WATER CONSERVATION AND FOOD GARDENS AT HEALTHCARE SITES IN BRITISH COLUMBIA

PREPARED BY: MOLLY ZHANG, UBC SUSTAINABILITY SCHOLAR, 2025
PREPARED FOR: JEN CHAPMAN/ EMILY LOMAX, REGIONAL SUSTAINABILITY CONSULTANT, ENERGY & ENVIRONMENTAL SUSTAINABILITY, BC GREENCARE

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Disclaimer

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***Cover photo** courtesy of Erin Branco, Northern Health*

Executive Summary

This research project explores the best practices in water conservation applicable to the potential establishment of food gardens at Health Organization (HO) sites in British Columbia (BC), Canada. This project is supported and mentored by the Energy and Environmental Sustainability (EES) team, which collaborates with clinical and non-clinical departments and staff to implement a regional approach to low-carbon, climate-resilient, and environmentally sustainable health systems through planning, design, procurement, construction, and operations across Fraser Health, Providence Health Care, Provincial Health Services Authority, and Vancouver Coastal Health.

There are different HO targets to decrease water consumption, and HO sites have a shared goal to contribute to decreasing water use between 30 and 40% by 2030. Food gardens have the potential to help HO sites with their overall sustainability and wellbeing programs. However, food gardens also demand water for irrigation, and this may have an impact on the water-use reduction target at HO sites. Therefore, it is crucial to investigate and understand the trade-offs between food gardens and water use. Especially if larger food garden projects are proposed, it is important to have information on water consumption to make evidence-based decisions.

As such, this research seeks to answer the following questions.

- **Q1:** What water-saving strategies can be potentially implemented at food gardens in healthcare? How are food gardens currently set up and irrigated at healthcare sites, and what practical water-saving strategies are implemented?
- **Q2:** What are the key challenges and opportunities in planning and maintaining food gardens in healthcare settings, particularly in relation to 2030 water reduction targets and broader sustainability goals?

The research methods for this report were split into three phases. The project was conducted from May to August 2025. In the first phase, a literature review was conducted to identify common water-saving practices in food gardens with a specific focus on healthcare. In the second phase, a call for participation was sent out, and people with experience in food gardens at HO sites were invited to participate in interviews. The ten (10) participants came from a wide range of professional backgrounds, including current and former staff working in roles such as facilities maintenance and operations, food services, horticultural therapy, and emergency medical response. They work in sites such as hospitals, long-term care homes, cancer centers, and emergency service stations. They also work across different healthcare organizations, including the Provincial Health Services Authority (PHSA), Fraser Health, Vancouver

Coastal Health (VCH), and Northern Health. In the third phase, interview transcripts were analyzed using thematic analysis, which leads to a context-specific understanding of the constraints and opportunities for integrating water-efficient food gardens in BC healthcare settings.

In response to research Q1, this project finds that healthcare food gardens are typically small-scale, volunteer-run initiatives using simple irrigation methods. As the water consumption at food gardens is not extensive, water usage in general has not been a concern for people working with the gardens. Drip irrigation and hand watering are the most common approaches, often chosen due to their simplicity and low cost. A few sites have implemented timer-controlled drip irrigation systems, which were praised for reducing labour needs, though broader adoption is limited by infrastructure constraints and lack of funding. Water-saving practices are generally known and supported by staff, but implementation depends on the availability of spigots, hose access, or automated systems. Rainwater harvesting is rarely used due to concerns over contamination and food safety. As such, while water use in gardens is minimal overall, the findings show that expanding drip systems could further reduce water consumption and reduce the labour demand at HO sites.

Regarding research Q2, the project shows that food gardens offer many social, environmental, and mental benefits, including improved dietary diversity, enhanced well-being for patients and staff, community engagement, and commitment to a more sustainable future. However, their continued success depends on continuous institutional support. Many gardens are maintained by enthusiastic staff or volunteers working outside their paid roles. While this model has proven valuable in getting gardens off the ground, it leaves them vulnerable to changes in staffing, interest, or departmental priorities. Several participants emphasized the need for more stable, institutional support, whether through designated roles, modest recurring budgets, or better integration into operational planning.

Importantly, this research also shows that food gardens are not expensive to maintain. Modest investments, such as a few hundred dollars for tools and seeds, can yield long-lasting impacts. Gardens were frequently described as aligning naturally with healthcare goals around mental health, staff wellness, equity, and climate resilience. However, to scale these benefits, there is a need for recognition from the HOs that gardens are contributors to these goals, and not just as side projects dependent on individuals.

