Introduction

Food environment highly influences healthy dietary behaviors and health outcomes (1). Food environment takes into account the availability, accessibility, and affordability of healthy foods and beverages, along with exposure to calorie-dense, nutrient-poor foods, and beverages (2). Over the last 10 years, evidence has been mounting which...
Community participation in food environment policymaking

demonstrates associations between diet-related health disparities and food environment (3). Thus, a healthier food environment supports making healthier choices (4, 5).

In the neighborhood environment with limited access to healthy foods and increased access to fast-food outlets and convenience stores, the prevalence of obesity is high (6-11). The 2010 US Dietary Guidelines proposed that for facilitating individual healthy nutrition behaviors, food environment should be enhanced (12). Therefore, putting food environment improvement on the political agenda is an inevitable necessity.

Community-based participatory research (CBPR) has emerged in recent decades as a powerful approach for building healthy communities and promoting health by linking place-based work and policy (13). Equitable involvement of the community acts as a powerful method in decreasing health disparities, including diet-related health disparities (14). Community engagement can facilitate change in the food environment (15). Foster-Fishman et al. reviewed integrative models and developed a framework to increase the capacity of community participation in community coalitions to facilitate their success. Four levels of community participation capacities were included (relational capacity, member capacity, programmatic capacity, and organizational capacity) that needed strategies to build and increase these levels.

A number of CBPR studies have been conducted to involve the community to tackle food environment problems (16-18). However, how participation capacity can be strengthened and fostered in a food environment policymaking has remained a challenge. The objective of this scoping review is to examine and map the literature and identify key strategies used for increasing community participation capacity in the food environment policymaking process based on Foster-Fishman et al. framework. The results of this study will inform future researchers to assess the effectiveness of retrieved strategies to ensure their success in the field. In contrast to a systematic review, a scoping review is less likely to address very specific research questions (19).

Methods

A scoping review was done to obtain peer-reviewed articles on community participation and food environment policymaking. The review followed the framework suggested by Arksey and O’Malley (2005) who outlined 5 steps: identifying the study questions, finding relevant research, selection of studies, charting the data, summarizing, and reporting results (20). The primary question was “Which strategies have been used for increasing community participation capacity in the food environment policymaking process?”

Search strategy

To identify relevant records, databases and the reference lists of relevant literatures were searched. A search strategy was developed iteratively and piloted using PubMed. To choose appropriate key terms, the title, abstracts, and key words of 10 retrieved relevant original or review articles were assessed and the synonyms of core concepts were determined. Then, Scopus, PubMed and Web of Science were searched using a combination of refined set of search terms: (community participat* OR community engag* OR participatory action research OR community based participat*) AND (food access* OR food availab* OR food affordab* OR food environment) to find peer-reviewed articles published up to 2018 in English (Appendix 1: Search syntaxes). A manual search was conducted on the reference lists.

Inclusion and exclusion criteria

Peer-reviewed articles published in English that used CBPR approach or other engaged research such as participatory action research, which dealt with community participation and policymaking in the food environment and mentioned the strategies used for increasing community participation capacity, were included. Records irrelevant to the topic of participation in food environment policymaking, not written in English, books, organizational reports, and conference abstracts were excluded.

Article screening and selection

Titles and abstracts of retrieved records were reviewed independently by 2 researchers (NZ, EJ). Then, full-texts were assessed to decide on the relevancy of the articles. The researchers discussed the disagreement, if any, and in case an agreement was not reached, the third researcher (LS) resolved the problem. After screening, 59 full-text studies were reviewed for eligibility. A flow diagram of the study selection procedure is presented in Figure 1.

Data extraction and analysis

In scoping review, included studies are not assessed for methodological quality (21). For data abstraction, a charting table was developed to record the key information of the source, including researchers/year, objective, the setting, and type of democratic process, in which community has the possibility of participating in the decision-making, steps of community involvement in the policymaking process, participation level, and participation techniques. Public policymaking process was reviewed based on the Charles Jones policymaking framework which includes 4 major steps: (1) agenda-setting and problems identification, (2) policy formulation (translating the agenda item into an authoritative decision: a law, regulation,…), (3) policy implementation (administering and enforcing the authorized policy by an agency of government), and (4) policy evaluation (assessing the impacts of the policy) (22).

Public participation level and participation techniques were evaluated using the International Association of Public Participation (IAP2) classification. According to the IAP2 spectrum of public participation, participation can be classified into 5 levels, including informing, consulting, involving, collaborating, and empowering (23). Also, participatory techniques are classified into 3 categories: sharing information, compiling and providing feedback, and bringing people together (24).

