BMC Medicine

RESEARCH

Open Access

Which factors influence the transition towards a healthy and sustainable food environment in Dutch hospitals? A qualitative view from stakeholders

Joline J. Wierda[1*], Femke van Nassau[2], Sanne K. Djojosoeparto[1] and Maartje P. Poelman[1]

Abstract

Background Hospitals fulfill an important exemplary role in promoting health and well-being. It is therefore crucial to have a supportive food environment that stimulates healthy and sustainable food choices of patients, staff, and visitors. This qualitative study aimed to identify factors influencing the implementation of long-lasting actions to enhance the healthiness and sustainability of the food environment in the hospital setting in the Netherlands, from the perspective of different stakeholders.

Methods Semi-structured interviews were conducted in hospitals realizing a healthy and sustainable food environment. Verbatim transcripts were thematically analyzed, guided by the Consolidated Framework for Implementation Research. Data were organized and interpreted per theme as well as stakeholder group.

Results In three hospitals, 29 semi-structured interviews were conducted with 30 stakeholders from a wide spectrum of stakeholder groups (i.e., facility professionals, healthcare professionals, project coordinators, and board of directors). Identified themes and subthemes were: 1 the outer setting, with momentum for change, government-established policies and guidelines, collaboration and networks outside the hospital, and caterers' and suppliers' food offerings, interests, and contracts; 2 the innovation domain, with familiarity and compliance with the TEH program; 3 support at all levels, achieving organizational buy-in with communication as a strategy, and end user interests; 4 the inner setting, with key priority in policy and having a vision, available resources, infrastructure within the hospital, ambassadors, and gradual process with continuous effort; and 5 the individual domain with personal drive.

Conclusions The results revealed an interplay of perceived factors that influence the enhancement of a healthy and sustainable food environment and underscored the importance of addressing various facilitators and barriers across multiple domains within and outside the hospital setting. To ensure successful integration of a healthy and sustainable food environment in hospitals, throughout the entire organization it is crucial to engage diverse stakeholders at all levels and address their barriers with tailored implementation strategies. We suggest verification of our findings in more hospitals.

Keywords Hospital, Food environment, Health, Healthy food environment, Food choices, Sustainability, Hospital staff, Patients, Implementation evaluation, Prevention

*Correspondence:
Joline J. Wierda
joline.wierda@wur.nl
Full list of author information is available at the end of the article

Background

Our food choices are strongly influenced by the food environment, which currently stimulates unhealthy and unsustainable rather than healthy and sustainable food choices [1, 2]. The food environment can be defined as the collective physical (availability, quality, promotion), economic (costs), policy (rules), and sociocultural (norms, beliefs) surroundings, opportunities, and conditions that influence food choices and nutritional status [3]. Unhealthy diets are major contributors to overweight, obesity, and non-communicable diseases (NCDs), such as type 2 diabetes and cardiovascular diseases [4, 5] and unsustainable diets such as the high consumption of animal-based foods have a negative impact on environmental sustainability [6]. A healthy and sustainable diet contains high-nutrient foods including a diversity of fruits, vegetables, legumes, unsalted nuts and unsaturated oils, whole grain products, and is low in animal-source foods, saturated and trans fats, refined grains, highly processed foods, and added sugars [6]. Implementing a healthy and sustainable food environment supporting healthy and sustainable food choices may have significant beneficial implications for both human and planetary health, also in terms of increased health equity, growth of sustainable food systems, and ultimately reducing healthcare costs [6, 7]. For example, a healthy and sustainable food environment is one where nutritious and environmentally friendly food options are the default. These options are affordable, widely available, and actively promoted, making it easy and appealing for individuals to make healthier and sustainable food choices.

Hospitals have an exemplary role to play in promoting health and well-being and it is therefore important that hospitals implement a healthy and sustainable food environment that guides patients, staff, and visitors towards healthy and sustainable food choices [8, 9]. The hospital setting can promote health for patients, as research has shown that nutrition plays a critical role in recovery, enhancing patient outcomes and preventing diseases [10, 11]. A healthy and sustainable food environment in hospitals must accommodate the nutritional requirements of all individuals, both those with specific clinical dietary needs and those without. For example, hospitalized patients often face a higher risk of malnutrition or require elevated protein intake [12], while others, including staff and visitors, benefit from adhering to general dietary guidelines [13]. Moreover, the hospital setting includes a large number of employees, which provides the opportunity for hospitals to promote a healthy and sustainable work environment and to keep employees healthy by providing healthy foods during their working hours [14]. Additionally, hospitals receive a significant number of visitors for whom this setting can fulfill an exemplary role when it comes to health [15].

The current literature on the hospital food environment showed that the foods available and offered are primarily unhealthy and unsustainable [16–20]. In recent years, there has been growing awareness for the need of healthy and sustainable food environments in general as well as specifically in hospitals. For example, the Dutch government has set the ambition that in 2025, 50% of hospitals offer healthy foods to patients, visitors, and staff, and in 2030 all hospitals should reach this goal [21]. To support the hospital ambition of the government, the Dutch Ministry of Public Health, Welfare and Sports commissioned a national program in 2018, called "A Taste of Excellent Healthcare" (TEH) (in Dutch: Goede Zorg Proef Je) [22]. The TEH program aims to support and help hospitals improving the food environment for patients, staff, and visitors, and is executed and led by the Dutch Nutrition & Healthcare Alliance (a national expertise center in nutrition and healthcare) [23]. The scientific bases for the TEH program are the 2015 Dutch food-based dietary guidelines [13] and the ESPEN guidelines for hospital nutrition [12] for patients, and the Guidelines Eating Environments of the Dutch Nutrition Centre [24] for staff and visitors. Across the globe, several other initiatives show promising efforts for a transition of the hospital food environment. For example, in New York City, many hospitals joined a program that led to improvements of the hospital food environment [25]. In Australia, a state-wide policy was introduced for a healthy food environment in all healthcare facilities, including hospitals [8, 26].

It has been recognized that changing the food environment in the hospital setting is a complex transition, which requires a systemic approach for a drastic shift in the entire hospital organization [18]. It involves changes at various levels of the organization, with a variety of stakeholders who have different roles and distinct spheres of influence. So far, previous studies evaluating implementation of healthy food initiatives in hospital or healthcare settings have already identified that resources, support, and communication are essential factors influencing implementation of strategies to improve food environments [27, 28]. Known barriers for implementing change in hospital food environments are, e.g., budget constraints, logistical barriers, lack of resources, time constraints, customer complaints, resistance, and lack of support [18, 28, 29].

