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**Citation:** Vargas, C., Whelan, J., Brimblecombe, J., Brock, J., Christian, M. & Allender, S. (2022). Co-creation of healthier food retail environments: A systematic review to explore the type of stakeholders and their motivations and stage of engagement. *Obesity Reviews*, 23(9), e13482. doi: 10.1111/obr.13482

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## REVIEW

# Co-creation of healthier food retail environments: A systematic review to explore the type of stakeholders and their motivations and stage of engagement

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## Funding information

Deakin University; National Health and Medical Research Council (NHMRC)-funded Centre of Research Excellence in Food Retail Environments for Health (RE-FRESH), Grant/Award Number: APP1152968

## Summary

**Objective:** To synthesize peer-reviewed literature that utilize co-creation principles in healthy food retail initiatives.

**Methods:** Systematic review of six databases from inception to September 2021. Screening and quality assessment were carried out by two authors independently. Studies were included if they were conducted in food retail stores, used a collaborative model, and aimed to improve the healthiness of the food retail environment. Studies excluded were implemented in restaurants, fast food chains, or similar or did not utilize some form of collaboration. Extracted data included the type of stakeholders engaged, level of engagement, stakeholder motivation, and barriers and enablers of the co-creation process.

**Findings:** After screening 6951 articles by title and abstract, 131 by full text, 23 manuscripts that describe 20 separate studies from six countries were included. Six were implemented in low-income communities and eight among Indigenous people groups. A common aim was to increase access to, and availability of, healthy products. A diverse range of co-creation approaches, theoretical perspectives, and study designs were observed. The three most common stakeholders involved were researchers, corporate representatives or store owners, and governments.

**Conclusions:** Some evidence exists of the benefits of co-creation to improve the healthiness of food retail environments. The field may benefit from structured guidance on the theory and practice of co-creation.

## KEYWORDS

co-creation, food outlets, food retail environments, participatory research

## 1 | INTRODUCTION

The World Health Organization's (WHO) target to halt the global rise in diabetes, overweight, and obesity in adolescents and adults by 2020<sup>1</sup> was not achieved and so was extended to 2030.<sup>2</sup> Progress toward these targets is being hampered by the complex interplay of individual, environmental, and societal factors that drive overweight and obesity<sup>3</sup>; and the food environment represents key drivers. Food environments can be conceived as complex systems, comprising dynamic interrelations between retail sources, retail actors, and business models influencing what, where, how, and when food is consumed or purchased.<sup>4,5</sup> Actively addressing food environments<sup>6,7</sup> to create opportunities to achieve healthy, accessible, and affordable diets represents a critical field in population health.<sup>8</sup> Food environment interventions to date have focused toward food reformulation, taxes on sugary drinks and health-oriented food labeling on packaged foods.<sup>9,10</sup> Globally, more than half of foods are purchased from supermarkets and grocery stores (e.g., in Europe 70%–80%,<sup>11</sup> in the United States 74%,<sup>12</sup> and in Australia 66%<sup>13</sup>), which highlights their influence on food provision<sup>14–18</sup> and makes them strategic settings for health-enabling initiatives.<sup>4,16–21</sup>

There is evidence to suggest multifaceted interventions within supermarket and grocery stores can improve the nutritional quality of food purchases, improving population health.<sup>22–25</sup> These interventions typically seek to improve dietary behavior at the point of choice in food stores<sup>25–27</sup> though are not always sustainable over the long term.<sup>25,26,28</sup> Key factors underpinning the success of healthy food outlet initiatives include the interplay of store owners and managers,<sup>22,28</sup> consumers,<sup>22</sup> and the support of retailers in the implementation.<sup>28</sup> Though landmark statements like the UN's Sustainable Development Goals<sup>29</sup> set out principles of multisectoral action to maximize prevention, little less is known about best practices in achieving collaboration between multiple stakeholders for designing, implementing, and measuring health-enabling initiatives in supermarkets and grocery stores. Co-creation may provide a means to understand and optimize these initiatives as it is participatory, collaborative, context-sensitive, and knowledge-based practice,<sup>30,31</sup> where actors collaborate with different kinds of knowledge, resources, and competencies to solve a shared problem.<sup>32</sup>

### 1.1 | Co-creation

Co-creation, co-design, and co-production have been used interchangeably to describe initiative development involving multiple stakeholders.<sup>31</sup> Each of these terms has emerged from different fields and holds nuance in meaning and application depending on the area in which the concept is applied.<sup>30</sup> Co-creation can be considered an overarching guiding principle encompassing co-design and co-production, as co-creation engages stakeholders in the co-design and co-production processes.<sup>33–35</sup> Co-creation represents an approach that allows stakeholders to interact and find shared values<sup>33,36</sup> to create change.<sup>31,34</sup> It has been described as a participatory method for collaborative design

of initiatives between academic and nonacademic stakeholders.<sup>37</sup> In this paper, we define co-creation as “the collaborative approach of creative problem solving between diverse stakeholders at all stages of an initiative, from the problem identification and solution generation through to implementation and evaluation.”<sup>38</sup> Co-creation has shown positive influences in education,<sup>39,40</sup> interorganizational cooperation,<sup>41</sup> creativity studies,<sup>34,42</sup> planning and development studies,<sup>43</sup> community-based research,<sup>31,44</sup> sustainability of healthcare services<sup>31,45</sup> and health promotion.<sup>30</sup> The power of co-creation includes the flexibility to adapt interventions to context including shared visions, plans, policies, initiatives, and regulatory frameworks.<sup>45,46</sup>

For the food retail setting, co-creation provides a way to systematically understand the collaboration between diverse stakeholders to improve the healthiness of food retail environments. Some studies report parallel benefits of collaboration between diverse stakeholders (i.e., suppliers, retailers, community, and government) with co-created and tailored interventions that target specific participants and settings.<sup>37,47</sup> Yet discussion continues about who should be involved, when, and what role should be played by stakeholders in the co-creation process.<sup>48</sup> Because supermarkets and grocery stores have diverse business models, mostly driven by profit and providing a service,<sup>4</sup> stakeholders could be anyone concerned with improving the healthiness of the food retail outlet. Identifying the type of stakeholders that are concerned to make healthy changes, their motivations and level of involvement is central to finding new shared solutions and opportunities for mutual benefit, which translate into the creation of value and could help to improve the sustainability of initiatives.