The democracy process for involving the community in decision-making which applied by each study was catego-
rized as a participatory or representative democracy. A participatory democracy uses informed and active citizens’ participation, where power is delegated to the citizens in recreating and managing the environment. In a representative democracy, authority is held by people’s representatives (25).

The strategies for improving participation capacity were extracted based on 4 critical levels of the collaborative capacity framework proposed by Foster-Fishman et al, which include member, relational, organizational, and programmatic capacities (26).

A directed content analysis approach was used for analysis. In this approach, the goal of a directed approach to content analysis is to conceptually validate or extend a theoretical framework or theory. The existing theoretical collaborative capacity framework can help to identify key concepts or variables as initial coding categories (27).

At first, the text of retrieved articles was read carefully to increase deep understanding. Key statements were underlined to find the meaning units or initial codes. Next, similar codes were located in categories of the framework. Then, the external check method using 2 experts in health promotion and nutrition policy and familiar with the framework was used to confirm dependability and conformability of the data. The initial codes and the categories of the framework were audited.

**Results**

As shown in Figure 1, about 2756 records were in the primary list of database searches; in the end, 28 studies were selected. The characteristics of the included studies are summarized in Table 1. Most of these studies (25 out of 28) were conducted in the US and in communities that had one of the following characteristics: poor socioeconomic status, a high prevalence of chronic diseases, and food insecurity.
Community participation in food environment policymaking

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Setting</th>
<th>Study objective</th>
<th>Democracy type/level of participation</th>
<th>Involvement of community in policy making steps</th>
<th>Participation technique/data gathering technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diez, Julia et al (2017) (46)</td>
<td>Spain (Madrid)</td>
<td>To understand key determinants of the local food environment influencing residents' diets</td>
<td>Participatory / Collaboration</td>
<td>Problem identification</td>
<td>1. Share information (via media, etc.), 2. Compile and provide feedback (photovoice, survey), 3. Bring people together (meeting)</td>
</tr>
<tr>
<td>Ball, Lanae et al (2017) (48)</td>
<td>US (Catawba, Carolina)</td>
<td>To evaluate the implementation of a farmers’ market targeting a WIC program participants</td>
<td>Participatory / Empowerment</td>
<td>Problem identification, policy formulation, policy implementation</td>
<td>1. Share information (TV/radio advertisements, e-mail newsletter, YouTube video and etc.), 2. Compile and provide feedback (direct observation, review of various documents and semi-structured interviews), 3. Bring people together (meeting, workshops)</td>
</tr>
<tr>
<td>Lachance, Laurie et al (2018) (49, 50)</td>
<td>US (Michigan, New York, Boston)</td>
<td>To describe the outcomes of local systems and policy change to increase equitable opportunities for health</td>
<td>Participatory / Empowerment</td>
<td>Problem identification, agenda-setting, policy formulation, and policy implementation</td>
<td>1. Compile and provide feedback (photovoice, interview, focus group discussions) Share information (joint press conference include local radio and newsletter) 1. Compile and provide feedback (interview, review of internal documents, focus group), 2. Bring people together (meeting) Compile and provide feedback (computer-based polling)</td>
</tr>
<tr>
<td>Leung, May May et al (2017) (51)</td>
<td>US (New York)</td>
<td>To use photovoice for exploring food justice issues with minority youth</td>
<td>Participatory / Collaboration</td>
<td>Problem identification, agenda-setting</td>
<td>1. Compile and provide feedback (photovoice, interview, focus group discussions)</td>
</tr>
<tr>
<td>Minkler, Meredith et al (2018) (52)</td>
<td>US (San Francisco)</td>
<td>To bring healthy retail to urban “Food Swamps”</td>
<td>Participatory / Empowerment</td>
<td>Problem identification, policy formulation, policy implementation, and policy evaluation</td>
<td>1. Compile and provide feedback (interview, review of internal documents, focus group), 2. Bring people together (meeting)</td>
</tr>
<tr>
<td>Buman, Bertmanns et al (2015) (53)</td>
<td>US (a large metropolitan city)</td>
<td>To understand factors that enhanced or detracted from shoppers’ experiences in an urban farmers’ market</td>
<td>Participatory / Involvement</td>
<td>Problem identification</td>
<td>Compile and provide feedback (interview)</td>
</tr>
<tr>
<td>Gravlee, Boston et al (2014) (54)</td>
<td>US (Tallahassee, Florida)</td>
<td>To examine the perspectives of food-store owners and managers on the food environment</td>
<td>Participatory / Involvement</td>
<td>Problem identification</td>
<td>Compile and provide feedback (interview)</td>
</tr>
<tr>
<td>Pitts, Smith et al (2013) (55)</td>
<td>US (Lenoir County, North Carolina) Centered in the heart of the stroke belt</td>
<td>To determine winnable obesity-prevention policies from among the COCOMO* recommended strategies from the perspectives of local policy-makers and stakeholders</td>
<td>Participatory / Involvement</td>
<td>Policy formulation</td>
<td>Compile and provide feedback (interview and survey)</td>
</tr>
</tbody>
</table>

