

Implementation Factors Related to Improving the Food Environment Within Health Care Institutions: A Multiple Case Study

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Abstract

Background Healthy food environment policies (HFEPs), such as sugar-sweetened beverage bans or nutritional standards for vending machines, can improve the healthfulness of retail food venues, particularly within health care institutions that have a health-focused mission. The degree to which operational managers' and executive leaders' perceptions of implementation challenges align or diverge, and the extent to which these perceptions affect HFEP implementation, is unknown.

Methods We conducted ten semi-structured key informant interviews with managers and executive leaders who participated in HFEP development within five health care organizations. Interviews explored facilitators and barriers for HFEP adoption and maintenance. We transcribed, coded, and analyzed interviews and derived contextual facilitators and barriers.

Results We identified 27 facilitators and 30 barriers, which were refined into six and five categories, respectively, and ultimately paired to create three overarching recommendations. Operational managers' and executive leaders' perceptions overlapped 44-75% when identifying facilitators but only 33-58% when identifying implementation barriers. Interpersonal issues such as over-delegation and mistrust were prominent among those organizations whose respondents' perceptions diverged substantially.

Conclusion As the obesity epidemic continues to increase, understanding key facilitators and barriers to HFEPs, as well as the influence on leaderships' perceptions on the implementation process, will be key to addressing obesogenic food environments. Though leaders were generally aligned in perspectives regarding facilitators, there was greater divergence when barriers were discussed. Executive leaders are encouraged to familiarize themselves with operational barriers and refrain from over-delegating these challenges to their operational counterparts, who lack the institutional authority to override organizational or system-level decisions.

Contributions To The Literature

- Though health care institutions symbolize health and healing, many health care organizations do not offer healthful food and beverage options in their retail-facing outlets.
- This study showcased five health care systems' implementation processes of improving the healthfulness of their onsite food and beverage offerings.
- Our findings demonstrate the importance of involving both operational and executive leaders to successfully improve the food environment.
- Each health system's unique facilitators of and barriers to improving the food environment were synthesized to identify common challenges and offer proposed solutions for prospective health care leaders who are contemplating improving the food environment.

Background

Rates of overnutrition and obesity in the US have escalated dramatically in the past forty years, resulting in an ongoing obesity epidemic (Flegal et al., 2016). While the causal pathways of obesity development are complex, a major driver of this public health crisis is obesogenic food environments, defined as contexts in which nutrient-poor and energy-dense foods that saturate the collective physical, economic and sociocultural conditions that influence nutritional status (Hall, 2018; Swinburn et al., 2015). Among available obesity interventions, population-level policies that improve the food environment offer a promising start in addressing this epidemic (Stevens et al., 2017; Vandevijvere et al., 2015; Sallis et al., 2009). Examples of policies that target the food environment include implementing rigorous nutritional standards for food and beverage offerings, prioritizing healthy methods of food preparation (e.g. steaming versus frying), using pricing strategies to incentivize healthy food purchases, promoting and marketing nutritious offerings, and establishing healthy vending policies (INFORMAS, 2014).

Food environments in organizations such as hospitals and public health agencies warrant special consideration given their health-focused mission (PHLC, 2013; AHA, 2012). Though health care organizations symbolize health and healing, many of these organizations do not have healthy food environments within their retail cafés and cafeterias (Champ et al., 2019; Bell et al., 2013; Malhotra, 2013; Lawrence et al., 2009; McDonald et al., 2006). The Centers for Disease Control and Prevention identifies the health care setting as one of seven key areas to prevent and manage obesity (CDC, 2019). However, most of the refereed literature examining healthy food environment policies (HFEPs) within hospitals focuses on the inpatient dietary environment (Marshall et al., 2012; Pedersen et al., 2012; Brantley, 2009), leaving a paucity of information on facilitators of or barriers to improving the retail food venues of these organizations, where hospital staff and visitors regularly eat. Further, the application of HFEPs is often limited, focusing narrowly on one or two specific policies (Palmedo & Gordon, 2019; Hartigan et al., 2017; Lessard et al., 2014; Eneli et al., 2014; Bell et al., 2013; Block et al., 2010).