This study systematically reviewed the peer-reviewed literature on the design, implementation, and barriers and enablers of co-created initiatives to improve the healthiness of food retail outlets. It provides a focus on the roles of stakeholders in healthy food retail co-creation research and their involvement and motivation for conducting or participating in a co-created process. The review set out to answer the following research questions:

- Which stakeholders are engaged in healthy food retail co-creation research?
- How do stakeholders understand and participate in the healthy food retail co-creation research?
- What are the motivations of stakeholders to engage in healthy food retail co-creation research?
- What are the identified enablers and barriers in healthy food retail co-creation research?

## 2 | METHODS

The systematic review was conducted in accordance with the Preferred Reporting Items of Systematic Reviews and Meta-Analyses (PRISMA) guidelines<sup>49</sup> and registered with PROSPERO (ID: CRD42021226566; January 16, 2021). The current review deviates from the registered protocol by extending the study search to include all languages (not restricted to English and Spanish).

## 2.1 | Search strategy

Searches were conducted in (MEDLINE complete [Ebsco Host], Global Health [Ebsco Host], CINAHL [Ebsco Host], Scopus [Elsevier], and Embase [Elsevier]). The strategy was developed between authors and a research librarian trained in conducting systematic reviews. The strategy was informed by previous systematic reviews that examined the food retail environment<sup>23,28,50</sup> and principles of co-creation<sup>44,51</sup> (Table 1). The search strategy was adapted to each database for original research involving human participants and published from inception of each database to the 21st of September 2021. An additional hand search was undertaken of reference lists from included studies.

## 2.2 | Study selection

Studies were included if they (1) were carried out in food stores (comprising supermarkets, community food stores, and convenience stores) and (2) included the use of a collaborative model (e.g., co-creation, co-design, co-production, or participatory research). Because there is a long history of collaborative initiatives and problem-solving methods that are not referred as co-creation,<sup>34</sup> studies were included where collaboration of at least two stakeholders occurred in each reported step of the initiative development. (3) Studies were included where the initiative was not predetermined, for example, where the manuscript described the process of the development of the initiative, and (4) have an underlying aim of modifying the healthiness of the food store environment (e.g., sales, purchases, or availability of core [healthy] foods or discretionary [less healthy] foods). Studies were excluded if they (1) did not present primary data, for example, reviews, book chapters, expert

opinions, conference reports, unpublished studies, or protocols, or (2) were interventions implemented in food outlets where most of the food is preprepared or ready to eat (e.g., within a school, workplace, hospital setting, fast food chain, café, or restaurant). Google Translate<sup>52</sup> was used to review papers in other languages.

## 2.3 | Data extraction

Search results were imported to Endnote X9<sup>53</sup> where duplicates were removed, and the remaining citations imported into COVidence<sup>54</sup> for screening, data extraction, and quality assessment. Two researchers independently screened titles and abstracts and full text. All conflicts at the titles and abstracts stage were resolved by a third researcher. A data extraction schema was developed in consultation with all authors, based on a combination of commonly reported information from previous systematic reviews<sup>22–25</sup> and empirical material focusing on principles of co-creation (Table 2).<sup>55</sup> Where conflicts arose at full-text extraction, discussions were held between researchers involved in the data extraction until agreement was reached.

## 2.4 | Quality assessment

Study quality was assessed by two independent researchers using the Mixed Methods Appraisal Tool (MMAT), a validated tool for quality assessment in systematic reviews of mixed study designs.<sup>56</sup> The tool appraises the methodological quality of five designs: qualitative research, randomized control trials, quantitative non-randomized studies, quantitative descriptive studies, and mixed methods studies. After two screening questions, eligible studies were scored against five questions about study design quality as “yes” (scored 1) or “no” (scored 0). In accordance with the MMAT reporting guidelines,<sup>57</sup> mixed methods studies were scored in the same way on a 15 - question scale, and this is standardized to score out of 5 to make it comparable within the MMAT. Each study could achieve one of six score categories based on score and (% available score): 5 (100%), 4 (80%), 3 (60%), 2 (40%), 1 (20%), or 0 (0%). Conflicts were resolved by discussion between the two researchers.

## 2.5 | Data synthesis

The narrative and tabular synthesis of the results comprised two steps. First, data were coded based on the attributes listed in Table 2. Subsequently, stakeholders were grouped by type and their level of engagement according to the study's description. We interpreted the studies from our understanding and construction of co-creation, drawn from a combination of service management, marketing, and public administration, adapted to public health initiatives in supermarkets and grocery stores. To our knowledge, there are no preexisting co-creation frameworks applicable to these food retail environments.

**TABLE 1** Terms included in the search strategy

String 1	co-creat* OR cocreat* OR co-design* OR codesign OR co-product* OR coproduc* OR co-develop* OR codevelop* OR co-implement* OR coimplement* OR “participat research” OR “action research” OR “community participation” OR collaborat* OR “shared decision making” OR engagement OR “participatory co-creation” OR “participatory co-design” OR “stakeholder-led research” OR “community-led research”	Title and abstract
AND		
String 2	“food retail environment” OR “consumer food environment” OR “food retail” OR “food environment” OR store OR supermarket OR “food outlet” OR “food market” OR “food store” OR “food shop” OR “convenience store” OR “grocer* store” OR “corner store” OR “community store” OR grocer* OR in-store	Title and abstract

**TABLE 2** Extraction schema

Attribute	Description
Description of the studies	Author's name, year, country, study design, main aim, program/project name, duration of the study, setting description, and participant food stores
Principles that informed co-creation	Theory, approach, or framework used to support the study design
Conception of "healthiness" of the food retail	Study's definition/strategies for the food retail healthiness (e.g., increase availability, prominent placement of healthier products, or a combination of variables)
Type of stakeholders	Stakeholders mentioned throughout the publication (e.g., research team, retailers, corporate owners, managers, etc.)
Reflection on the co-creation process	Description of the benefits or barriers to use co-creation to improve the healthiness of the food retail and its impact on the study outcomes
Reflection for future use of co-creation	Recommendations for future application of co-creation
Motivations to participate in a co-created initiative	Motivations for those participating in the study (e.g., intrinsic or extrinsic) Roberts et al's <sup>55</sup> typology was used to classify these motivations. This typology positions individual motivations to co-create across three types of co-creation efforts: (1) motivations to innovate, driven by intrinsic motives; (2) motivations to contribute to community innovation activities, driven by altruistic motives; and (3) motivations to collaborate directly with organizations, driven by opportunity or goal-related motives
Motivations of researchers for the use of co-creation	Clear statement on the underpinning motivation for the study (e.g., testing new strategy, contribute to knowledge)
Level of participation of stakeholders engaged in the study	Time of participation from stakeholders throughout the co-creation process (initiation, identification [consultation], definition, design, realization, and evaluation) <sup>56</sup> Level of participation was classified and interpreted using the following ranking adopted from service delivery and public administration engagement <sup>57,58</sup> : (1) passive, stakeholders considered just to implement or evaluate the study (2) active, consideration of the stakeholder input in the design, and realization of the study (3) very active, multiple interactions throughout the study