Table 1: Characteristics of included articles to the review on community participation and food environment policymaking

In most cases, the type of democracy which applied was participatory (n=24). In addition, the most common participatory techniques that were used included compiling and providing feedback.

Table 2 shows the strategies for increasing community participation capacity in food-environment policymaking, which are assigned into organizational, relational, member, and programmatic capacities.

Thirteen out of the 28 included studies involved the community in more than one step of Jones’ policy-making process. Most studies used the CBPR approach to involve them to address at least the problem identification step of the policymaking process (n=12) and only 7 studies reported their participation in all the steps of policymaking. In 15 out of 28 studies, community participation was at involvement level and in 8 it was at empowerment level.

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Discussion

This study reviewed the articles which used the CBPR approach to explore strategies to increase community participation capacity in food environment policymaking. Results showed that most of the studies involved the community in the problem-identification step of policymaking and the level of community participation was at involvement level. Involvement means to work directly with the community throughout the research process to ensure that their concerns are steadily perceived and considered (23). This level is higher than informing and consulting to obtain feedbacks. In line with this study, results of a systematic review on CBPR studies conducted by the research team showed that the community was most involved in the selection of research question (problem-identification), intervention development, and im-

Table 1. Ctd

<table>
<thead>
<tr>
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<th>Participation technique/data gathering technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitts Stephanie B. Jalocht et al (2012) (56)</td>
<td>US (Pitt County, North Carolina) Centered in the heart of the stroke belt</td>
<td>To present a community-driven, COCOMO-guided approach toward identifying winnable local policy strategies for obesity prevention</td>
<td>Representative / Involvement</td>
<td>Policy formulation</td>
<td>Compile and provide feedback (interview)</td>
</tr>
<tr>
<td>Byrd- Bredbenner, Johnson et al (2012) (57)</td>
<td>US (East Harlem, New York) With high diabetes rates</td>
<td>To describe a partnered approach by using structured observation to collect baseline data regarding the built and food environments</td>
<td>Participatory / Involvement</td>
<td>Problem identification</td>
<td>Compile and provide feedback (survey)</td>
</tr>
<tr>
<td>Noseworthy, Williams et al (2011) (58)</td>
<td>Canada (Nova Scotia) With high chronic disease</td>
<td>To examine the availability and relative cost of nutritious, locally produced foods in grocery stores</td>
<td>Representative / Involvement</td>
<td>Problem identification</td>
<td>Compile and provide feedback (survey)</td>
</tr>
<tr>
<td>Izumi, Zenk et al (2012) (59)</td>
<td>US (Detroit, Michigan) Three low-income districts</td>
<td>Assessing the reliability of the food environment audit for diverse neighborhoods</td>
<td>Participatory / Involvement</td>
<td>Problem identification</td>
<td>Compile and provide feedback (survey)</td>
</tr>
<tr>
<td>Azuma, Gilliland et al (2010) (60)</td>
<td>US (Los Angeles, California) Three low-income communities</td>
<td>To evaluate food access, availability, and affordability</td>
<td>Participatory / Involvement</td>
<td>Problem identification</td>
<td>Compile and provide feedback (survey, food-mapping, interview)</td>
</tr>
<tr>
<td>Skinner, Hanning et al (2006) (45)</td>
<td>Canada (Ontario)</td>
<td>To investigate barriers, and support healthy eating and physical activity in youth</td>
<td>Participatory / Involvement</td>
<td>Problem identification</td>
<td>Compile and provide feedback (scan of the community environment, focus Groups, and unstructured one-on-one interviews)</td>
</tr>
<tr>
<td>Mabachi and Kimminau (2012) (33)</td>
<td>US (Wyandotte County, Kansas)</td>
<td>To investigate the food needs of residents and develop a business plan to improve access to healthy food options</td>
<td>Participatory / Involvement</td>
<td>Problem identification and policy formulation</td>
<td>1.Compile and provide feedback (survey) 2.Bring people together (deliberative dialogues)</td>
</tr>
<tr>
<td>Fleischacker, Vu et al (2011) (61)</td>
<td>US (North Carolina)</td>
<td>To develop planning and policy strategies to improve access to healthy eating</td>
<td>Representation / Involvement</td>
<td>Policy formulation</td>
<td>1. Share information (central information contacts, television, technical reports, and award-winning media campaign) 2.Compile and provide feedback (interview, survey, and mapping) 3. Bring people together (deliberative dialogues)</td>
</tr>
<tr>
<td>Vásquez, Lanza et al (2007) (16)</td>
<td>US (San Francisco)</td>
<td>To describe local food security policy efforts through public policy action in a community-based participatory study</td>
<td>Participatory / Involvement</td>
<td>Problem identification, agenda-setting, policy formulation, policy implementation, and policy evaluation</td>
<td>1. Share information (central information contacts, television, technical reports, and award-winning media campaign) 2.Compile and provide feedback (interview, survey, and mapping) 3. Bring people together (deliberative dialogues)</td>
</tr>
</tbody>
</table>
Community participation in food environment policymaking