There are many influences that shape what kinds of healthy practices are adopted by institutions, from environmental facilitators (e.g., institutional pressure, public criticism) (Powell & DiMaggio, 2012) to inter- and intra-personal facilitators (e.g., champions, communication channels) (Fairholm, 2009). Given that decisions to improve food environments are made at the administrative level, leadership perceptions surrounding implementation are particularly relevant (Shill et al., 2012). While the implementation science literature has examined the role of leadership perceptions of implementation challenges in shaping the actual implementation process (Rodriguez et al., 2018), little has been published by way of examining multiple leadership perspectives, such as those of operational managers and executive administrators, and their respective influence on decision-making to improve retail food venues. Perception discrepancies of which strategies to pursue have an unknown effect on the implementation of HFEPs.

The healthcare retail food environment differs from the inpatient setting in significant ways. First, unlike inpatient dietary standards, the standards of food service operations are not monitored by the Joint Commission on Accreditation of Healthcare Organizations and thus have no oversight from an accreditation perspective (JCAHO, 2020). Further, retail venues serve visitors and employees, instead of convalescing patients, and thus are not bound to make their meal offerings as nutritious as those offered by inpatient services. Finally, most retail food service operations need to meet sales goals within a budget that is wholly separate from inpatient operations. Given these distinguishing characteristics, facilitators and barriers identified in the extant literature may lack the validity and transferability to be transposed from the inpatient setting to the retail context. Thus, studying organizational facilitators and barriers specific to this setting is warranted.

In this study, we sought to qualitatively describe the barriers to and facilitators of HFEP implementation across five distinct health care organizations: 1) a state public health agency; 2) a regional not-for-profit health plan and delivery system; 3) an academic medical center; 4) a federally-run medical center; and 5) a faith-based hospital network. We interviewed two levels of leadership—operational managers and executive administrators—within each organization to describe similarities and differences between the kinds of factors cited and determine whether executive leaders and operational managers aligned or diverged in their perspectives regarding HFEP implementation challenges. By reflecting five diverse health care organizations, the findings add to the implementation science literature with respect to facilitators and barriers of HFEPs in the retail environment. Further, by including two leadership levels within these organizations, this study provides a nuanced description of implementation factors that influence the relationship between stakeholder perception and organizational performance (Lord & Maher, 2002).

Methods

Design & Setting This work is part of a broader mixed methods study examining implementation challenges in improving health care food environments (Walker, 2020). To examine a wide spectrum of HFEP implementation challenges, we recruited health care organizations that differed by key characteristics. We prioritized differences in payer mix, size, governance structure, stakeholder groups and tax status to ensure a heterogenous group. We limited recruitment to a single state to ensure a shared public policy context among participating organizations. We identified six health care organizations that adopted HFEPs, recruiting interview participants by email using a purposive sampling strategy. Semi-structured key informant interviews were completed with operational managers and executive leaders who either self-identified as having participated in HFEP implementation at their institution or were identified by others at their institution as having direct knowledge. Executive and operational roles were selected to be complementary, as executive leaders typically make the adoption decision while operational managers contend with the logistical variables of execution and maintenance. Ethical approval for this study was obtained from [Blinded: University] Institutional Review Board (Study #196741-18).

Analytic Sample Out of the six health care organizations identified, one organization—a rural non-profit hospital—was excluded due to the unavailability of executive participation in our study. We completed two interviews (one each with an operational and executive staff member) in the remaining five health care organizations for a total of ten interviews.

Data Collection We used semi-structured key informant interviews and supplemental document review to explore facilitators of and barriers to implementing HFEPs. Interviews were 41-57 minutes in length and were conducted between December 2019 and March 2020 by the first author. All but two interviews were conducted in-person, with the interview respondent selecting a private location of their choice (e.g., office, conference room). Interviews were electronically recorded and the interviewer took contemporaneous field notes during each interview. Each participant provided written consent^[1] and was given a copy of the questions in advance of the interview, which was developed using Kallio and colleagues' (2016) five-step protocol framework (see Supplement A). Before the start of each interview, participants were notified that they could request commercially sensitive or proprietary information be stricken from the transcript record; each participant was provided with their transcribed comments for review of sensitive information. Interviews were

transcribed verbatim and all data files (interview transcripts, field notes and any supplemental documentation offered) were managed in NVivo 12 (QSR International, Cambridge, MA) qualitative analysis software.