Our perspective on co-creation considers that stakeholder involvement goes beyond the occasional participation or consultation. Stakeholder engagement is essential for the relevant design of solutions that promote incremental change and transformative innovation and suit the context of the involved parties. In this view, the co-creation approach is sought as continuum that brings multiple stakeholders together through the research process.<sup>38</sup>

### 3 | RESULTS

The initial search returned 8549 results, and a further 24 papers were identified from hand searching references of these initial papers. Of these, 6819 records were excluded based on title and abstract; and a further 108 were excluded based on full-text screening (Figure 1).

#### 3.1 | Description of included studies

The 23 papers included comprised 20 separate studies, see Appendix 1 (Table S1) for a general description of included articles. Three of the articles were published between 1980 and 2000,<sup>58–60</sup> seven were published between 2010 and 2015,<sup>61–67</sup> and the majority were between 2016 and 2021 ( $n = 13$ ).<sup>68–80</sup> Among the 23 included papers, Healthy Foods North (HFN),<sup>61,62</sup> Healthy Foods Hawaii (HFH),<sup>63,64</sup> and the Tribal Health and Resilience in Vulnerable Environments (THRIVE)<sup>73,74</sup> were reported in multiple articles. Around half of the studies ( $n = 11$ )<sup>59,63–70,73–75,80</sup> were conducted in the

United States. The remaining studies were conducted in Australia ( $n = 4$ ),<sup>72,76,77,79</sup> Canada ( $n = 2$ ),<sup>58,61,62</sup> New Zealand ( $n = 1$ ),<sup>78</sup> Finland ( $n = 1$ )<sup>60</sup> and Denmark ( $n = 1$ ).<sup>71</sup>

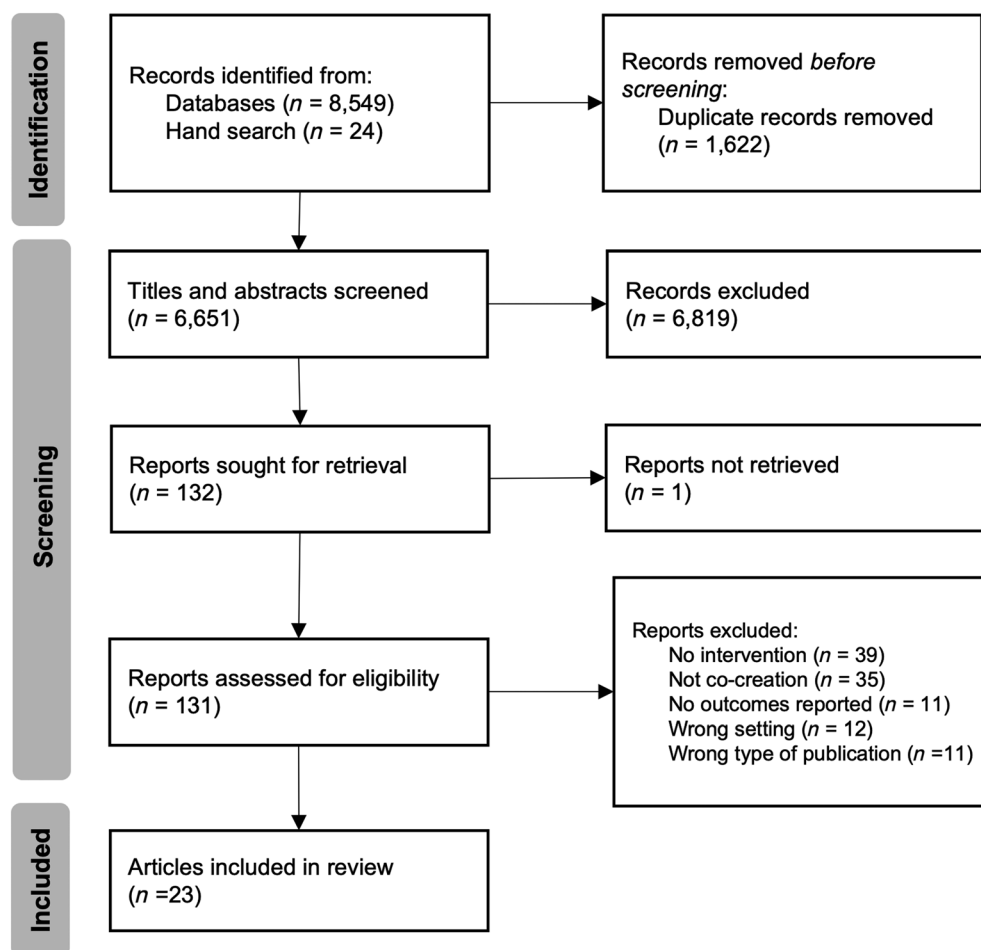
Eight studies focused on First Nations communities; these represented Australia ( $n = 3$ ),<sup>72,76,77</sup> the United States ( $n = 3$ ),<sup>63,64,73–75</sup> or Canada ( $n = 2$ ).<sup>58,61,62</sup> The rest reported on interventions situated in urban areas ( $n = 7$ )<sup>65–70,78</sup> that targeted communities described as low income or living with poverty.<sup>65–70</sup> Four studies did not describe the target population.<sup>59,60,71,79</sup> Interventions were carried out in supermarkets ( $n = 6$ ),<sup>59,60,68,71,78,79</sup> corner stores ( $n = 5$ ),<sup>65–67,70,75</sup> food stores ( $n = 3$ ),<sup>61–64,72</sup> community stores ( $n = 3$ ),<sup>58,76,77</sup> and convenience stores ( $n = 2$ ).<sup>69,73,74</sup>

Studies typically focused on one component ( $n = 13$ ),<sup>58–60,63–65,67–69,71,75–78</sup> to improve the healthiness of food retail outlets, such as improving the availability of healthy products ( $n = 6$ ),<sup>63,64,67,71,75–77</sup> educating consumers on healthy options ( $n = 3$ ),<sup>58–60</sup> increasing access to healthy food ( $n = 2$ ),<sup>65,69</sup> or changes to healthy product placement ( $n = 2$ ).<sup>68,78</sup> Some studies considered a combination of two ( $n = 3$ )<sup>61,62,66,70,80</sup> or three ( $n = 2$ )<sup>72–74</sup> components; one study conceived the healthiness of food retail outlets in five components (availability, education, socialization, marketing, and policy).<sup>79</sup>

#### 3.2 | Quality assessment

After answering "yes" to the two screening questions, the methodological quality of included papers score ranged from 40% ( $n = 3$ , 13%),<sup>58–60</sup> 60% ( $n = 6$ , 26%),<sup>66–68,70,80</sup> and 80% ( $n = 9$ , 39%),<sup>61,63,68,71–76</sup> and five

**FIGURE 1** PRISMA diagram of the systematic review process for this review



papers (22%)<sup>62,64,70,77,78</sup> met 100% of the quality criteria. See Appendix 1 (Table S2) for individual study quality scores.