To the best of our knowledge, there are currently no studies examining how a healthy and sustainable food environment through the entire hospital organization can be realized. Only specific aspects of the food environment have been examined, for example, the evaluation of the implementation of healthier foodservice guidelines in

hospital cafeterias [28] or adopting sustainable food service practices [29]. Furthermore, the perspectives of all stakeholders across all levels of the hospital organization are not often analyzed in one study. Often, only a specific group of stakeholders was considered, for example, only the perspectives of hospital food outlet retailers concerning the implementation of healthy food procurement policy [30]. To achieve a sustained transition of the entire hospital food environment for patients, staff, and visitors towards a healthy and sustainable food environment, it is important to study this in a more holistic way, incorporating both the full food environment and a variety of stakeholders in all levels of the hospital.

Therefore, the aim of this study was to gain insight into the factors that influence the implementation of actions to enhance the healthiness and sustainability of the food environment in the hospital setting in the Netherlands, from the perspective of different stakeholders in this setting.

Methods

Context

This study was part of a project that was financially supported by a grant (grant number 162135) from the Regio Deal Foodvalley, a collaboration between the Dutch government and different regional governments, entrepreneurs, education, and knowledge institutions, including the Nutrition & Healthcare Alliance, a national expertise center that aims to realize health benefits by applying scientific findings on nutrition and exercise in prevention and healthcare. The TEH program is funded and supported by the Dutch government, following the National Prevention Agreement of 2018, which is an agreement aiming to achieve a healthier Netherlands, signed by the Dutch government and several public and private organizations [21]. One goal in the agreement focuses on the food environment in hospitals and states that by 2025, 50% of hospitals are expected to offer healthy foods to patients, staff, and visitors, with the goal of reaching full implementation in all hospitals in the Netherlands by 2030. The Nutrition & Healthcare Alliance and the TEH program started a learning network with 20 hospitals that committed to accelerating achieving the goal in the agreement: realizing a healthy hospital food environment by 2022. This group of 20 hospitals is called the frontrunner hospitals [31, 32]. A prerequisite to be a frontrunner hospital was to have a vision on healthy food for patients.

Study design

This qualitative study aimed to identify factors influencing the transition towards a healthy and sustainable food environment in frontrunner hospitals in the Foodvalley region in the Netherlands. Our study adopts an interpretivist design rationale, as it explores a complex reality from subjective experiences and perspectives of different stakeholders [33]. Results were reported guided by the Consolidated criteria for reporting qualitative research (COREQ), please see Additional file 1 [34].

Ethics

Prior to the interview, participants received information about the study via email, including the goal and purpose of the interview and study. All participants provided informed consent. The Social Sciences Ethics Committee of Wageningen University & Research approved this study (reference number 2021-38-Wierda) and it complies with the Netherlands Code of Conduct for Research Integrity.

Participant recruitment

The hospitals were chosen based on their location in the Foodvalley region in the Netherlands, as this was the study area of the overall research project this study was part of. Four frontrunner hospitals were identified and were approached for participation in this study, of which one hospital was unwilling to participate due to their self reported time constraints. In 2022, semi-structured interviews were conducted in three hospitals (an academic, top-clinical, and general hospital). The participants were recruited with support of the network of the Nutrition & Healthcare Alliance, who had contacts within these hospitals, as these hospitals were part of the TEH program. Either an email address was provided and the first author (JJW) made the initial contact, or the Nutrition & Healthcare Alliance introduced the participants via email. Additionally, we asked participants if they could suggest a colleague that fulfilled the inclusion criteria and whom we should also interview. Hospital staff were eligible to participate if they were professionally engaged with the food environment or had a significant role in shaping its structure within the hospital food system. We recruited participants among four stakeholders groups within each hospital: facility professionals, project coordinators, healthcare professionals, and board of directors. The target number of participants for this study was based upon the stakeholders that were identified by the three hospitals (i.e., a convenience sample), spanning all organizational levels from facility staff to board directors, ensuring representation of each stakeholder group.

Interview guide

We used the Consolidated Framework for Implementation Research (CFIR) to guide the interviews [35]. CFIR consists of constructs across five domains, the innovation, the outer setting, the inner setting, the individuals,

and the implementation process domain. We were guided by the CFIR framework in this study, although not all CFIR components were included. The interview guide helped to explore the various factors that influence the implementation of a healthy and sustainable food environment in the hospital setting. Topics that were asked were, for example, commitment of management level, vision and goals for the hospital food environment, motivation for the transition, and available resources (see Additional file 2 for the interview guide). We developed the questions for the semi-structured interviews guided by the CFIR framework, relevant literature, our previous study where we characterized the food environment [18], and team discussions to ensure alignment with the research objectives. We tailored the topic list to the specific role of the interviewee in the implementation process. For example, in interviews with management, we placed less emphasis on questions regarding practical implementation, whereas in interviews with operational staff, we de-emphasized questions related to allocated financial resources. This approach provided flexibility, but may have introduced some variability in the data collected across the different roles of the participants. Prompts and probes were used to encourage deeper responses or to clarify participants' answers when necessary.

Data analysis

Interviews were conducted in Dutch by the first author (JJW). In general she was not involved with the participants beforehand, except that she had interviewed one participant previously for a different study [18]. The interviews were transcribed verbatim by an external company (Transcript online) [36]. Participants did not comment on the transcripts or the findings. All verbatim transcripts were anonymized and thematically analyzed. The data analysis was guided by several phases including all authors, JJW (PhD candidate at time of the study, female) and FvN, SKD, MPP (PhDs, females, experienced qualitative researchers). First, three of the four authors (JJW, FvN, and MPP) each independently read a selected different transcript, each from a different stakeholder group and a different hospital to capture diversity, and open coded that interview. Then, these three authors met in person to discuss and organize all codes under each CFIR domain. The three authors combined their individual codes into a single set, and then collaboratively organized these codes into the CFIR domains. Some codes were merged, because they represented the same concept, thereby excluding some initial codes, while other codes remained distinct. The first author then reviewed and refined these codes, consolidating duplicates and adjusting certain terms to better capture the nuances of the data. The final codebook was discussed and agreed upon by the entire research team (please see Additional file 3 for the code book). Then, two authors (JJW and SKD) coded separately the same interview with this code book to create consensus. The two authors discussed their codes for the specific interview, reviewed all the codes, and no major differences emerged. There was consistency in coding by both authors, and after discussing a few nuanced differences, consensus was reached. The code book was used by the first author (JJW) to code all interviews via the analysis software ATLAS.ti (version 22) [37]. In consultation and discussion with all authors for organization of the data, codes were reviewed for similarities, redundant codes were merged, and relating codes were grouped into themes, with the CFIR as guiding framework for grouping the codes into themes. Data were also organized and interpreted per stakeholder group. The findings comprehensively aligned with the data. Quotes from participants were used to illustrate the presented findings including an identification of the participant. The quotes were selected based on their relevance and suitability to best illustrate the themes discussed and align with the study's objective. Illustrative quotes were translated from Dutch to English.