Identifying HFEPs In the interview protocol, respondents were asked to specifically outline HFEPs that their institution adopted, including pilots or trial runs to demonstrate HFEP feasibility, staff procedures, changes to the physical environment, vending changes and any educational materials developed for staff and consumers (see Questions 4A-F, 7A-C, and 8B in Supplement A). Each respondent was then asked to describe any HFEP barriers experienced, such as stakeholder resistance or revenue loss, as well as HFEP facilitators, such as champions or staff buy-in (Questions 5A-D and 6A-D). Interview probes were offered to capture all possible HFEPs and each policy's stage in implementation; these interview probes were informed by the Healthy Food Environment Policy Index, an index created by INFORMAS, an international collaborative effort sponsored by the World Health Organization, whose objective was to develop typologies of actions aimed at enhancing the food environment (INFORMAS, 2014). Practices such as nutritional labeling, limits on fat or salt content, healthy vending policies and market promotion were included as probes. For time efficiency, respondents were invited to provide supplemental documentation to be included as part of data collection materials.

Analysis Employing a directed content analysis approach (Hsieh & Shannon, 2005), an *a priori* codebook was developed prior to data analysis based on a literature review for the broader mixed methods study. Two domains of inquiry included specific HFEPs adopted, as well as facilitators and barriers to implementation. Five iterative cycles of coding took place, with the first round dedicated to transcript review (pre-coding); the second to deductive coding using the codebook; the third to inductive coding of emerging concepts; the fourth to reconciling duplication among codes and consolidating concepts; and the fifth to grouping codes into categories and, ultimately, themes. For the final two rounds, the use of parent-child codes was utilized to initially create highly specific codes which were then collapsed into broader categories.

Upon completion of the thematic analyses for each interview respondent, coding themes among operational and executive interviews within each organization were compared to identify any differences found between the two roles. This was done separately for each of the five organizations and then across organizations. A single coder (first author's initials) approach was used given the broader nature of this study (dissertation research); dissertation committee members provided oversight during qualitative analysis. Upon primary analysis, 27 facilitators and 30 barriers were identified; iterative rounds of analysis generated six and five categories for facilitators and barriers, respectively. Quote attributions include organization identifier, followed by an "E" for executive leadership or "O" for operational manager (e.g., [1E] or [4O]).

The study methods and findings are also reported using the Consolidated Criteria for Reporting Qualitative Research (COREQ), a formal reporting guideline consisting of 32 items describing the selection, methods, analysis and interpretation of the findings (Tong, Sainsbury & Craig, 2007). Similar to the CONSORT guideline for randomized control trials (Moher et al., 2001) or STROBE for observational studies (Von Elm et al., 2007), COREQ represents a guideline for reporting qualitative research, specifically for interviews and focus groups (see Supplement B).

[1] The two virtual respondents provided written consent by emailing a signed copy of the consent form.

Results

Descriptive characteristics Descriptive information of the five health care organizations and ten interview participants is presented in Table 1. Basic information was obtained from the interview transcripts, supplemental document analysis, and a review of each organization's public website. Median employment length was 5 years (7 months–15 years) among operational managers, and 22 years (6 years–35 years) among executive leaders.

Spectrum of HFEPs Adopted

For each organization, respondents described each of the HFEPs adopted by their organization. In total, 27 distinct HFEPs were identified across the five organizations (Supplement C). Common HFEPs among most organizations were: incorporating choice architecture within food venue layouts, implementing competitive pricing strategies to incentivize healthy purchases, improving the quality of food sourcing, and monitoring sales and procurement data to inform purchasing decisions. Notably, all of the food service departments were subsidized minimally or substantially by their institutions.