### 3.3 | Methodological characteristics of included co-creation studies

Study designs included case studies ( $n = 8$ ),<sup>58,60,67–69,72,75,79</sup> case-control studies ( $n = 8$ ),<sup>59,61,63,64,66,71,76,78</sup> randomized controlled trials ( $n = 3$ ),<sup>70,73,77</sup> and one quasi-experimental study,<sup>62</sup> one cluster control trial,<sup>74</sup> one pre-post non-randomized intervention<sup>65</sup> and one mixed methods study (Table 3).<sup>80</sup> Diverse principles, theories, models, and approaches informed the use of co-creation (Figure 2). Community-based participatory approaches ( $n = 7$ )<sup>62,63,66,70,75,76,80</sup> were the most prominent, followed by diverse forms of participatory methods ( $n = 4$ ),<sup>64,65,69,72</sup> socioecological models ( $n = 2$ ),<sup>67,68</sup> and co-design ( $n = 2$ ).<sup>78,79</sup> Four studies combined approaches, being (1) behavioral and environmental initiatives through community-based activities<sup>61</sup>; (2) community-based participatory research principles in the study design<sup>73</sup> and socio-cognitive theory in the results reporting<sup>74</sup>; (3) socio-ecological theory and co-design<sup>77</sup>; and (4) ecological and participatory approach.<sup>71</sup> Three studies did not provide explicit theoretical frameworks, two of these were conducted in a supermarket setting,<sup>59,60</sup> and one was conducted with Inuit and Native Canadian.<sup>58</sup>

### 3.4 | Type of stakeholders and level of collaboration in the co-creation process

Six different groups of stakeholders were reported: (1) corporation or store owners ( $n = 18$ )<sup>59–71,73–78,80</sup>; (2) academic Institutions/researchers ( $n = 18$ )<sup>59–74,76–80</sup>; (3) government officers ( $n = 6$ )<sup>58,60–64,67,76</sup>; (4) community or nongovernmental organization representatives ( $n = 14$ )<sup>58,60–64,67,69–76,79,80</sup>; (5) members of various types of committees ( $n = 7$ )<sup>59,66,72–76,80</sup>; and (6) specific project partners ( $n = 1$ ).<sup>75</sup>

Each stakeholder group collaborated in different co-creation stages. Five studies<sup>58,69,77,78,80</sup> described the initiation process with members from another stakeholder group such as government officers ( $n = 4$ ),<sup>58,61,64,67</sup> corporation or store owners ( $n = 4$ ),<sup>58,77,78,80</sup> or community or nongovernmental organization representatives ( $n = 2$ ).<sup>69,80</sup> Most of the studies reported diverse stakeholder groups participating in the identification, definitions, and design of the initiative in some capacity (e.g., consultation, environmental analysis, and co-design). Descriptions on the collaboration of corporation or store owners commonly were common in the initiative design ( $n = 14$ )<sup>58,59,61,65,69–72,75–80</sup> and realization ( $n = 18$ )<sup>58,59,61–72,75–80</sup> stages. Academic Institutions/researchers conducted the evaluation of the initiative in collaboration with corporation or store owners ( $n = 7$ )<sup>58,61,65,68,77,78,80</sup> when the design required

TABLE 3 Summary characteristic of included studies

Author, year of publication, and country	Principles that informed co-creation	Conception of healthiness	Stakeholder group	Stakeholders' type	Time of participation of stakeholders					
					Initiation	Identification	Definition	Design	Realization	Evaluation
Schurman et al (1983) Canada <sup>61</sup>	Framework of stages and objectives direct the program	Education	Corporation/stores	Hudson's Bay Company	✓					
				HBC Nutritionist	✓	✓		✓	✓	
				Store staff	✓				✓	
			Government	Government officials	✓					
				Professional health workers	✓		✓	✓	✓	
			Community	Schools			✓			
Light et al (1989) United States <sup>62</sup>	Previously successful collaborative experiences and on the experience of other researchers who have conducted point-of-purchase studies	Education	Academic inst./researchers	Community members	✓				✓	
				Provincial or national agencies and organizations					✓	
			Corporation/stores	National Cancer Institute (NCI)	✓	✓		✓	✓	
				Giant Food Inc. (regional supermarket chain)			✓	✓	✓	
			Advisory/steering panels/groups/committees	Technical consultant			✓	✓	✓	
				Writer editor			✓	✓	✓	
			Consumer Advisory Board (Established by GF)	NCI review group (program staff and office of cancer communications)				✓		
				Consumer Advisory Board (Established by GF)				✓		
				External Advisory Group (federal government agencies, academia, the food industry, and consumer groups)				✓		
Nörhinen et al (1999) <sup>63</sup> Finland		Education	Academic inst./researchers	✓	✓				✓	
			Corporation/stores			✓				
			Government		✓					
			Community					✓		
Adjoian et al (2017) <sup>71</sup> United States	Socioecological model	Placement	Academic inst./researchers	✓	✓	✓		✓		
			Corporation/stores					✓		
Gittelsohn et al (2010) <sup>64</sup>	Combination of behavioral and environmental strategies	Availability Promotion	Academic inst./researchers	✓	✓	✓				
			Corporation/stores							
				Inuit and non-Inuit project staff	✓	✓	✓	✓		



TABLE 3 (Continued)