Results

Interview procedure and participant characteristics

The interviews were conducted between May and November 2022. In total, 29 interviews were conducted with 30 participants (one duo interview), of which 12 interviews in hospital one, 10 interviews in hospital two, and 7 in hospital three. A total of 18 interviews were conducted online via Microsoft Teams or by telephone and 11 interviews in person in the hospital. The interviews were audio-recorded and lasted between 24 and 70 min. A description of the characteristics of the participants can be found in Additional file 4. Some participants fulfilled a position that could be classified in multiple stakeholder groups: 11 participants were categorized in the facility stakeholder group (e.g., chef, team leader of the nutrition and hospitality department), 9 participants as project coordinators (e.g., department manager of hospitality services), 9 participants as healthcare professional (e.g., dietitian, gastroenterologist), and 3 in the board of directors (e.g., chairperson of the board of directors, management team). All three hospitals included representation from each stakeholder group, except in one hospital no one from the board of directors was willing to participate in this study.

Key factors that influence the transition towards a healthy and sustainable hospital food environment

Table 1 describes an overview of the factors influencing a transition towards a healthy and sustainable hospital food environment.

The outer setting

Factors within the outer setting that affected the realization of a healthier and more sustainable food environment in hospitals were momentum for change, government-established policies and guidelines, collaboration and networks outside the hospital, and caterers' and suppliers' food offerings, interests, and contracts.

Momentum for change Some participants mentioned that there was increased attention and awareness for prevention and a healthy lifestyle in society in general. This created momentum for change to healthier and more sustainable food environments in their hospital and enhanced the awareness among the entire population. Additionally, a few participants mentioned that recent experiences with the COVID-19 pandemic reinforced this momentum for a healthier environment. However, these participants indicated at the same time that the COVID-19 pandemic had delayed the realization of a healthy and sustainable food environment in hospitals, for example, because of staff shortages and a deteriorated financial situation of caterers and suppliers, causing less emphasis on development and innovation of healthy and sustainable food products. Yet, a shift towards a healthier environment is still needed, emphasized by a healthcare professional: "*Before a hospital truly embraces nutrition, prevention, health promotion, that requires a significant shift, especially if you always focused solely on illness.*" P21, healthcare professional/project coordinator.

Government-established policies and guidelines As a helpful guidance in achieving a healthy and sustainable food environment, participants often mentioned that the clear goals and targets set by the National Prevention Agreement [21] provided them the urgency to change: "*[…] And we just have to achieve that goal, because we signed the [NPA] agreement.*" P2, facility professional. In addition, many participants indicated that the tools and guidelines of the National Nutrition Centre with respect to healthy and sustainable diets and food environments are supportive in achieving this goal. However, a participant also illustrated: "*…hospital patients often require more protein and energy, more frequent eating moments, and sometimes more compact foods with higher energy density. As a result, it may not always fully align with the [Dutch] Dietary Guidelines.*" P8, healthcare professional.

Collaboration and networks outside the hospital All three participating hospitals were located near a university that facilitated collaborations with academics and provided them with knowledge and skills that supported the transition towards a healthy and sustainable food environment. Furthermore, all three hospitals acknowledged that the national learning network of hospitals set up by the TEH program of the Nutrition and Healthcare Alliance supported them in various ways, such as sharing best practices, learning from each other, and benchmarking their performance against other hospitals, as illustrated by: "*What we have particularly benefited from is the motivation it [the TEH network] gave and the contacts with other hospitals that emerged there. So doing*

Table 1 Factors influencing a transition towards a healthy and sustainable hospital food environment

Main theme	Subtheme
The outer setting This theme includes several factors and societal developments outside the hospital boundaries that affect the realization of a healthier and more sustainable food environment within hospitals	Momentum for change Government-established policies and guidelines Collaboration and networks outside the hospital Caterers' and suppliers' food offerings, interests, and contracts
Innovation domain This theme describes factors concerning the implementation of a healthy and sustainable food environment, supported by the TEH program (A Taste of Excellent Healthcare)	Familiarity with the TEH program Compliance with the TEH program
Support at all levels This theme describes factors related to support for a healthy and sustainable food environment	Achieving organizational buy-in End user interests Communication as a strategy for gaining buy-in
Inner setting This theme describes factors related to the hospital setting in which a healthy and sustainable food environment is implemented	Key priority in policy and having a vision Available resources Infrastructure within the hospital Ambassadors Gradual process with continuous effort
Individual domain This theme describes influences and roles of individuals involved in the implementation of a healthy and sustainable food environment in hospitals	Personal drive

it together with [hospitals] in the entire country." P19, healthcare professional.

Caterers' and suppliers' food offerings, interests, and contracts Participants indicated that in each hospital a cooperative and committed food supplier and/or caterer was essential in the transition towards a healthy and sustainable food environment. Illustrated by: "*[…] it depends to some extent on the willingness of the caterer to move forward. And we might be lucky with that, that it went smoothly.*" P23, project coordinator. However, some issues with caterers and suppliers were not in favor of the transition. First, facility professionals, project coordinators, and board of directors participants indicated that caterers and suppliers were generally willing to cooperate and to innovate, but emphasized that commercial and financial interests took precedence and sometimes hindered the preferred transition. Moreover, some participants mentioned that caterers' profit was mainly obtained from the sale of unhealthy products: "*Next to a cappuccino, the second best-selling product is a sausage roll and then a croquette [fried meat snack]. That's just profit.*" P3, facility professional. Second, mostly facility and project coordinator participants mentioned that the product range of the caterer or supplier was not always sufficient to achieve a healthy and sustainable food environment. Finding alternative products was mentioned to be challenging and the market did not always seem ready for it: "*For example, finding alternatives to meat products was very difficult.*" P23, project coordinator. Furthermore, some healthcare professionals mentioned that clinical dietary requirements, for example, that of patients with increased protein needs, must be assured, especially in the transition towards sustainable food environments. As illustrated by a participant: "*Of course, we now also have a much stronger focus on plant-based foods, which is quite more complicated for patients, because we say – it [a more plant-based diet] should not come at the expense of patients' protein needs.*" P7, project coordinator. Finally, the long-term contracts without an emphasis on health and sustainability targets were observed as an obstacle for creating a healthy and sustainable food environment in the short term. Participants indicated that because of such contracts they were, for example, not always in charge of what was offered, or that they were dependent on fixed menus provided by the external party or were only able to use fixed order lists (e.g., with pre-defined products). Moreover, those with in-house management of food provision expressed the greater flexibility for changing foods and meals offered: "*Of course, we [the restaurant] are managed in-house, which really makes a big difference. So we are not tied to fixed recipes or fixed order lists.*" P5, facility professional. What worked in some hospitals were negotiations: "*So I put pressure on the suppliers, I negotiate with them to renew and improve their food offerings. And that's exactly what happened.*" P13, board of director. Including healthy and sustainable foods in a Statement of Requirements (i.e., document with requirements, criteria, and conditions that a potential product or service must meet to be purchased in, for example, a procurement process) for suppliers was also regarded as facilitating: "*This was clearly stated as a requirement in our tender to all external suppliers. Naturally, they have to be able to comply with that.*" P5, facility professional. Uniting as hospitals towards producers and suppliers, the power of the collective, was put forward by participants as a solution to increase the demand for more healthy and sustainable products.