<table>
<thead>
<tr>
<th>Table 1. Ctd</th>
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<tbody>
<tr>
<td>Author/Year</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>Jernigan, Salvatore et al (2011)(62)</td>
</tr>
<tr>
<td>Hill, Jennie et al (2015)(63)</td>
</tr>
<tr>
<td>Seguin, Folla et al (2014)(64)</td>
</tr>
<tr>
<td>Fialkowski, DeBaryshe et al (2014)(65)</td>
</tr>
<tr>
<td>Sloane, Diamant et al (2003)(66)</td>
</tr>
<tr>
<td>Corsino, McDuffee et al (2013)(68)</td>
</tr>
<tr>
<td>Sharif, Garza et al (2015) (69)</td>
</tr>
</tbody>
</table>

The importance of financing as an organizational capacity in the success of community participation in policymaking is highlighted in this review and mentioned in other review studies (29, 30). The funding of research partnerships is an influential factor in developing CBPR implementation phase of studies (28). The collaboration with the community in decision-making process needs sustaining long-term empowerment efforts. Most included studies did not achieve higher levels of community participation. http://mjiri.iums.ac.ir
Med J Islam Repub Iran. 2020 (9 Mar); 34:18.
Applying participatory process and techniques for engaging stakeholders in program planning and implementation (64)

Unreliable funding can create significant obstacles for collaborative working relationships between partners. Tsui et al mentioned that ending grant funding prevented adolescents from completing the action project (32). Although financial constraints often come up in CBPR projects, in such circumstances, certain communities donate time and energy to the project because of their concerns and commitments (13, 33).

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Results showed the importance of using appropriate frameworks for improving the organizational capacity of community in policy-related change. Another review confirmed the effectiveness of applying the openness framework as a conceptual mean for increasing community participation in environment and health issues (34). In a framework developed by Literacy for Environmental Justice (LEJ), a nonprofit youth empowerment and environmental justice education organization, a policy agenda setting that prioritized food security by continuous communication with local policymakers, their research findings on the diverse dimensions of this issue in the neighborhood were presented (16).

Results of the review showed the role of using a simple decision-making process to reach a consensus for improving community organizational capacity. Collaborative consensus building methods use civic dialogue and discourse among parties that allow diverse perspectives to be aired (35). By using this process, decisions can be supported by all the involved parties.

Relationship-building is an arduous task that has consumed immense time and energy on the part of all stakeholders. The relationships between community partners can lead to long-term partnerships that rely on one another (36). Successful community coalitions are associated with internal (eg, relationships across participating members and organizations) and external (eg, connections between the coalition and external entities) relationships (26). Considering the results of this review, positive internal relationships can be shaped through trust-building and continuous communication, and external relationships can be formed through disseminating research achievements and sharing information with external agencies and involving them in advisory committees.

Based on the results, trust-building was among the extracted strategies for improving relationship capacity of community participation in food environment policymaking. Trust can be considered as a key factor in a successful partnership (37). Mabachi et al described a multistage trust-building, which takes much time. During this process, the research team is present to share community stories. Spending time to visit the community and share stories give the team greater insight into the community and make the residents become familiar with the researchers. This helps them to build trust with the key constituencies of local associations as well as community members (33). Results showed a respectful and fun interaction in the data collection process by academic and community partners can develop a positive working climate. It can help to build additional relationships and further develop the capacity for an ongoing partnership, which enhances the quality and the quantity of data (38). The results can form a basis for a systematic review of the effectiveness of proposed trust-building methods in various perspectives.