Author, year of publication, and country	Principles that informed co-creation	Conception of healthiness	Stakeholder group	Stakeholders' type	Time of participation of stakeholders					
					Initiation	Identification	Definition	Design	Realization	Evaluation
Canada	through community-based activities		Corporation/stores	Store managers and staff	✓	✓	✓	✓	✓	✓
			Government	Health and social service staff	✓	✓	✓	✓		
			Community	Representative of local community organizations: community leaders, community members	✓	✓	✓	✓		
Kolahdooz et al (2014) <sup>65</sup> Canada	Community participatory research	Availability Promotion	Academic inst./researchers	University students						✓
			Corporation/stores	Food stores					✓	
			Government	Local community health workers						✓
			Community	Community stakeholders and community	✓	✓				
				Community members						✓
Gittelsohn et al (2010) <sup>66</sup> United States	Participative process with the community	Availability	Academic inst./researchers		✓	✓	✓			✓
			Corporation/stores	Producers					✓	
				Distributors					✓	
			Community	Caregivers and families						✓
				Community	✓					
Novotny et al (2011) <sup>67</sup> United States	Participatory strategic planning with the Healthy Living in the Pacific Islands Initiative (HLPI)	Availability	Academic inst./researchers	Project staff					✓	✓
			Corporation/stores	Store owners and managers, food distributors, and local food distributors					✓	
			Government	Healthy Living in the Pacific Islands Initiative	✓	✓	✓	✓		
			Community	Community	✓					
				Nonprofit					✓	✓
Gudzune et al (2015) <sup>68</sup> United States	Collaborative model	Access	Academic inst./researchers	Study staff	✓	✓	✓	✓		✓
			Corporation/stores	Store owners				✓	✓	✓
				Farmers				✓	✓	

TABLE 3 (Continued)

Author, year of publication, and country	Principles that informed co-creation	Conception of healthiness	Stakeholder group	Stakeholders' type	Time of participation of stakeholders							
					Initiation	Identification	Definition	Design	Realization	Evaluation		
Young et al (2014) <sup>70</sup> United States	Socioecological approach	Availability	Academic inst./ researchers	Ohio State University					✓	✓		
				Corner stores					✓			
			Corporation/stores	Local F&V distributor					✓			
				Municipal health department	✓	✓						
			Government	Public health office				✓	✓	✓		
				Regional nonprofit		✓		✓	✓	✓		
			Community	Nonprofit advocacy group				✓	✓			
				Neighborhood community food nonprofit					✓	✓		
Ortega et al (2015) <sup>69</sup> United States	Community-engaged approach	Availability Education	Academic inst./ researchers	Expert corner store operator		✓		✓				
				University investigators		✓		✓				
			Corporation/stores	Store owners				✓				
				Produce wholesalers and local farmers markets				✓	✓			
			Advisory/steering panels/groups/ committees	Community Advisory Board: Community and government		✓		✓				
				Scientific Advisory Board: Academics				✓	✓			
			Pothukuchi (2016) <sup>72</sup> United States	Participatory action research methodology	Access	Academic inst./ researchers	SEED Wayne	✓	✓		✓	✓
							Project representatives: student employees and volunteers				✓	
Corporation/stores	Store operators							✓	✓			
	Wholesale distributors							✓	✓			
Community	Capuchin Soup Kitchen's (CSK) staff and guests	✓				✓		✓				
	Study staff					✓						
Thordike et al (2017) <sup>73</sup> United States	Community-based approaches for promoting healthy eating	Placement Quality				Academic inst./ researchers	Produce consultant		✓			
							Corner store Owners			✓		
			Corporation/stores	Massachusetts state WIC office					✓			
				Government								
Winkler et al (2016) <sup>74</sup>		Availability	Academic inst./ researchers		✓	✓	✓	✓	✓			

TABLE 3 (Continued)

Author, year of publication, and country	Principles that informed co-creation	Conception of healthiness	Stakeholder group	Stakeholders' type	Time of participation of stakeholders					
					Initiation	Identification	Definition	Design	Realization	Evaluation
Denmark	Ecological and participatory approach (super setting approach)		Corporation/stores	Store owners and regional sales manager				✓	✓	
			Community		✓					✓
Brimblecombe et al (2017) <sup>75</sup>	Participatory action learning model for continuous quality improvement	Availability	Academic inst./researchers	Research team	✓		✓	✓	✓	✓
Australia		Affordability	Community	Community coordinator and members			✓	✓	✓	✓
		Access	Advisory/steering panels/groups/committees	Good food groups: store board and management, the health service, the school, the aged-care service, government	✓		✓	✓	✓	✓
Jernigan et al (2018) <sup>76</sup>	Community-based participatory research	Availability	Academic inst./researchers	University researchers	✓		✓	✓	✓	✓
United States		Affordability	Corporation/stores	Native convenience stores			✓	✓	✓	
		Access	Community	Native adults living within the Chickasaw and Choctaw Nations	✓					
			Advisory/steering panels/groups/committees	Tribal-university partnership: university researchers and tribal health, commerce, and government leaders			✓	✓		
Bird Jernigan et al (2019) <sup>77</sup>	Social cognitive theory	Availability	Community	Individuals (ev. process)						✓
United States		Affordability	Advisory/steering panels/groups/committees	Tribal-university partnership: university researchers and tribal health, commerce, and government leaders						✓
Young et al (2018) <sup>78</sup>	Community engaged research	Availability	Corporation/stores	Corner storeowners			✓	✓		
			Community				✓	✓		

(Continues)

TABLE 3 (Continued)

Author, year of publication, and country	Principles that informed co-creation	Conception of healthiness	Stakeholder group	Stakeholders' type	Time of participation of stakeholders							
					Initiation	Identification	Definition	Design	Realization	Evaluation		
United States				Youth and community residents								
				Consumers				✓				
			Advisory/steering panels/groups/committees	Community-based liaison				✓			✓	
				Infrastructure subcommittee					✓			
				Marketing subcommittee				✓				
				Distribution subcommittee				✓		✓		
				Stakeholder coalition				✓				
		Project partners	Project partners: Walnut Way Conservation Corp, the Medical College of Wisconsin, and the City of Milwaukee Health Department	✓	✓	✓	✓	✓	✓	✓		
Fehring et al (2019) <sup>79</sup> Australia	Community-led action aligned with aligned with key organizational, state, and global health promotion frameworks	Availability	Academic inst./ researchers	Project team	✓	✓	✓				✓	
			Corporation/stores	Apunipima staff			✓			✓		
			Government	Aboriginal Shire Councils					✓			
			Community	Community members				✓		✓		
				Community organizations							✓	
			Advisory/steering panels/groups/committees	Community advisory committees	✓	✓	✓	✓				
Young et al (2020) <sup>81</sup> New Zealand	Co-design approach	Placement	Academic inst./ researchers	Public health nutrition academics			✓	✓			✓	
				An independent group facilitator			✓					
			Corporation/stores	Representatives of health, nutrition, purchasing, and communications		✓		✓				
				Store staff						✓		✓
Bogomolova et al (2021) <sup>82</sup>	Design thinking (co-design)	Availability Education	Academic inst./ researchers	Researchers	✓	✓	✓	✓			✓	
				Dietitian						✓		