Innovation domain

Factors within the innovation domain that affected the realization of a healthier and more sustainable food environment in hospitals were familiarity and compliance with the TEH program.

Familiarity with the TEH program Many of the participants were not familiar with the TEH program; only a small part of the participants recognized the name and knew the program, especially the facility and project coordinators. Illustrated by a project coordinator: "*… people sometimes really don't know the TEH. But they don't know the National Prevention Agreement either, so- And that, I think, is the biggest challenge for all of us. Like, how do you get it to people on the floor?*" P7, project coordinator. Healthcare professionals also often knew little about TEH: "*Because they approached me quite at a final phase as a medical specialist.*" P21, healthcare professional/project coordinator. A participant from the board of directors described it as follows:

> *And I don't know whether TEH is widely known in the hospital, but its effects are widely known in the hospital. […] if you randomly ask a nurse here about TEH, that person may not be able to place it, but at least knows that we are working on nutrition. P11, board of director, May 24, 2022*

The hospitals incorporated TEH into their own projects, in which the objectives of TEH were reflected: "*We don't call it TEH, but we call it [unique name of project in hospital]. But actually, it's the same thing.*" P17, project coordinator.

Compliance with the TEH program Most participants familiar with TEH mentioned that the program served as a driving force to accelerate the transition by providing

them guidance and serving as a strong incentive. Hospitals wanted to comply with the requirements. Moreover, participants stated that the TEH program was a key incentive for participation, because it involved all hospitals and other healthcare institutions in the Netherlands to work towards the same goal.

Participants mentioned that within the TEH frame there was freedom how to implement the transition. A project coordinator expressed that the degree of freedom should be limited in implementation and deviation from agreements on realizing a healthy and sustainable hospital food environment: "*But hospitals evaluate their own food environment. And my experience is that everyone interprets it differently and that the criteria that are set are therefore not always implemented in the same way.*" P23, project coordinator. Additionally, a few participants mentioned that consensus was lacking about when you succeeded with the TEH program. The facility and project coordinator stakeholders described the criteria for what constitutes a healthy and sustainable food environment mainly at product level, while other participants mentioned the "TEH criteria" and the NPA as the ultimate goal.

Support at all levels

Factors within the theme support at all levels that affected the realization of a healthier and more sustainable food environment in hospitals were achieving organizational buy-in, end user interests, and communication as a strategy for gaining buy-in.

Achieving organizational buy-in Having support of colleagues throughout the entire hospital organization was mentioned by many participants from all stakeholder groups as a key facilitator for implementing a healthy and sustainable food environment in their hospital. Improving food environments needs endorsement throughout the entire hospital organization: "*I believe the real difference lies in having a shared direction and actively working on it.*" P8, healthcare professional, and "*What I think is also a very important one is that you really have to include all levels.*" P19, healthcare professional. Participants with a management position stated the following: "*It is essential to realize that when management and middle management do not fully support the initiatives, expecting support from the executive people becomes unrealistic.*" P12, healthcare professional/board of director.

Participants from the board of directors also mentioned that they tried to provide managerial support, e.g., by providing resources and sharing the vision for the transition, to implement a healthy and sustainable food environment and they indicated that this support was necessary. Participants from the other stakeholder groups also perceived the managerial support as positive; it was considered necessary that the board of directors took a firm stance on the transition. Illustrated by a project coordinator: "*You are highly dependent on visionary leaders for your innovative capacity*," P30, project coordinator. Some facility stakeholders perceived the managerial support as being more distant: "*Sometimes it feels as if we need to push it up from the lower levels, whereas ideally, it should be more like a blanket covering the entire organization.*" P5, facility professional.

End user interests The interviews revealed that the attitude of the end user, i.e., patients, staff, and visitors, towards a healthy and sustainable food environment in the hospital often varied and were perceived differently by the various stakeholder groups interviewed. Especially facility stakeholders elaborated on the resistance topic and mentioned that often patients found a healthy and sustainable food offering acceptable, however most of the resistance towards a healthy and sustainable food environment came from hospital staff, as illustrated by: "*And the staff of the hospital also have to get used to it. When they come to us, they are always more critical than the guests, the visitors, for example.*" P3, facility professional, and "*The biggest complainers are the staff.*" P25, facility professional. One hospital practiced with role plays how facility stakeholders could react to guests who showed resistance to overcome this barrier. Participants from the facilities stakeholder group also believed that especially the staff, including medical staff, had to set the right example: "*If I have to engage in a discussion with a physician, something seems to go wrong in my perception, as you expect that especially from the core of the hospital, the (medical) specialists, should know what healthy food is.*" P5, facility professional. It was mentioned multiple times from the facility stakeholder group that it sometimes felt like the transition was coming from them, as if they were the ones that determined what someone can and cannot eat, because the facility staff received first hand feedback. A few healthcare professionals echoed this; they also mentioned that the criticism was greater among staff than among patients and that staff felt patronized more often. As illustrated by: "*Staff – there is really huge criticism that there is now more plant-based food in the restaurant and then you really hear people grumble like I should be able to choose what I want.*" P21, healthcare professional/project coordinator. In all stakeholder groups, participants mentioned that resistance and criticism from patients, staff, and visitors are inevitable during a transition, but emphasized the importance of persevering with the change, dealing with resistance,

and giving it time: "*Then I think, you are not yet the early adaptor or the innovator, you are a laggard. Time will take care of it […], I am trying to focus mainly on the people who are naturally involved in this.*" P27, project coordinator.

Generally, it was stated in all stakeholder groups that a healthy and sustainable food environment is inherent to a hospital and that a hospital has a role model function and a unique position towards healthy nutrition for patients, but also for its staff. It was also mentioned by project coordinators that those few hospital days can make a difference in ensuring that someone is well-nourished. There was also some countervailing opinion: "*However, when examining where the actual problems lie, they are often more related to lifestyle, living environment and individual behaviors at home. And in that context, what you offer in hospitals is honestly speaking just a drop in the ocean*," P30, project coordinator. A healthcare professional outlined some conflicting interests occasionally heard among medical specialist regarding the role of the hospital:

> *Why focus on prevention? On health promotion? We are a hospital. We are dealing with sick individuals; that should not be part of this. All of that needs to be addressed in primary care, or even zero-line care (care provided outside formal healthcare). P21, healthcare professional/project coordinator, July 14, 2022*

A healthcare professional also stated: "[…], *the core business, so to speak, is essentially just running the hospital*," P1.