Results of this review showed using incentives can help improving relationship capacity of community participation in food environment policymaking. Community disengagement may occur in some CBPR projects because of the interest waxes and wanes in longer duration research. Buman et al suggest using certain incentives such as small tokens (eg, key chains, coffee mugs, etc.) and meals/snacks, which can help engage older adults in CBPR activities. However, a sustained effort with ongoing opportunity for feedback and input is necessary to maintain the involvement (35).

Based on the results of the review, selecting young volunteers can be a beneficial strategy for increasing member capacity of community participation in food environment policymaking. There is a growing momentum of adolescents’ participation in the development of policies (39). Young people have the time, the energy, and the passion to lead community movements and may constitute an untapped resource for public health (40). Although few partnerships have involved young people in health policy, their engagement will be the bridge between effective policies and valuable practical action on the ground (41). This shows the importance of involving the youth and youth organizations for increasing the success of CBPR projects focused on the policymaking process.

Another finding of this review was the role of training of members in increasing member capacity of the community for better involvement. In this regard, the Overseas Schools Advisory Council stressed on equipping participants with sufficient knowledge to understand the ideas and the suggestions of the other participants and to develop and share common ideas (42).

Building partnerships require the identification of partners and their unity around a shared vision and a set of goals (43). When the rationale for the project is not as clearly defined, mobilizing community members is not done well (32).

The results of this review showed that for increasing programmatic capacity, applying participatory methods of data collection, planning, and implementation of programs are imperative. Since participatory research places emphasis on conducting research by involving people, the use of suitable means can increase their level of participation. Applying participatory survey methods for gathering data at various stages of policymaking make respondents more motivated and provide higher quality data (44). Using easy-to-use tools such as photo-voice, observational checklists, and mapping with completion manuals, an operational definition of unclear terms, can result in capacity-building and increase the sense of ownership and accountability (35, 45).

The use of local expertise of community partners in the formulation and prioritization of policies was extracted as a beneficial strategy for increasing the programmatic capacity of community participation in food environment policymaking in reviewed articles. Motivating and recognizing their knowledge can increase their sense of belonging and engagement (45).

Results of this review revealed that the use of a framework for behavior and policy-related changes can be effective in promoting program capacity of community participation. In this regard, the LEJ organization presented an example of a successful model of how the partnership between an academic partner with nonprofit youth empowerment and environmental justice education organization can be established for the translation of basic research.
into practice and interventions to improve the food environment. This organization proposed that elements such as effective leadership, formalized procedures, effective communication, sufficient resources, and continuous improvement can result in a stable collaborative working group and lead to long-term partnerships to develop community accessibility to healthy food (16).

The main limitation of this review was that only published peer-reviewed journal articles were included in the review; grey literature and those studies which were published in conferences, books, and organizational reports were not considered. Another limitation was that included studies in this review were mainly conducted in the US; thus, the generalizability of the results to other countries, particularly to developing and underdeveloped countries, is limited.

Conclusion
To improve the food environment and people’s health using the community-participation approach, identifying successful strategies and adjusting them based on the social and political context of each society is necessary. Thus, further assessment and systematic reviews should be conducted on the effectiveness of the proposed strategies.

Acknowledgments
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Conflict of Interests
The authors declare that they have no competing interests.

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Appendix 1. Search syntaxes in databases

**PubMed**


Filters: English

**Scopus**

(TITLE-ABS(community participat*) OR TITLE-ABS(community engag*) OR TITLE-ABS(participatory action research) OR TITLE-ABS(community based participat*)) AND (TITLE-ABS(food access*) OR TITLE-ABS(food availab*) OR TITLE-ABS(food affordab*) OR TITLE-ABS(food environment)) AND (PUBYEAR > 1989 AND PUBYEAR < 2019) AND ( LIMIT-TO ( DOCTYPE,"ar" ) ) AND ( LIMIT-TO ( LANGUAGE,"English" ) )

**Web of Science**

((TS=(community participat*) OR TS=(community engag*) OR TS=(participatory action research) OR TS=(community based participat*)) AND (TS=(food access*) OR TS=(food availab*) OR TS=(food affordab*) OR TS=(food environment)) AND (PY=(1990-2018)) AND LANGUAGE: (English) AND DOCUMENT TYPES: (Article)