Facilitators

Iterative rounds of thematic analysis generated six categories of facilitators cited among respondents. In descending order of code frequency, categories were: institutional commitment (66 references), employee wellness prioritization (46), technical assistance (40), incrementalism (24), external pressures to change the food environment (21), and champion/change agent (19). For institutional commitment, every respondent affirmed the vital role that executive sponsorship and financial assistance played in adopting HFEPs:

"If leadership doesn't get onboard, it frustrates the staff. We have to approve the budget, make sure all of that works. But the majority of the effort comes from the bottom-up ... One of things we did was not charge rent to our cafeterias. So, we had to absorb that impact. And we're big enough, so that's not impossible" [2E].

Respondents also underscored the greater purchasing power that accompanied executive sponsorship: *"This past year, we even went a step further ... Suffice it to say that resources available for transitions will always have to have a return on investment" [40].* Though Organizations 1, 2 and 4 had institutional commitments, the resistant stakeholders in Organization 1 led to fewer changes than in Organizations 2 and 4.

Employee wellness prioritization was cited twice as much among executive leaders (31 references) than operational managers across all organizations (15 references):

"Our diabetes numbers are outrageous, what we're spending on this is expensive, we need meaningful solutions. When you look at the employee wellness triangle, with health and wellness, there's only so much the health plans can do that the individual is responsible for themselves. So the focus really became us. And, if we can get our own house in order, what would that look like?" [1E]

Employee wellness committees and policies was an inductive finding during analysis, identified by participants as a first step in a process of garnering stakeholder support for HFEPs. References of vision, size, and organizational norms overlapped when discussing employee health:

"Going back to creating a healthier workforce. And supporting wellness, food is one of those areas, in addition to exercise and stress. [Redacted] is different because we have a health plan and a delivery system all together. When you have the health plan at the table and able look at the numbers, we're an integrated system. You can do things when you have all parts at the table, and realize that investment" [2E].

The strong sense of employee wellness was present in both levels of leadership: *"That is pretty much the biggest driver of this—not only do we want to help our caregivers be healthier, but we have an investment in our caregivers" [20].*

Most codes for the technical assistance category were predominantly cited at the operational level, with managers emphasizing the need for logistical support, nutritional expertise from dietitians, and organizational resources: *"The [consulting group] did some market research for us. We already had the idea of where we were going and they helped reinforce that. And they actually helped us design and develop [redacted], our natural foods store that's up there." [3E]* However, tensions rose if logistical support did not include the operational members:

"During this entire time, we've had 6 different consulting companies come through that I have not hired and they'll tell [redacted] the same thing I've been telling them except they'll accept what the consultant says and not so much from me. [Laughs] Which I thought about quitting and then telling them what to do! Just kidding. I still need a check." [30]

For the incrementalism category, Organizations 3, 4, and 5 had similar views on the value and benefits of building on existing policies and relationships to continually improve actions. Specifically, respondent 40 discussed at length how his food site was one of 10 that routinely piloted new HFEPs for the remaining 170 interorganizational food venues within his broader network: *"We are going to continue offering the Beyond Burger indefinitely. [EW]: What about the sushi pilot, is that coming to a close? [40]: No, it's successful and definitely staying—it actually increased total sales." Retaining a degree of control over potential outcomes was another desirable feature of incrementalism: "[It] allowed us to make the decisions and see how it was playing out." [3E]* Further, the ability to change the food environment gradually, as opposed to a step function, proved to be protective against scaling too quickly: *"But we also learned from another site that took out both diet and regular [soda], they ended up bringing back the diet. So we said, OK, we'll start with taking out regular and see where that goes" [20].*

The last two categories, external pressures to change and champion/change agent, had a positive feedback relationship, in that executive leaders cited external pressures and public criticism as impetus for their support in changing the food environments, while operational managers emphasized a need for an executive champion to support them in making changes:

"We knew internally that we were serving slop. Foods were very overcooked and lost taste, nutritional value. For the retail side of it, there aren't any options on [redacted], basically, to eat. And so you have a closed system that was not performing very well." [3E]

"When they did the surveying of when the new president came in, he did all the surveying of people of what mattered the most. Food was #1. I went to my boss and said, 'Are you watching this?' Do you see that this is a really great opportunity for us to like, basically, be like 'Here's what we need?'" [30]

Of the organizations that most closely overlapped in facilitators cited between managers and leaders, Organization 4 had an overlap of 75%, diverging only on topics of nutritional expertise and the benefit of having a captive audience. Similarly, Organization 5 had an overlap of 68% between factors cited by both respondents. Of the organizations with the least amount of overlap, Organizations 1 and 2 diverged substantially (44% and 50%, respectively). Table 2 shows specific facilitators cited by each respondent.

Barriers

Similar to the facilitator analysis, the five-stage coding process generated 30 barriers, which were collapsed into five categories: resource constraints (50 references), prescriptive centralization (42), complexity (30), pushback (28), and lack of leadership (19). Resource constraints were uniformly cited by all respondents as the largest barrier to implementing HFEPs, with some of these codes overlapping with an emergent barrier: mutual mistrust. For some respondents, this perceived mistrust was between food service operations and the host institution: *"I'd say a barrier is that [redacted] is constantly saying how tough money is. [Chuckles] Especially during negotiations, right?" [3E]. "Isn't it ironic? That the [redacted] was costing us \$100K to operate and they closed it, only to put [redacted] here and it costs us more than \$100K between utilities and loss of sales" [50].* For others, it was between the operations staff and executive leaders: *"I had that thought today, honestly, 'Did [redacted] just hire me so that they could say we have a sustainability manager and we're doing good things?'" [30].*

One executive leader explained that the large resource constraints meant that food service staff were not paid competitive wages, leading to *"high turnover and vacancy rate, [which] means we might not be able to have every single station open, we might have fewer cashiers, so there's waits... and so that's a more contextual barrier" [4E].* For some, the resource scarcity added pressure to make up the funds elsewhere: *"Yes, there would be institutional pressure to make changes. We have done that. We have laid people off and reduced positions. We needed to downsize our catering group by a third, so a lot of people left the organization" [3E].*

In addition to the resource constraints, prescriptive centralization stood as a top-down barrier for organizations who wanted to innovate within their onsite food environments:

"Interestingly, we have prohibitions in the federal government from advertising. We can educate but it's set up to not compete with the private sector. So we can educate about the [redacted], but we can't post them in the lobby because we can't advertise. So, for the marketing question you have, it's a little tricky to get the customers into the canteen but once they do, we have placards about healthy choices ... but if they're posted around the hospital, we take them down." [4E]

Similarly, after respondent [1E] concluded that her current vendor was not meeting the needs of the building tenants, she was surprised to realize that she couldn't competitively solicit bids for another vendor: *"I don't know if you've dug into the actual rules around the mini Randolph Sheppard Act in [State], because technically written into law is that the licensed vendors and the [redacted] have right of first refusal, which means they have priority over all of our state-contracted concessions." While these institution-wide prohibitions or legislated stakeholders represented structural barriers, process-oriented barriers emerged in the form of pushback. When HFEPs were implemented, nearly every interview respondent said that there was some level of pushback, no matter how minor. For some HFEPs, consumers asked *"why they didn't go far enough" [50].* However, the more frequent response to a HFEP was some version of liberty infringement: *"Why are you telling me what to do, I'll make that choice myself. When [redacted] took out their fryers, you would think that we extracted every first male born child" (sic) [2E].* Both operational and executive leaders cited this factor as a consistent barrier.*

Complexity was also cited by both levels of leadership, typically in relation to untangling bureaucratic situations:

"So yes, we'd be one of very few—I'm trying to think—so, [redacted; "Agency"] is the agency that is—they're basically our landlord for most of our facilities. So [redacted; "Division"], we rent this space from [Agency]. So technically, the cafeteria downstairs—that's not in operation right now—[Agency] contracts with the [Vendor], and the [Vendor] then contracts with [Distributor]'s licensed vendors to operate the facilities" [1E].