TABLE 3 (Continued)

Author, year of publication, and country	Principles that informed co-creation	Conception of healthiness	Stakeholder group	Stakeholders' type	Time of participation of stakeholders					
					Initiation	Identification	Definition	Design	Realization	Evaluation
Australia		Policy Marketing Socialization	Corporation/stores	Design agency				✓		
				Staff	✓			✓		
			Community	Management				✓		
				Consumers: adult shopping population for the region	✓					
Brimblecombe et al (2020) <sup>80</sup> Australia	Socioecological theory Co-design	Availability	Academic inst./ researchers		✓		✓		✓	
			Corporation/stores	ALPA board of directors	✓		✓			
				ALPA management	✓		✓			
				ALPA store management	✓		✓	✓	✓	
				ALPA nutritionist	✓		✓	✓	✓	
Rollins et al (2021) <sup>83</sup> United States	Community-based participatory approach	Availability Marketing	Academic inst./ researchers	Academic institutions	✓					
			Corporation/stores Community	Store owners				✓		
				CCB: Academic institution, residents, and social service agencies	✓		✓	✓	✓	
				Community leaders			✓	✓	✓	
				Graduate students					✓	

Author, year of publication, and country	Level of participation <sup>56</sup>		Motivations		Reflection of the co-creation process	Recommendations for future use of co-creation
	Passive	Very active	Stakeholder <sup>55</sup>	Researcher		
Schurman et al (1983) Canada <sup>61</sup>		✓	Contribute	NR	Enhance implementation	NR
Light et al (1989) United States <sup>62</sup>	✓					
		✓				
	✓					
		✓				
	✓					
		✓				
		✓				
Nörhinen et al (1999) <sup>63</sup> Finland		✓	NR	Test theory	Retailer empowerment Expand partnerships	NR
Adjoian et al (2017) <sup>71</sup> United States	✓		NR	Test theory	NR	Capacity building
		✓				
Gittelsohn et al (2010) <sup>64</sup> Canada		✓	NR	Reduce knowledge gap	Cultural appropriateness Community empowerment	Setting adaptation
Kolahdooz et al (2014) <sup>65</sup> Canada		✓	NR	NR	NR	Extended stakeholders' diversity

TABLE 3 (Continued)

Author, year of publication, and country	Level of participation <sup>56</sup>		Motivations		Researcher	Reflection of the co-creation process	Recommendations for future use of co-creation
	Passive	Active	Very active	Stakeholder <sup>55</sup>			
Gittelsohn et al (2010) <sup>66</sup> United States		✓	✓	NR	Reduce knowledge gap	NR	Extended stakeholders' diversity Prolonged time Policy support
Novotny et al (2011) <sup>67</sup> United States		✓	✓	NR	Test theory	Enhance implementation Project sustainability	Setting adaptation
Gudzune et al (2015) <sup>68</sup> United States		✓	✓	Contribute	Test theory	Enhance implementation	Setting adaptation
Young et al (2014) <sup>70</sup> United States	✓	✓	✓	NR	Contribute to existing theory	NR	Setting adaptation
Ortega et al (2015) <sup>69</sup> United States	✓	✓	✓	NR	Test theory	Community empowerment Enhance implementation	Capacity building Intensive program
Pothukuchi (2016) <sup>72</sup>	✓	✓	✓	Contribute	NR	NR	NR

(Continues)

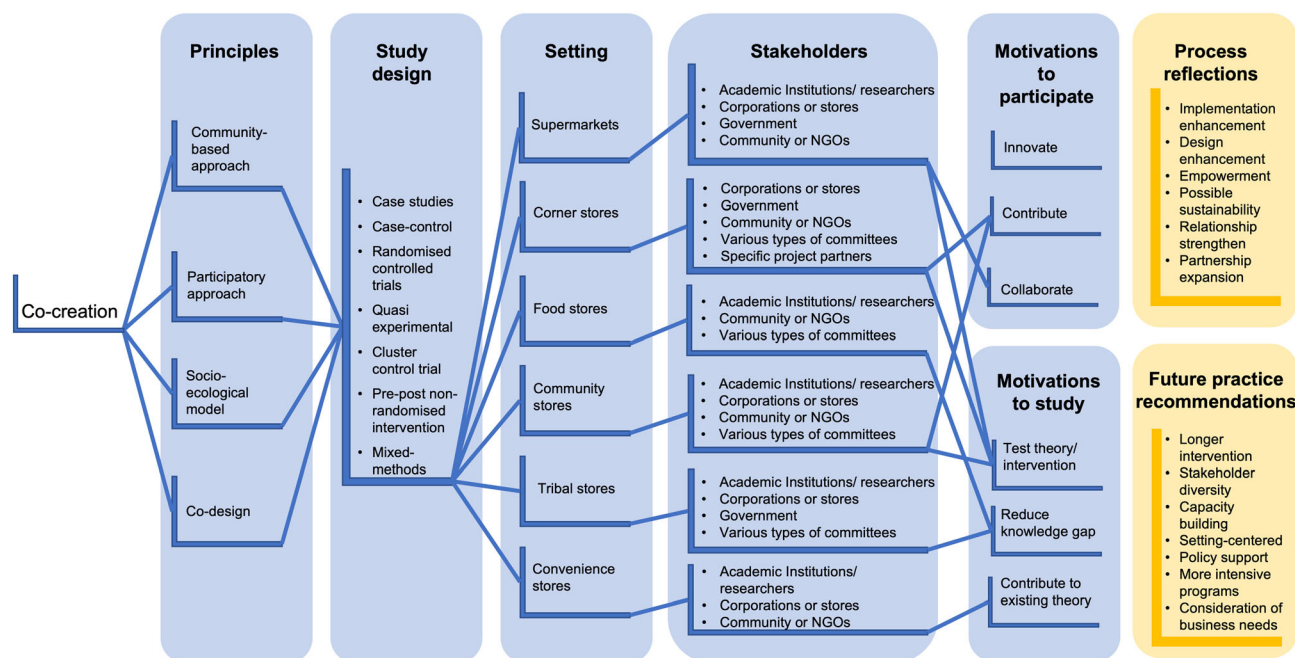
TABLE 3 (Continued)

