collection (Science Citation Index, Social Sciences Citation  
181 Index, Arts & Humanities Citation Index, Emerging Sources Citation Index, Index Chemicus, and  
182 Current Chemical Reactions), 14 databases from EBSCO (Academic Search Premier; APA PsycArticles;  
183 APA PsycINFO; Business Source Premier; CINAHL; Education Research Complete; GreenFILE;  
184 Humanities International Complete; Library, Information Science and Technology Abstracts [LISTA];  
185 MEDLINE; Psychology and Behavioral Sciences Collection; Regional Business News; SportDISCUS; and  
186 Teacher Reference Center), as well as PubMed.

187 Our search syntax will not impose limits based on language; however, studies in languages other  
188 than English, French, Portuguese, or Spanish will be excluded during the screening phase due to  
189 resource constraints. We will report on the number of studies excluded based on language, and  
190 preliminary search results indicate that these will be very few. Each study will be assessed by  
191 members of the team who are fluent in the relevant language. Due to the evolving nature of food  
192 environment characteristics in LMICs related to globalization, urbanization, and changing  
193 agroecological systems,<sup>9,10,13,15</sup> the search strategy will be limited to studies published between  
194 January 1, 2010, and the present.

## 195 *Study selection<level 2 heading>*

196 Following the search, all identified citations will be collated and uploaded into Mendeley V1.19.4  
197 (Mendeley Ltd., Elsevier, Netherlands) and duplicates removed. Following a pilot test, titles and  
198 abstracts will be screened in duplicate by 2 members of the team for assessment against the  
199 inclusion criteria using a screening tool that will be iteratively adjusted by the team. Potentially  
200 relevant sources will be retrieved in full and their citation details imported into Mendeley. The full  
201 text of selected citations will be assessed in detail and in duplicate against the inclusion criteria.  
202 Reasons for exclusion of sources that do not meet the inclusion criteria will be recorded and  
203 reported in the scoping review. Any disagreements that arise between the reviewers will be resolved  
204 through discussion. The results of the search and the study-inclusion process will be reported in full  
205 in the final scoping review and presented in a PRISMA flow diagram.<sup>29</sup>

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206 *Data extraction<level 2 heading>*

207 Data will be extracted in duplicate by 2 members of the team using quantitative and qualitative data  
208 extraction tools iteratively developed by the reviewers in collaboration with the wider team (see  
209 Appendix II). The data extracted will include specific details about the participants, concept, context,  
210 study design, methods, and key findings relevant to the review questions. The 2 data extraction tools  
211 will be iteratively modified and revised as necessary during the process of extracting data from each  
212 included evidence source. Modifications will be detailed in the scoping review. Any disagreements  
213 will be resolved through group discussion.

214

215 Risk of bias assessment of the literature will not be conducted because it is not recommended for  
216 scoping reviews that aim to provide descriptive statistics and evidence maps of the breadth and  
217 depth of research conducted on a concept.<sup>27</sup>

218 *Data synthesis<level 2 heading>*

219 Data will be analyzed and presented according to the PRISMA-ScR guidelines.<sup>23</sup> Descriptive statistics  
220 will be used to present quantitative data, including percentages and frequency counts relevant to  
221 the research categories and questions. For qualitative results, content analysis between and within  
222 studies will be used to identify key characteristics. Data will be presented in tabulated format, along  
223 with a narrative summary that aligns the data to the review questions and highlights gaps in the  
224 literature.

225 Factors influencing food-acquisition practices and dietary intake for WRA will be mapped against  
226 dimensions of existing food environment frameworks, and will be used to identify novel dimensions  
227 that may not be represented in current frameworks. This definition of dimensions of the food  
228 environment, based on a comprehensive exploration of the literature on women's food acquisition  
229 and intake in LMICs, will be a key contribution of this study.<sup>9,13,14,15,16,20</sup> We will identify opportunities  
230 to expand existing frameworks based on the emerging evidence for this target population. We aim  
231 to contribute to the food environment conceptual discourse by highlighting key food environment  
232 characteristics of importance for nutritionally vulnerable populations, specifically WRA in LMICs.  
233 Where appropriate, a diagram or framework may be constructed to visually present the links  
234 between food environment characteristics and WRA's food acquisition and dietary intake.