For the last category, lack of leadership, this subset of codes was predominantly cited among operation-level leaders (three times more often than executives). Lack of leadership subsumed codes such as unclear goals and goal conflicts, and operation managers levied these failures against their executive counterparts:

"It used to be that all the supervisors and management would sit a room together every week and we would have conversations. That hasn't happened in years. They just stopped. They just got tired of all the infighting and just stopped all of it. Because all the different locations are managed by different people. And they all can do whatever the hell they want. So there's no consistency." [30]

Of the organizations that most closely overlapped in barriers cited between operational managers and executive leaders, Organization 1 had an overlap of 58%, diverging in perspectives on unclear messaging, lack of leadership/mandate authority, and consumer preferences. Similarly, Organization 5 had an overlap of 55% between factors cited by both respondents. Of the organizations with the least amount of overlap, Organization 4 diverged significantly among respondent perspectives, aligning only 33% of the time. Organizations 2 and 3 had a similar degree of overlap (40% and 44%, respectively) (Table 3).

Discussion

Among this purposive sample of five health care organizations and 10 interview respondents, we identified 30 barriers to and 27 facilitators of HFEP implementation. From these, we developed overarching implementation factors that were consistently cited by respondents across all of the participating organizations. As expected, complementary leadership types cited factors corresponding to their domain, as executive leaders' perceptions of HFEP implementation focused on issues such as stakeholder management or external pressures whereas operational managers' perceptions focused on logistical aspects of HFEPs, such as technical assistance and nutritional expertise. However, these two realms typically conflicted when executive leaders over-delegated challenges to their operational counterparts, as was the case with Organizations 3 and 5. In the organizational literature, delegation refers to a leadership style whereupon executive leaders were trained to stay out of the minutiae of the day-to-day, relying on operational counterparts to respond dynamically to challenges (Klein et al., 2006; Zyngier, 2013). However, when it came to intractable problems that can only be addressed with executive approval, this delegatory leadership style oversimplified and underestimated the scope of HFEP implementation barriers, thereby frustrating organizational operators. The additional finding of mutual mistrust among some respondents (30 and 50) aggravated the implementation challenges.

Another critical implementation factor was the universally-cited resource constraint. The inability to purchase technology, kitchen equipment, or proprietary materials to implement a HFEP led one operational manager to get creative about cutting overhead costs: *"We eliminate[d] the need for us to carry a labor pool. It's their labor pool and we just contract with them. We get a fixed amount from their sales, and in return, we have no cost of goods and no cost of labor"* [40]. The decision to contract with a vendor for their labor pool seemed to be a risk-free proposition to the manager. However, the decision to structurally realign to an outside vendor's labor supply can have long-term repercussions of vendor reliance, inability to decouple, and ultimate dependence.

Finally, merging the overarching categories of facilitators and barriers into three complementary recommendations can be a useful heuristic to overcome HFEP implementation challenges. Just as operational and executive leaders are complementary in role, viewing the barrier and facilitator subgroups as reciprocal groups can help to map out tangible next steps:

1. Address the 'Lack of leadership' category with the corresponding 'Champion/change agent' category to fill the leadership void with a goal-oriented advocate.

Persistent challenges without a leader who continuously problem-solves can lead to a construct in the organizational literature known as 'inertia' (Hannan & Freeman, 1984; Coiera, 2011). Fairholm (2009) describes the critical role of leaders as agenda-setters: determining objectives, setting priorities and anticipating potential opportunities. The positive feedback relationship found between 'external pressures' and 'change agent' categories was cited among both operational and executive leaders. This suggests that, as public criticism grows for healthier food environments, change agents will emerge to champion the need to improve retail venues.