Author, year of publication, and country	Level of participation <sup>56</sup>		Motivations		Reflection of the co-creation process		Recommendations for future use of co-creation
	Passive	Active	Very active	Stakeholder <sup>55</sup>	Researcher		
United States	✓						
		✓					
		✓					
		✓					
Thorndike et al (2017) <sup>73</sup> United States			✓	NR	Reduce knowledge gap	NR	Policy support
		✓					
	✓						
Winkler et al (2016) <sup>74</sup> Denmark			✓	Collaborate	Reduce knowledge gap	Limited control over the intervention	NR
			✓				
Brimblecombe et al (2017) <sup>75</sup> Australia	✓				Reduce knowledge gap	Cultural appropriateness Project sustainability	Extended stakeholders' diversity Prolonged time Clear roles and responsibilities
Jernigan et al (2018) <sup>76</sup> United States		✓	✓	NR	NR	Inform policy work Design multilevel efforts	Setting adaptation
	✓						
Bird Jernigan et al (2019) <sup>77</sup> United States	✓		✓	NR	Reduce knowledge gap	Strengthen of cross-sector relationships	NR
Young et al (2018) <sup>78</sup> United States		✓	✓	NR	• NR	• Enhance implementation • Improved community connections	• Extended stakeholders' diversity • Capacity building • Business needs
	✓						
		✓					
		✓					
		✓					
		✓					
Fehring et al (2019) <sup>79</sup>		✓		NR	Test theory	Enhance implementation	NR



TABLE 3 (Continued)

Author, year of publication, and country	Level of participation <sup>56</sup>		Motivations		Researcher	Reflection of the co-creation process	Recommendations for future use of co-creation
	Passive	Active	Very active	Stakeholder <sup>55</sup>			
Australia			✓			Cultural appropriateness	
			✓				
			✓				
			✓				
			✓				
Young et al (2020) <sup>81</sup> New Zealand		✓	✓	NR	Test theory	Project sustainability Strengthen of cross-sector relationships	Capacity building
Bogomolova et al (2021) <sup>82</sup> Australia	✓		✓	NR	Test theory	Retailer empowerment Enhance implementation Community empowerment	Intensive program Prolonged time
		✓	✓				
		✓					
	✓						
Brimblecombe et al (2020) <sup>80</sup> Australia			✓	Contribute and collaborate	Test theory	<ul style="list-style-type: none"> <li>Strengthen of cross-sector relationships</li> <li>Restricting marketing, promotion and placement</li> </ul>	NR
			✓				
			✓				
			✓				
			✓				
Rollins et al (2021) <sup>83</sup> United States		✓		NR	Reduce knowledge gap	<ul style="list-style-type: none"> <li>Enhance implementation</li> <li>Community empowerment</li> </ul>	NR
		✓					
	✓						



**FIGURE 2** Summary of included studies outlining relevant principles, design, settings, relevant stakeholders, and motivations, along with reflections and recommendations for future practice

their input (e.g., sales data) and surveys or evaluations directed to the community ( $n = 10$ ).<sup>60,62,67,68,71,72,74,75,79,80</sup>

Participation ranged from passive to active to very active. Each stakeholder group comprised diverse actors (stakeholder type) that collaborated at different stages of the study (Table 3); the level of participation is described by stakeholder group. Participation was ranked depending on the time when a stakeholder group collaborated throughout the co-creation process (initiation, identification [consultation], definition, design, realization, and evaluation) as described in Table 2. It ranged from passive (i.e., when a group of stakeholders were just considered to implement or evaluate the study) to active (i.e., when the input of a group of stakeholders was considered in the design and realization of the study) and very active (i.e., multiple interactions from a group of stakeholders throughout the study). The studies described academic Institutions/researchers as having a very active role in the study ( $n = 20$ ); the role of corporations or stores oscillated between active ( $n = 11$ ) and very active ( $n = 12$ ); communities were typically very active through membership of various types of committees ( $n = 7$ ).

### 3.5 | Motivations for conducting or participating in a co-created process

Of the five studies that described the motivation of participants to engage in co-creation, these motivations were contributing to community innovation activities ( $n = 3$ )<sup>58,65,69</sup> and collaborating directly with organizations ( $n = 1$ ).<sup>71</sup> No studies reported innovation as a motivation. A combination of motivations to contribute to community and collaborate with the organizations was identified in one study.<sup>77</sup>

Authors' motivations were classified in three categories: (1) test theory/intervention ( $n = 9$ )<sup>60,64–66,68,77–79</sup>; (2) reduce knowledge gap ( $n = 6$ )<sup>61,63,70–72,74,80</sup>; and (3) contribute to existing theory ( $n = 1$ ).<sup>31</sup>

### 3.6 | Author reflections on the co-creation process: Enablers and barriers

Many studies presented author reflections on the co-creation process and/or study outcomes related to the co-creation process ( $n = 17$ ).<sup>58–61,64–66,71–80</sup> These related to the enhancement of implementation<sup>58,59,64–66,75,76,79</sup> or design (e.g., cultural appropriateness),<sup>61,72,76</sup> empowerment of the community<sup>61,66,77,79,80</sup> or retailers,<sup>60,79</sup> impacts on project sustainability,<sup>64,72,78</sup> strength of relationships with community<sup>75</sup> or between sectors,<sup>74,77,78</sup> and growing partnerships.<sup>60</sup> Recommendations for future use of co-creation included a prolonged time for the intervention,<sup>63,72,79</sup> extended stakeholders' diversity,<sup>62,63,72,75</sup> greater capacity building,<sup>66,68,75</sup> specific conditions of the setting,<sup>63–65,67,73</sup> policy support,<sup>63,70</sup> more intensive programs,<sup>66,79</sup> and consideration of business needs.<sup>75</sup> See Appendix 1 (Table S4) for specific examples of each category.

## 4 | DISCUSSION

This systematic review and synthesis of co-creation in health-enabling initiatives in food retail outlets found studies utilized varying study approaches to co-creation and different types and involvement of stakeholders. All studies involved at least academics and retailers and used participatory methods, typically working with lower

socioeconomic and Indigenous populations. The studies reviewed focused on presenting outcomes of the primary aim of the study rather than processes of co-creation. We found that the motivations reported by retailers extended beyond profit to include health outcomes.