Communication as a strategy for gaining buy-in Communication about the transition towards a healthy and sustainable food environment was mentioned multiple times by several participants from all stakeholder groups as a crucial strategy to gain support and overcome resistance. In particular to explain "the why" and the reasons for the transition and take people along the journey, articulate the importance across the entire hospital, continuously involve and enthuse people in a positive way, and maintain continuous and timely communication: "*I believe that is key, […], timely communication and thoroughly explaining why you are implementing particular actions.*" P24, project coordinator.

Several participants emphasized the importance of collaborating with colleagues of the communication department from the start of the transition. Examples of effective communication strategies included engaging in conversations with employees, organizing lunch sessions, face-to-face conversations, and offering tastings: "*Continuing the dialogue with employees and letting them taste the changes. Involve them in the transformation. That is truly change management.*" P17, project coordinator. A facility stakeholder mentioned that they did not explicitly communicate changes and had few negative reactions: "*But we also did not publicize it widely. We did not say, from Monday we will replace three types of [name of sweetened carbonated soft drink] for one and we also put water flavorings next to them.*" P5, facility professional.

Important in the communication was tailoring information on the food environment transition to different target groups. Facility stakeholders mentioned that they aimed to encourage people to make healthy choices rather than prohibiting unhealthy ones: "*It remains quite challenging to engage everyone without becoming patronizing. […], you have got to give it a bit of a nice twist and you have got to keep it fun.*" P10, facility professional. Several participants mentioned that the main part lies in healthy food, but that there should also be room for unhealthy food. Healthcare stakeholders primarily discussed the importance of communicating with their patients. Participants also stressed the importance that "the how and why" of a food environment transition should also be effectively communicated to the service assistants, who distribute food and drinks to patients: "*You have to turn all the radars, and the radar of the service assistants is of course also extremely important in this.*" P17, project coordinator.

Inner setting

Factors within the inner setting that affected the realization of a healthier and more sustainable food environment in hospitals were key priority in policy and having a vision, available resources, infrastructure within the hospital, ambassadors, and gradual process with continuous effort.

Key priority in policy and having a vision All stakeholder groups noted that having a written document, often a policy or vision document with, e.g., goals, served as a reference and guidance for the entire hospital organization and facilitated the realization of a healthy and sustainable food environment. Specifically project coordinators mentioned the importance of including the goals to improve the hospital food environment in a vision and policy document: "*It is so deeply embedded in the vision of the [name of the hospital], making it also embedded in the entire food concept for all three target groups [patients, staff, visitors]*," P7, project coordinator. Another participant gave the example of having a contract or Key

Performance Indicators (metrics to evaluate organizational performance): "*Ensure that things are documented. […] This way, you can keep holding each other accountable for the goals you have set together*," P23, project coordinator.

Available resources The majority of participants indicated that enough available resources, manifested in time, budget, and personnel facilitated the transition towards a healthy and sustainable food environment. They explained that the transition was accompanied with enhanced procurement costs and often required extra time of staff. However, most participants mentioned that they regarded working on the transition as part of their day to day work: "*All the time I spend on this falls within my regular hours*," P1, healthcare professional. They indicated that the implementation phase took more time but that eventually it should be integrated into their regular tasks. They experienced the given freedom by the hospitals as facilitating and it helped them to be creative and try new things in order to achieve a healthy and sustainable food environment: "*… you can just do what you want to do, you don't have to ask for permission for everything from above.*" P10, facility professional. Some participants of the board of directors, project coordinators, and some facility professionals mentioned that resources had been expanded, for example, in the form of hiring external project managers and the allocation of budget. Participants from the healthcare professionals, project coordinators, and facility staff all mentioned that staff shortages and a lack of qualified personnel were factors that hindered the transition to a healthy and sustainable food environment.

Infrastructure within the hospital Participants from all stakeholder groups noted that there was an infrastructure present within the hospital that supported the implementation of a healthy and sustainable food environment. Participants said that extensive use was made of project groups, work groups, steering groups, and advisory boards, which facilitated and were crucial for collaboration, coordination, and taking decisions. Often these infrastructures were already existing structures related to nutrition and sometimes specifically established for this purpose: "*A project team has been established for that [the transition] purpose, and a project coordinator is also assigned to it.*" P4, project coordinator. Participants also said that these project groups were important for progress and decision-making: "*… Otherwise, progress would be hindered […] Because everyone has an opinion about food and drinks.*" P17, project coordinator. In those project groups, many disciplines, perspectives, and departments were represented, as a participant illustrated that this contributed to generating support and ownership: "*because almost all departments are represented, this prevents any single department from questioning, 'how could you have done that?'*," P7, project coordinator. Participants also noted that it was important to represent and involve everyone: "*People need a medical specialist or a nurse, someone from facility, someone from procurement. Only when all those parts come together, it will succeed*," P12, healthcare professional/board of directors.

Ambassadors Ambassadors for realizing a healthy and sustainable food environment in the hospital were seen as key by participants to engage, enthuse, and motivate people for a healthy and sustainable food environment: "*You also need true champions at all levels, so among the paramedics, the nursing staff, medical specialists, support staff, facility staff, of course, and among kitchen personnel.*" P12, healthcare professional/board of directors. Project coordinators from one hospital mentioned that they specifically designated ambassadors to tell the story about their project translation of TEH across the hospital. In fact, most of the participants had taken on the ambassador role themselves: "*I think that we […] have taken the lead with the three of us to advance to this stage*," P24, project coordinator.

Gradual process with continuous effort Participants from all stakeholder groups mentioned that the transition towards a healthy and sustainable food environment requires time and is a slow and not always easy process; it is a process that is continually evolving. Participants from the board of directors mentioned that continuous investments are needed and that requires several years before a hospital truly embodies it: "*And then, still, I mean, it is not a project, it is truly akin to a form of DNA or a mindset that you have to adopt on all fronts.*" P11, board of director. It was in particular mentioned that changes were implemented gradually, in phases and with a learning approach, illustrated by: "*We did not start everything we wanted at once. So we are implementing it in phases.*" P22, healthcare professional. Almost all participants indicated that the ongoing transition was likely to proceed: "*These changes are irreversible, figuratively speaking. They initiated it, it is in motion, and it is unlikely that we will reverse it quickly.*" P6, project coordinator. In addition, participants emphasized the importance of monitoring changes and ensuring that efforts continue, for example, via patient and customer satisfaction surveys, monitoring product procurement changes via systems of caterers and suppliers and monitoring the Key Performance Indicators (metrics to evaluate organizational performance) that were established during the procurement process.

Individual domain

A factor within the individual domain that affected the realization of a healthier and more sustainable food environment in hospitals was personal drive.