2. Solve the 'Complexity' barrier category with 'Technical assistance' facilitators.

Some HFEP challenges appear ambiguous or multifactorial, which leads to an unclear goal or "pulls and pushes" (Hannan & Freeman, 1993). Technical assistance strategies such as availing nutritional expertise from onsite dietetics or resources from participating collaboratives could transform obstacles that are seemingly insurmountable into problems that can be managed under the operational manager's purview. However, operational managers perspectives should be included when considering outside consultation, as failing to

do so (e.g., top-down decisions) was shown to increase tension among levels of leadership (Organization 3), later contributing to an overall sense of mistrust among leaders.

3. Overcome 'Resource constraints' with the 'Institutional commitment' category.

As mentioned in the introduction, food service operations are unlike inpatient dietary settings in a number of ways, most significantly in that they have a budget that introduces the element of needing to vend food and beverage options that will entice purchase and appeal to mass tastes. When and if a HFEP under consideration will lead to a reduction in overall sales (irrespective of whether this barrier is perceived or actual), institutional commitment strategies of financial subsidies, institutional bargaining power and public organization-wide support of HFEP development can be necessary to advance HFEP goals, as was the case in each of the five organizations in this study.

Limitations

Enrollment of study organizations was restricted to one state to ensure a shared public policy context. While important for our study design, this potentially limits the transferability of findings to out-of-state organizations that have different policy contexts. The state in which our study took place is politically and civically progressive, thus consumer demand, public perception, organizational norms, and health care leaders' opportunities might vary sufficiently so as to pose novel implementation challenges not captured in this study. This work was part of a broader dissertation study and therefore required a single coder approach. Potential limitations of this approach were largely mitigated by active dissertation committee oversight, with one coauthor (RB) having specific expertise as to the methods and analytic techniques. Notwithstanding these limitations, this study provides insights to intra- and inter-organizational factors surrounding HFEP implementation.

Conclusion

This study examined HFEP implementation within five health care organizations, providing insight on the challenges of accurately measuring leaders' perceptions of the facilitators and barriers to this process. Overlap of factors cited by both operational managers and executive leaders ranged from 44-75%, such that paying attention to the perspectives of these two distinct levels of leadership can be useful when determining strategies for overcoming implementation challenges. Finally, as leaders look to the academic literature to prepare for HFEP implementation, understanding the common barriers and challenges and identifying corresponding facilitators can help leaders, particularly operational managers, to prepare a plan of action if and when implementation obstacles arise.

Abbreviations

CDC - Centers for Disease Control and Prevention

COREQ - Consolidated Criteria for Reporting Qualitative Research

HFEP - Health Food Environment Policy

INFORMAS - International Network for Food and Obesity/Non-Communicable Diseases Research, Monitoring and Action Support

Declarations

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Ethics declaration: Ethical approval for this study was obtained from Portland State University Institutional Review Board (Study #196741-18).

Availability of data: This study relied on individual interviews that comprise the qualitative dataset. This dataset, which includes individual transcripts, is not publicly available due to confidentiality agreements.

Consent for publication: All participants provided informed consent before participating in the study, which included consent to publish de-identified quotes from individual participants. Eight participants provided written informed consent, while two virtual respondents provided written consent by emailing a signed copy of the consent form.

Competing interests: The authors declare that they have no competing interests.

Authors' contributions: EW conceptualized the study design, recruited participants, conducted all the participant interviews, transcribed interviews, analyzed and interpreted the data, and wrote the first draft of the manuscript.

RB contributed to the design and conception of the study, provided technical expertise for the qualitative analysis software, oversaw data analysis, and critically revised the manuscript.

JMG led the conception and design of the study, oversaw participant selection, oversaw data collection and analysis, and provided substantial feedback and revision through all iterations of the manuscript.

EW, RB, CLE, LCM, KOB and JMG were involved in the design of the study, data interpretation and revision of the manuscript. All authors read and approved the final manuscript.