In this review, co-design was referred to by authors in some studies as an important part of co-creation but was not described in detail. It was common that the included studies expressed the co-creation approach as a participatory and problem-solving method. For example, Gudzone et al's<sup>65</sup> formative research considered views and concerns of farmers and retailers to define the process of implementation through participatory methods. This agrees with the literature, as co-creation has grown from participatory methods in business research aiming to engage diverse stakeholders to plan, conduct, evaluate, and report change initiatives,<sup>37</sup> including complexity-informed interventions,<sup>30</sup> and only recently entered public health literature.

The heterogeneity of approaches to co-creation we identified limits recommendations and the application of co-creation as a systematic approach for health-enabling initiatives in supermarkets and grocery stores. Correlation between theoretical approaches, study design, and co-creation was not clear, as there are differences on the level of detail provided between studies. Research in co-creation to improve the healthiness of the food retail environment is underdeveloped.<sup>45</sup> Leask et al<sup>37</sup> propose a checklist for reporting co-creation initiatives more broadly, which will help authors in future to better detail co-creation processes. This checklist however considers co-creation as occurring at a point in time as a participatory method, rather than a continuum that brings multiple stakeholders together through the stages of initiation, identification [consultation], definition, design, realization, and evaluation, as we have analyzed it in this review. Leask et al<sup>37</sup> checklist can help to provide consistency in the reporting of co-creation as a participatory method, in the same way as the PRISMA checklist does for systematic reviews. We consider that approaching co-creation as a more encompassing approach can provide better understanding to the complexity of food retail environment initiatives and stakeholder collaborations that can sustain these initiatives over time.

The included studies that reported retailers' motivations to be involved in the co-created initiative showed that despite supermarkets and retail stores are driven by profit, the extrinsic motivation to include better health outcomes for communities is also present. Although identification of motivations for value co-creation is a common practice in marketing,<sup>81–83</sup> there is limited knowledge of retailers' motivations to sell healthy foods. Previous studies have described retailer's willingness to engage in healthy food retail and a desire for greater support to implement healthy food retail initiatives, but mostly in independent food stores where retailers have a higher power of in-store decision making.<sup>84</sup> Additionally, some food retailers that engage with community-based institutions tend to create a mix of profit motive and community benefit that can be related to health.<sup>4</sup> The THRIVE study demonstrated that an increase in fruits and vegetables sales did not negatively affect total store sales.<sup>85</sup> The Healthy Stores 2020 study found no adverse impact on business outcomes with a strategy that successfully restricted merchandising of unhealthy food and drinks.<sup>77</sup>

## 4.1 | Strengths

This review applied systematic methods across five scientific databases and study inclusion/exclusion criteria assessed by two independent coauthors. Though our review focused on the use of co-creation, the search terms included a far broader set of design terms including co-design, co-production, and participatory research terms. In this way, the initial data corpus was broad enough to include studies that may use principles and techniques from co-creation without using the specific term to describe them. As such, this review provides a comprehensive summary of the use of co-creation approaches, in healthy food retail research beyond the limitation of the term “co-creation.” This review has summarized a broad range of co-creation attributes for the first time in health-enabling food retail outlets. It sets the basis to develop principles for co-creation practice and adds value to practitioners as well as directs future research in stakeholder co-creation in food retail outlets.

## 4.2 | Limitations

Our research was limited to the academic literature. Gray literature databases were not reviewed, meaning government reports and other. The databases were all health specific, meaning those appearing only in the business or management literature were not observed. Including some search terms such as “process evaluation” may have identified more studies that reported the co-creation process. Data extraction and interpretation was subjective as it was based on article's reporting and the lack of clear frameworks to guide descriptions of co-creation at the time of some publications.

## 4.3 | Future research

Further research is warranted to provide deeper insight into how co-creation can help deliver the WHO<sup>1</sup> and UN's Sustainable Development Goals<sup>29</sup> principles of multisectoral action.<sup>51,86</sup> Business services<sup>31,87</sup> have recognized the power of co-creation for creating meaningful change. Business models may provide new directions for co-creation with retailers, as co-creation presents a potentially powerful method to engage food retail environments to create healthier purchasing patterns and subsequently diets.

To advance co-creation as an innovative collaborative approach, more attention should be placed on describing the development process. This way studies can be aligned with the principles of co-creation,<sup>35</sup> mostly related to elements that could identify motivations, enhance the co-creation of value, and promote the interaction and engagement between stakeholders. Future research should also investigate the feasibility, impact, and scalability of co-created interventions in food retail outlets. Identifying the type of motivations of diverse stakeholders as well as the degree of involvement and roles could help to co-create initiatives that build stronger ties between food retail outlets and communities that tap into corporate social

responsibility and identify elements to reproduce and systematize healthy food retail co-creation research.

## 5 | CONCLUSION

Co-creation of healthier food retail environments has been used mostly in lower socioeconomic and Indigenous populations. The heterogeneity of evidence and the lack of description limited an assessment of effectiveness of the process of co-creation. This review provides insight into a knowledge gap related to the degree of stakeholder involvement, roles, and motivations for future development of healthy food retail co-creation research. Co-creation in healthy food retail is being used to improve the health of population diets, and the field may benefit from structured guidance on the theory and practice of co-creation.

## ACKNOWLEDGMENTS

CV, JW, and MC are supported by; and JBri and SA; are researchers within the National Health and Medical Research Council (NHMRC)-funded Centre of Research Excellence in Food Retail Environments for Health (RE-FRESH) (APP1152968). JW is supported by a Deakin University Dean's Postdoctoral Fellowship. The opinions, analysis, and conclusions in this paper are those of the authors and should not be attributed to the NHMRC. Open access publishing facilitated by Deakin University, as part of the Wiley - Deakin University agreement via the Council of Australian University Librarians.

## CONFLICT OF INTEREST

None.

## AUTHOR CONTRIBUTIONS

CV, JW, JBri, and SA together determined the research questions and search strategy. JW, JBri, and SA provided research guidance throughout the study. CV led the study and undertook the search, screening, article selection, data extraction, quality assessment, and data synthesis. JW, JBri, and MC undertook the screening, article selection, data extraction, and quality assessment. CV drafted the manuscript in collaboration with JW and SA. All authors critically revised the manuscript, provided detail editing, and approved the manuscript submitted.

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**How to cite this article:** Vargas C, Whelan J, Brimblecombe J, Brock J, Christian M, Allender S. Co-creation of healthier food retail environments: A systematic review to explore the type of stakeholders and their motivations and stage of engagement. *Obesity Reviews*. 2022;1-20. doi:10.1111/obr.13482