Personal drive The majority of participants saw it as their responsibility to contribute to the transition, either from their professional position or from their own intrinsic motivation. Participants considered it an important topic to work on and aimed to improve the food environment: "*We strive to provide people healthy food that contributes to quick recovery*," P2, facility professional. Some healthcare stakeholders said that they had to give the right example and "the white coat effect" also helped. One participant illustrated this by referring to changing the food environment in the hospital as personal mission: "*In general, it is my mission to improve that health is a standard part of medical treatment.*" P27, project coordinator.

Discussion

This qualitative study identified various factors influencing the implementation of a healthy and sustainable food environment in hospitals, as perceived by different stakeholder groups throughout the hospital. We found several important insights. First, this study identified multiple influencing factors in various domains within and outside the hospital as perceived by the stakeholders, ranging from internally available resources to external government established guidelines and from the personal drive of key stakeholders to societal momentum for change. Second, participants from all stakeholder groups encountered unique challenges and opportunities that affect the implementation of a healthy and sustainable food environment. These outcomes highlight the importance of engaging a diverse array of stakeholders at all levels of the organization in this process, along with tailored implementation strategies.

One of the main facilitators identified by all stakeholder groups for enhancing a healthy and sustainable food environment in the hospital setting was having support and motivation at all levels in the hospital. Lack of support or motivation was at the same time perceived as a strong barrier for improving hospital food environments. To gain support from each stakeholder group, tailored strategies and customized communication approaches were mentioned as helpful strategies, for example, doing role plays how to deal with resistance instead of emailing such information. The need for support and motivation observed in our study are factors that are consistent with previous research in the hospital setting. A prior study of barriers and facilitators when implementing the protein transition—shifting dietary patterns from animal-based proteins towards the use of plant-based and alternative protein sources [6, 38]—in public food procurement, including hospitals, noted support and motivation as one of the five main themes for successful adoption [38]. A scoping review to understand implementation of local food procurement in healthcare foodservices mentioned organizational support, passionate leaders, and step-by-step changes as enablers [39]. This study adds to these insights and showed that the support or motivation for the implementation of a healthy and sustainable food environment was perceived different by each stakeholder group. Healthcare professionals expressed support in particular for a healthy food environment to cure their patients, compared to, for example, project coordinator stakeholders who were motivated to create a healthy and sustainable food environment for all their guests—hospital patients, staff, and visitors. Commitment and support from management was seen as crucial by participants for the transition to a healthy and sustainable food environment. This is in line with other studies that mentioned those aspects as essential for disseminating the innovation through an organization [40, 41]. A review analyzing policy implementation processes of healthy hospital retail policies in Australia found similar factors for successful implementation [42]. They mentioned among others support and acceptability from all stakeholders in the hospital including management, retailers, staff, and visitors. The three frontrunner hospitals in our study already had commitment from management level at the moment they signed a declaration for participation in the TEH program and intention to change the food environment. This might have helped in the realization of a healthy and sustainable food environment. A systematic review exploring factors that influence sustained implementation of hospital-based interventions also mentioned that having the management team on board was a frequently reported facilitator [43]. However, some stakeholders emphasized the importance of being vigilant to ensure that commitment to such a national program aimed at improving the food environment is genuine rather than merely symbolic.

Another observation from our study was the perceived existence of resistance for a healthy and sustainable food environment among stakeholders, particularly among hospital staff. A few participants of the healthcare stakeholder group experienced that not all medical specialists did perceive prevention as the responsibility of the hospital setting and that a hospital should be focused on cure, and prevention is something that should be addressed earlier in the care pathway. Staff resistance was also a challenge found in a study to identify the drivers of sustainable hospital food services [44]. A possible explanation for the resistance of staff

could be that staff might express more concerns, since they encounter the food environment in the healthcare setting on a daily basis, whereas patients and visitors typically have shorter interactions. Another explanation for resistance of stakeholders (including staff) could be that people do not want to be patronized when it comes to food choices, or people see it as individual responsibilities of consumers, while the focus should be shifted from the individual to strategies focused on improving the (food) environment, thereby improving public health [45]. These particular results illustrate barriers for adoption, which is in line with the diffusion of innovation theory of Rogers that shows that it is common that not everyone is instantly receptive to change [40]. Innovators and early adopters start implementing, yet the late majority and laggards need more to be convinced and only accept an innovation when it is widespread and broadly accepted and adopted by a majority of stakeholders of a hospital organization. Therefore, it is important to have tailored implementation strategies in place that include among others having ambassadors, positive communication, and explaining the why, as also appeared from our study, to address these perceived barriers of non-adopting individuals [46].

Interests and experiences of participants from all stakeholder groups in the hospital organization varied regarding the implementation of a healthy and sustainable food environment, which has been observed in other studies as well. To illustrate, a study on the transition of the food environment in nursing homes found that staff members' attitudes differed when the transition impacts their workflow (e.g., kitchen staff was the most resistant to change) versus when they gain from the change (e.g., management) [47]. In our study, for example, facility stakeholders had their main focus on improving the product assortment, while healthcare staff mainly focused on optimizing the food environment to enhance patient satisfaction and health. Furthermore, it is important that the food environment can be tailored to the nutritional needs of hospitalized patients (e.g., diet high in energy and protein). Providing more plant-based foods is often more challenging for specific groups such as patients, as compared to animal proteins, plant-based foods generally provide less complete protein nutrition due to differences in essential amino acids and digestibility [48]. As a result, a larger volume of plant-based foods is often required to achieve an adequate protein intake of sufficient quality, which can be challenging for patients, particularly those with poor appetite or early satiation [49]. The diverse stakeholder interests and experiences confirm again that changing the food environment in the hospital setting is complex, showing that it is important to ensure that all stakeholders are motivated and aligned when it comes to the realization of a healthy and sustainable food environment.

A strength of the study was that the realization of a healthy and sustainable food environment for patients, staff, and visitors was explored from a broad variety of different perspectives through the entire hospital system. Stakeholders through the entire hospital were incorporated in this study, from facility (e.g., nutrition assistant, kitchen staff member), management (director), healthcare (e.g., dietitian, physician), and project coordinator (e.g., project leader nutrition) levels. The process towards the realization of a healthy and sustainable food environment in the hospital setting was robustly explored in a systematic way guided by the CFIR framework, thereby creating a deep understanding of the factors underlying and influencing the implementation. Three diverse hospital settings (academic, top clinical, general) were followed during their ongoing process of enhancing the food environment which contributed to the generalizability of the results, providing real world insights into their implementation processes. However, when considering generalizability, there are also a few limitations. First, the three hospitals were frontrunner hospitals in the transition towards a healthy and sustainable food environment. One could argue that these hospitals are more likely the "believer" hospitals who are actively pursuing the transition ambition. It is also important to note that we did not independently verify the extent to which they had actually changed their hospital food environment into a healthy and sustainable one; we relied solely on the fact they committed to be frontrunner hospitals and the accelerated attainment of the NPA ambition. It would also be interesting to study how hospitals not affiliated to TEH would implement such a transition. Another limitation is that we did not include the end user, the patient or hospital visitor, and external catering companies or supply companies. Therefore, future research should focus on assessing the generalizability of the outcomes by validating them in different hospitals as well as with other stakeholders (e.g., patients, end users, government, suppliers). An additional limitation may be that no explicit definition of a healthy and sustainable food environment was provided for participants and they had to rely on their own definitions. We did explain that the interview focused on the food environment for patients, staff, and visitors.