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Tables

Table 1. Descriptive characteristics of organizations and interview participants

<i>Identifier</i>	<i>Description of health care organization</i>	<i>Type</i>	<i>No. food venues</i>	<i>No. employees</i>	<i>Title of operational manager</i>	<i>Title of executive leader</i>
1	State public health agency with legislated budget and stakeholders	Government agency	4	3000	Policy Specialist	Chronic Disease Division Manager
2	Regional non-profit health plan and delivery system	Health plan and hospital system	19	21000	Retail Dietician	Regional Chief Executive Officer
3	Urban non-profit academic medical center, sole Level One Trauma Center in the state	Hospital system	9	17000	Sustainable Food Programs Manager	Food & Nutrition Services Director
4	Federally-run medical center with centralized governance and homogenous patient mix	Health care administration	1	4000	Retail Food Services Director	Associate Director
5	Faith-based health care network with vegetarianism as part of faith tradition	Hospital system	2	2000	Food Services Director	President/CEO

Table 2. Respondent-specific facilitators

<i>Facilitator</i>	<i>1E</i>	<i>1O</i>	<i>2E</i>	<i>2O</i>	<i>3E</i>	<i>3O</i>	<i>4E</i>	<i>4O</i>	<i>5E</i>	<i>5O</i>
Champion/change agent	x		x	x	x	x	x	x	X	x
Early adopters					x		x	x	x	
Employee wellness prioritization	X	x	x	x	x	x	X	x	X	X
Grant opportunity	x									
Open communication			x		x	x	X	x	X	X
Staff buy-in						x	x	x	x	x
Cost savings from employee health	x		x	x						
Incrementalism	x	x	x	x	x	x	X	x	x	x
Ability to pilot		x		x		x	x	x	x	x
Institutional commitment	x	x	X	x	X	x	x	X	X	X
Available financial resources			x	x	x	x	x	x	x	x
Competitive pricing strategies										x
Market promotion			x	x	x					
Profit making food operations units						x				
Mandate authority	x	x		x	x		x	x	x	x
High bargaining power with vendors				x	x		x	x	x	
Strong food services mission			x		x			x	X	x
Subsidizing food service operations			x		x	x			x	x
External pressures to change FE	x		x	x	X	x	x	x	x	x
Captive audience					x			x	x	x
Consumer demand					x	x	x	x	x	
Technical assistance			x	x	X	x	X	x	x	X
Available administrative resources			x				x		x	
Centralized operations							x	x		
Highly skilled kitchen staff/chef					x	x	x		x	X
Nutritional expertise					x	x	x			x
Skills sharing among sites			x		x	x				x

Note: capitalized and bolded Xs signify more than 5 coded references were made

Table 3. Respondent-specific barriers

<i>Barrier</i>	<i>1E</i>	<i>1O</i>	<i>2E</i>	<i>2O</i>	<i>3E</i>	<i>3O</i>	<i>4E</i>	<i>4O</i>	<i>5E</i>	<i>5O</i>
Complexity	X	x			X	x	x	x	x	x
Unclear goals	x				x	x	x	x	x	
Inconsistent messaging	x					x	x		x	x
Lack of leadership		x			x	x		x	x	
Perceived goal conflict					x			x	x	x
Prescriptive centralization	X	X		x	X	X	x		x	x
Institutional bias	x	x								x
Long-term vendor contracts										x
Power struggle				x	x	X			x	x
Mutual mistrust					x	X				x
Prohibitions on marketing							x	x		
Statutory barriers	X	x				x				
Lack of mandate authority		x				x				
Pushback	x	x	x	x	x	x	x	x	x	x
Competition with surrounding vendors					x			x		x
Consumer resistance/preference for unhealthy items	x		x					x	x	x
Disgruntled staff/lack of buy-in				x		x	x		x	
Lack of competent/skilled staff							x			
Disgruntled vendors	x	x	x	x	x					
High stress environment			x					x		
Resource constraints	x	x	x	X	X	X	x	x	x	X
Actual revenue loss			x	x	x				x	x
Perceived revenue loss				x	x				x	x
Higher food costs						x		x		x
Higher labor costs			x	x		x		x	x	x
Lack of money	x	x			x	x				x
Lack of training or capacity	x	x		x	x	x	x		x	
No monitoring possible	x	x				x				
Staff turnover						x	x		x	

Note: capitalized and bolded Xs signify more than 5 coded references were made

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