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241 **Author contributions<level 1 heading>**

242 LO, JdB, CT, KW, PDS, EF conceptualized the project. LO, JdB, CT, PDS contributed to the  
243 methodology and designing of the analysis. LO, MS, JdB contributed to the search criteria. LO, TH,  
244 JdB, PDS performed the preliminary screening of studies. LO wrote the original draft, while LO, JdB,  
245 PDS, EF, CT, MS, KW contributed to writing and editing the manuscript. All authors have read and  
246 agreed to the published version of the manuscript.  
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320 **Appendix I: Search strategy <level 1 heading>**

321 *Web of Science Core Collection<level 2 heading>*

322 Date searched: October 19, 2022

323

324 **Search criteria:**

325 (TS=(*"diet\* divers\*" OR "diverse diet\*" OR "diet\* diversification" OR micronutrient\* OR "micronutrient intake\*" OR "diet\**  
326 *quality" OR "diet\* outcome\*" OR "diet\* intake\*" OR "nutrition\* adequacy" OR "vitamin A deficien\*" OR "nutrition\**  
327 *deficien\*" OR "vitamin deficien\*" OR "vitamin D deficien\*" OR "mineral deficien\*" OR "iron deficien\*" OR "b12 deficien\*"*  
328 *OR "B vitamin deficien\*" OR "calcium deficien\*" OR "zinc deficien\*" OR "protein deficien\*" OR "fat deficien\*" OR "iodine*  
329 *deficien\*" OR "food acqui\*" OR "food choice\*" OR "food consum\*" OR "food habit\*" OR "food purch\*")*

330

331 AND TS=(*"high calorie food\*" OR "food environment\*" OR "food desert\*" OR "food swamp\*" OR "obesogenic*  
332 *environment\*" OR "nutrition\* environment\*" OR "food system\*" OR "food avail\*" OR {available food} OR "food*  
333 *secur\*" OR "nutrition secur\*" OR "food vendor\*" OR "food outlet\*" OR "food product\*" OR market\* OR "wild food\*" OR*  
334 *"food produc\*" OR "own production" OR "crop production diversity" OR "farm divers\*" OR "agricultur\* divers\*" OR "crop*  
335 *spec\* rich\*" OR "livestock owner\*" OR "animal-source\* food\*" OR ASF OR ocean\* OR coast\* OR fisher\* OR forest\* OR*  
336 *forag\* OR "street food\*" OR "home\* garden\*" OR "homestead produc\*" OR price\* OR "food price\*" OR {price of food} OR*  
337 *"food value\*" OR {value of food} OR {monetary value of food} OR "vendor\* propert\*" OR "product\* propert\*" OR "open\**  
338 *hour\*" OR "vendor\* servic\*" OR "vendor\* typolog\*" OR "food\* qual\*" OR "food\* composition\*" OR "food\* process\*" OR*  
339 *"shelf-life" OR "food\* packag\*" OR "food regul\*" OR "food\* promot\*" OR "promot\* info\*" OR "nutr\* info\*" OR "nutr\**  
340 *promot\*" OR brand\* OR advertis\* OR sponsor\* OR "food\* label\*" OR "food\* polic\*" OR {access to food} OR "food*  
341 *access\*" OR "distance NEAR/5 food" OR "distance NEAR/5 market\*" OR "distance NEAR/5 fisher\*" OR "proximity NEAR/5*  
342 *market\*" OR "proximity NEAR/5 fisher\*" OR "proximity NEAR/5 forest\*" OR "vendor access\*" OR {access\* to vendor\*} OR*  
343 *"physical distance\*" OR "activity space\*" OR mobility OR transport OR {mode of transport} OR "food afford\*" OR*  
344 *"purchas\* power NEAR/5 food" OR "food expenditure\*" OR "buying power" OR {expenditure on food} OR "food allow\*"*  
345 *OR {cost of food} OR "time use" OR "time allocation" OR "food litera\*" OR "prepar\* food" OR "food preparation" OR*  
346 *{preparation of food} OR cook\* OR "food consumption" OR {consumption of food} OR {desirability of food} OR "food*  
347 *desir\*" OR "food preference\*" OR {preference of food} OR "food knowledge" OR "food skill\*" OR "food choice\*" OR*  
348 *"sustainable agriculture" OR "environmental\* sustain\*" OR biodivers\* OR agrobiodivers\* OR "environment\* footprint" OR*  
349 *"carbon footprint\*" OR "climate resilien\*" OR "nutrition\* qual\*" OR "nutrient-dense food\*" OR "crop qual\*" OR "seasonal*  
350 *food\*" OR "sustainable supply chain\*" OR "sustainable food package\*" OR "local food system\*" OR "local supply chain\*"*  
351 *OR "food accept\*" OR "food culture\*" OR "traditional food knowledge" OR "traditional food\*" OR "cultural food\*" OR*  
352 *"prestige food\*" OR "food prestige" OR "food taboo\*" OR "price elasticity" OR "price elasticities" OR "social capital" OR*  
353 *"social network\*")*