The results of this study can be used to provide all hospital stakeholders and policy makers with insights into the factors influencing the implementation of a healthy and sustainable food environment thereby highlighting potential areas and issues to address. It is important to address multiple themes on which facilitators and barriers may occur: the outer setting, with momentum for

change, government-established policies and guidelines, collaboration and networks outside the hospital, and caterers' and suppliers' food offerings, interests, and contracts; the innovation domain, with familiarity and compliance with the TEH program; support at all levels, achieving organizational buy-in with communication as a strategy, and end user interests; the inner setting, with key priority in policy and having a vision, available resources, infrastructure within the hospital, ambassadors, and gradual process with continuous effort; and the individual domain with personal drive. Furthermore, it indicates that compliance with national policy and ambitions does not occur automatically - continuous and long-term efforts are needed. The insights of this study provide potential starting points and strategies for practice, policy and scientific research, how to formulate, tailor, implement, and evaluate policy for enhancing and sustaining the healthiness and sustainability of the food environment in the hospital setting.

Conclusions

This qualitative research highlights that various factors are perceived to affect the food environment transition in hospitals and it is important to address these factors on which facilitators and barriers may occur, ranging from, i.e., internal resources, support, and communication to external guidelines, policies, interests, and societal momentum for change. Different stakeholder groups encountered unique challenges and opportunities affecting the implementation of a healthy and sustainable food environment. To ensure successful integration of a healthy and sustainable food environment in hospitals, it is crucial to engage diverse stakeholders and address their barriers with tailored implementation strategies. Future research should focus on assessing the generalizability of the outcomes by validating them in different hospitals as well as with other stakeholders (e.g., patients, end users, government, suppliers).

Abbreviations

CFIR Consolidated Framework for Implementation Research
NPA National Prevention Agreement
TEH A Taste of Excellent Healthcare

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12916-025-03872-y.

Additional file 1: Consolidated criteria for reporting qualitative research (COREQ), completed for this study.

Additional file 2: Interview guide English version (translated from Dutch to English).

Additional file 3: Codebook used for coding the semi-structured interviews.

Additional file 4: Participant characteristics (e.g., function of the participant, the categorized stakeholder group).

Acknowledgements

We thank all participants in this study for their contributions during the interviews. Furthermore, we would like to thank the Nutrition & Healthcare Alliance for their help in the recruitment of participants in three hospitals that are part of their network. And we would like to thank Dr. Gerda Pot (Nutrition & Healthcare Alliance) for carefully reviewing a draft of the manuscript and providing insightful feedback.

Authors' contributions

J.J.W., F.v.N. and M.P.P. designed this study. J.J.W. conducted, coded and analyzed the interviews. J.J.W., F.v.N., S.K.D. and M.P.P. were major contributors and editors in writing the manuscript. All authors read and approved the final manuscript.

Funding

The study was part of a project that was financially supported by a grant (grant number 162135) from the Regio Deal Foodvalley [50], a collaboration between the Dutch government and different parties from the region to achieve healthy and sustainable food for everyone, including regional governments, entrepreneurs, education, and knowledge institutions, e.g., the Nutrition & Healthcare Alliance [51].

Data availability

The generated interview guide in this study is available in Additional file 2. The data used and/or analyzed for this article are available in Dutch from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

The Social Sciences Ethics Committee of Wageningen University & Research approved this study (reference number 2021-38-Wierda) and this study complies with the Netherlands Code of Conduct for Research Integrity. All participants provided informed consent.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

[1]Consumption & Healthy Lifestyles Group, Wageningen University & Research, Wageningen, The Netherlands. [2]Department of Public and Occupational Health, Amsterdam Public Health research institute, Amsterdam UMC, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands.

Received: 28 September 2024 Accepted: 14 January 2025
Published online: 27 January 2025

References

1. Larson N, Story M. A review of environmental influences on food choices. Ann Behav Med. 2009;38:56–73.
2. Swinburn BA, Sacks G, Hall KD, McPherson K, Finegood DT, Moodie ML, et al. The global obesity pandemic: shaped by global drivers and local environments. The Lancet. 2011;378:804–14.
3. Swinburn B, Egger G, Raza F. Dissecting obesogenic environments: the development and application of a framework for identifying and prioritizing environmental interventions for obesity. Prev Med (Baltim). 1999;29:563–70.
4. Branca F, Lartey A, Oenema S, Aguayo V, Stordalen GA, Richardson R, et al. Transforming the food system to fight non-communicable diseases. BMJ. 2019;364:l296.