354

355 AND TS=(*LIC\* OR "low income econom\*" OR "low income countr\*" OR LMIC\* OR "lower middle income countr\*" OR "low*  
356 *and middle income countr\*" OR "upper middle income econom\*" OR "upper middle income countr\*" OR "develop\**  
357 *countr\*" OR "develop\* econom\*" OR "global South" OR "Sub-sahara\* Africa\*" OR Pacific OR "Pacific Island\*" OR*  
358 *Afghanistan OR Benin OR {Burkina Faso} OR Burundi OR {Central African Republic} OR Chad OR Comoros OR {Democratic*  
359 *Republic of Congo} OR Eritrea OR Ethiopia OR Gambia OR Guinea OR "Guinea Bissau" OR Haiti OR Korea OR Liberia OR*  
360 *Madagascar OR Malawi OR Mali OR Mozambique OR Nepal OR Niger OR Rwanda OR Senegal OR {Sierra Leone} OR Somalia*  
361 *OR {South Sudan} OR Tanzania OR Togo OR Uganda OR Zimbabwe OR Angola OR Armenia OR Bangladesh OR Bhutan OR*  
362 *Bolivia OR {Cabo Verde} OR Cambodia OR Cameroon OR Congo OR Djibouti OR Egypt OR {Ivory Coast} OR "Cote d ivoire"*  
363 *OR {El Salvador} OR Georgia OR Ghana OR Guatemala OR Honduras OR India OR Indonesia OR Jordan OR Kenya OR Kiribati*  
364 *OR Kosovo OR {Kyrgyz Republic} OR Lao OR Lesotho OR Mauritania OR Micronesia OR Moldova OR Mongolia OR Morocco*  
365 *OR Myanmar OR Nicaragua OR Nigeria OR Pakistan OR {Papua New Guinea} OR Philippines OR {Sao Tome Principe} OR*  
366 *{Solomon Islands} OR {Sri Lanka} OR Sudan OR {Syrian Arab Republic} OR Syria OR {Syrian Arab Republic} Tajikistan OR*  
367 *"Timor Leste" OR Tunisia OR Ukraine OR Uzbekistan OR Vanuatu OR Vietnam OR {West Bank Gaza} OR Yemen OR Zambia*  
368 *OR Albania OR Algeria OR {American Samoa} OR Argentina OR Azerbaijan OR Belarus OR Belize OR {Bosnia Herzegovina} OR*  
369 *Botswana OR Brazil OR Bulgaria OR China OR Colombia OR {Costa Rica} OR Croatia OR Cuba OR Dominica OR {Dominican*  
370 *Republic} OR Ecuador OR {Equatorial Guinea} OR Fiji OR Gabon OR Grenada OR Guyana OR Iran OR Iraq OR Jamaica OR*  
371 *Kazakhstan OR Lebanon OR Libya OR Macedonia OR FYR OR FYROM OR Malaysia OR Maldives OR {Marshall Islands} OR*  
372 *Mauritius OR Mexico OR Montenegro OR Namibia OR Panama OR Paraguay OR Peru OR Romania OR {Russian Federation}*

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373 OR Russia OR {Russian Federation} Samoa OR Serbia OR {South Africa} OR {St. Lucia} OR {St Lucia} OR {St. Vincent  
374 Grenadines} OR {St Vincent Grenadines} OR Suriname OR Thailand OR Tonga OR Turkey OR Turkmenistan OR Tuvalu OR  
375 Venezuela OR Swaziland OR Eswatini)  
376 AND TS=(women OR woman OR {women reproductive age} OR WRA OR mother\*)  
377 Restricted to articles and review articles published between January 1, 2010, and July 31, 2022.  
378 Records retrieved: 3014  
379

380 **Appendix II: Draft data extraction instrument<level 1 heading>**

381 *Table 1: Draft data charting form<level 2 heading>*

<b>Article information</b>	
Unique article ID	
Author	
Year of publication	
Country	
Region	
Setting	Rural/urban/peri-urban
Aims/objectives	
Study design	
Methods of data collection	
Sampling strategy	
Data analysis	
<b>Description of participants</b>	
Sample size	
Area of origin	
Age	
Setting	
Category of WRA	
<b>Key findings</b>	
Food-acquisition practices	
Dietary intake	
Food environment characteristics	

382 WRA, women of reproductive age

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383 *Table 2: Themes and quotations from qualitative studies<level 2 heading>*

<b>Themes</b>	<b>Quotations from articles</b>
Eg, Theme 1	Eg, "quote 1" [Author, year]

384