5. World Health Organization. *WHO European Regional Obesity Report 2022.* Copenhagen: WHO Regional Office for Europe; 2022. Licence: CC BY-NC-SA 3.0 IGO.
6. Willett W, Rockström J, Loken B, Springmann M, Lang T, Vermeulen S, et al. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. The Lancet. 2019;393:447–92.
7. Giskes K, van Lenthe F, Avendano-Pabon M, Brug J. A systematic review of environmental factors and obesogenic dietary intakes among adults: are we getting closer to understanding obesogenic environments? Obes Rev. 2011;12:e95-106.
8. Cranney L, Thomas M, Shepherd L, Cobcroft M, O'Connell T, Munn L, et al. Towards healthier food choices for hospital staff and visitors: impacts of a healthy food and drink policy implemented at scale in Australia. Public Health Nutr. 2021;24:5877–84.
9. Pelikan JM, Krajic K, Dietscher C. The health promoting hospital (HPH): concept and development. Patient Educ Couns. 2001;45:239–43.
10. World Health Organization. *Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation.* World Health Organization; 2003;916.
11. Jayedi A, Soltani S, Abdolshahi A, Shab-Bidar S. Healthy and unhealthy dietary patterns and the risk of chronic disease: an umbrella review of meta-analyses of prospective cohort studies. Br J Nutr. 2020;124:1133–44.
12. Thibault R, Abbasoglu O, Ioannou E, Meija L, Ottens-Oussoren K, Pichard C, et al. ESPEN guideline on hospital nutrition. Clin Nutr. 2021;40:5684–709.
13. Kromhout D, Spaaij CJK, de Goede J, Weggemans RM. The 2015 Dutch food-based dietary guidelines. Eur J Clin Nutr. 2016;70:869–78.
14. Witkoski A, Dickson VV. Hospital staff nurses' work hours, meal periods, and rest breaks. AAOHN J. 2010;58:489–97.
15. Whitehead D. Health promoting hospitals: the role and function of nursing. J Clin Nurs. 2005;14:20–7.
16. Horton Dias CE, Dawson RM, Harris DM, Wirth MD, Abshire DA. Foods and beverages available to nurses in hospital cafeterias, vending machines, and gift shops. Am J Health Promot. 2022;36:1133–41.
17. Champ CE, Iarrobino NA, Haskins CP. Hospitals lead by poor example: an assessment of snacks, soda, and junk food availability in Veterans Affairs hospitals. Nutrition. 2019;60:70–3.
18. Wierda JJ, de Vet E, Troost E, Poelman MP. Characterizing food environments of hospitals and long-term care facilities in the Netherlands: a mixed methods approach. BMC Health Serv Res. 2024;24:31.
19. Tsai C, Svensen E, Flood VM, Probst Y, Reilly K, Corbett S, et al. Healthiness of food and beverages for sale at two public hospitals in New South Wales. Australia Nutrients. 2018;10:216.
20. Moran A, Lederer A, Johnson CC. Use of nutrition standards to improve nutritional quality of hospital patient meals: findings from New York City's Healthy Hospital Food Initiative. J Acad Nutr Diet. 2015;115:1847–54.
21. Ministerie van Volksgezondheid, Welzijn en Sport. Nationaal Preventieakkoord: Naar een gezonder Nederland. 2018. https://www.rijksoverheid.nl/documenten/convenanten/2018/11/23/nationaal-preventieakkoord
22. Alliantie Voeding in de Zorg. Goede zorg proef je. https://goedezorgproefje.nl/.
23. Alliantie Voeding in de Zorg. https://www.alliantievoeding.nl/nl/wie-we-zijn.
24. Voedingscentrum. Richtlijn Eetomgevingen. https://www.voedingscentrum.nl/professionals/gezonde-eetomgeving/de-richtlijn-gezondere-eetomgevingen.aspx.
25. Moran A, Krepp EM, Johnson Curtis C, Lederer A. An intervention to increase availability of healthy foods and beverages in New York City hospitals: the Healthy Hospital Food Initiative, 2010–2014. Prev Chronic Dis. 2016;13: 150541.
26. Cranney L, Drayton B, Thomas M, Tang B, O'Connell T, Crino M, et al. Impact and acceptance of a state-wide policy to remove sugar-sweetened beverages in hospitals in New South Wales. Australia Health Promotion Journal of Australia. 2021;32:444–50.
27. Boelsen-Robinson T, Blake MR, Backholer K, Hettiarachchi J, Palermo C, Peeters A. Implementing healthy food policies in health services: a qualitative study. Nutr Diet. 2019;76:336–43.
28. Jilcott Pitts SB, Graham J, Mojica A, Stewart L, Walter M, Schille C, et al. Implementing healthier foodservice guidelines in hospital and federal worksite cafeterias: barriers, facilitators and keys to success. J Hum Nutr Diet. 2016;29:677–86.
29. Carino S, Collins J, Malekpour S, Porter J. Environmentally sustainable hospital foodservices: drawing on staff perspectives to guide change. Sustain Prod Consum. 2021;25:152–61.
30. Law KK, Pulker CE, Healy JD, Pollard CM. "Just so you know, it has been hard": food retailers' perspectives of implementing a food and nutrition policy in public healthcare settings. Nutrients. 2021;13:2053.
31. Pot GK, Winkels RM, van Loenhout T. Letter to the editor: an omission in guidelines. Cardiovascular disease prevention should also focus on dietary policies for healthcare facilities. Clinical Nutrition. 2023;42:1240–2.
32. Goede zorg proef je. Wie doen er al mee? . https://goedezorgproefje.nl/wie-doen-er-al-mee/.
33. Guba E, Lincoln Y. Competing paradigms in qualitative research. In: Denzin N, Lincoln Y, editors. The handbook of qualitative research. 1st ed. Sage; 1994. p. 105–17.
34. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007;19:349–57.
35. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implement Sci. 2009;4:50.
36. Transcript online. https://transcriptonline.nl/.
37. Scientific Software Development GmbH. ATLAS.ti . 2023.
38. Djojosoeparto SK, Verain MCD, Schebesta H, Biesbroek S, Poelman MP, Candel JJL. Harnessing the potential of public procurement for the protein transition – perceived barriers and facilitators. Agric Human Values. 2024.
39. Faulkner K, Collins J, Gilbertson HR, Porter J. Local food procurement by hospitals: a scoping review. J Hum Nutr Diet. 2023;36:2219–33.
40. Rogers EM. Diffusion of innovations. New York: The Free Press; 1995.
41. Cranney L, Thomas M, O'Connell T, Moreton R, Corbett L, Bauman A, et al. Creating healthy hospital retail food environments: multiple pathways to successful at scale policy implementation in Australia. J Health Serv Res Policy. 2023;28:100–8.
42. Tran HNQ, Krattli S, Ward N, Ananthapavan J. Australian healthy retail policies in hospital settings – a policy analysis and scoping review of potential impacts on dietary behaviours. Public Health Res Pract. 2024;34(1):3412406.
43. Cowie J, Nicoll A, Dimova ED, Campbell P, Duncan EA. The barriers and facilitators influencing the sustainability of hospital-based interventions: a systematic review. BMC Health Serv Res. 2020;20:588.
44. Carino S, Malekpour S, Porter J, Collins J. The drivers of environmentally sustainable hospital foodservices. Front Nutr. 2021;8:740376.
45. Hagenaars L, Waterlander W, den Hertog K, Stronks K. Een veerkrachtige publieke gezondheid in 2030: #hoedan? TSG. 2022;100:119–23.
46. Powell BJ, McMillen JC, Proctor EK, Carpenter CR, Griffey RT, Bunger AC, et al. A compilation of strategies for implementing clinical innovations in health and mental health. Med Care Res Rev. 2012;69:123–57.
47. Hoefnagels FA, Patijn ON, Meeusen MJG, Battjes-Fries MCE. The perceptions of food service staff in a nursing home on an upcoming transition towards a healthy and sustainable food environment: a qualitative study. BMC Geriatr. 2023;23:784.
48. Day L, Cakebread JA, Loveday SM. Food proteins from animals and plants: differences in the nutritional and functional properties. Trends Food Sci Technol. 2022;119:428–42.
49. Health Council of the Netherlands. A healthy protein transition. The Hague: Health Council of the Netherlands; 2023.
50. Regional Deal Foodvalley. Regio Deal Foodvalley. https://www.regiofoodvalley.nl/programma/regio-deal/.
51. Website of the Nutrition & Healthcare Alliance. https://www.alliantievoeding.nl/en.

Publisher's Note