In sum, food gardens at HO sites are typically small-scale, volunteer-run initiatives using simple irrigation methods with limited water consumption. Many participants expressed hope that institutions will recognize contributions from food gardens and consider more structured long-term support for food gardens at the HO site.

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1.0 Introduction

This research project explores the best practices in water conservation applicable to the potential establishment of food gardens at Health Organization (HO) sites (in British Columbia (BC), Canada. This project is supported and mentored by the Energy and Environmental Sustainability (EES) team, which collaborates with clinical and non-clinical departments and staff to implement a regional approach to low-carbon, climate-resilient, and environmentally sustainable health systems through planning, design, procurement, construction, and operations among those HO sites. EES supports four health organizations: Fraser Health (FH), Providence Health Care (PHC), Provincial Health Services Authority (PHSA), and Vancouver Coastal Health (VCH). The focus of this project was acute sites such as hospitals, non-acute/residential sites such as long-term care facilities, and pre-hospital emergency medical care units.

There are different HO targets to decrease water consumption, and HO sites have a shared goal to contribute to decreasing water use between 30 and 40% by 2030 (Energy and Environmental Sustainability, 2024).

Food gardens have the potential to help HO sites with their overall sustainability and wellbeing programs by providing locally sourced food and therapeutic benefits for the patients (Murphy, 2017). However, food gardens also demand water for irrigation, and this may have an impact on the water-use reduction target at HO sites. Therefore, it is crucial to investigate and understand the trade-offs between food gardens and water use. Especially if larger food garden projects are proposed, it is important to have information on water consumption to make evidence-based decisions.

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2.0 Background

About 60% of fresh water in Canada drains to the north, while 85% of its population lives in the south close to the Canada-United States border. Regional water scarcity is a growing concern which is particularly true in high density urban centers such as the Lower Mainland (ClimateReadyBC, 2024).

In a highly populated area, high demand for water can put limited resources under stress, reducing water availability and leading to potential restrictions on water supply during drought seasons. Local governments or First Nations can issue local water restrictions which limit or restrict water uses (Metro Vancouver, 2025).

Climate change is also exacerbating this vulnerability (Dierauer et al., 2021). Rising temperatures, reduced precipitation over extended periods of time lead to more frequent and prolonged drought events in BC (ClimateReadyBC, 2024). These changes put additional pressure on municipalities and institutions to adopt sustainable water management strategies.

Healthcare facilities depend on large volumes of water for essential services including sanitary, building heating and cooling, steam sterilizers, laundry, kitchen and x-ray processing etc (Environmental Protection Agency (EPA), 2025). Meanwhile, the clinical consequence of water shortage can be high.

The health sector also faces unique challenges with respect to water conservation. Many water-saving technologies and practices, such as the use of non-potable water for flushing or irrigation, may be restricted by infection control regulations or regional health standards (The Canadian Coalition for Green Health Care (CCGHC), 2024). Such constraints together with other regulatory and technical variability across regions and facilities, require an investigation on the trade-offs in water conservation.

One such trade-off emerges when integrating food gardens into healthcare environments. As outlined in the *Introduction*, while food gardens can support a broader sustainability vision, they also introduce additional water demands. At the same time, food gardens have been shown to offer environmental, ecological, and social benefits. They can reduce greenhouse gas emissions through offering local food for staff and patients (Cleveland et al., 2017), support biodiversity by providing habitat for pollinators and other beneficial species, and improve soil health (Barthel et al., 2015). Gardens also offer therapeutic and mental health benefits for patients (Carroll et al., 2024), enhance workplace wellbeing and morale for staff through stress reduction and opportunities for connection to nature, and provide access to fresh, nutritious food for both patients and staff (George et al., 2015). These benefits align with HOs' climate

resilience planing (Greencare, 2024). The challenge lies in understanding the trade-offs between the benefits of food gardens and the additional water they require for irrigation.

3.0 Research Methodologies

The research methods for this report were split into three phases. The project was conducted from May to August 2025.

PHASE 1 LITERATURE REVIEW

In the first phase, a literature review was conducted to identify common water-saving practices in food gardens with a specific focus on healthcare. The literature review was guided by research Q1 to look at what water-saving strategies can be potentially implemented at food gardens in healthcare. The findings were further categorized based on healthcare-specific opportunities and challenges. The search process was conducted primarily through Google Scholar, using targeted keyword combinations based on the core research questions, such as *food gardens in healthcare, water-efficient irrigation systems for food gardens, rainwater harvesting risks healthcare*, etc. Rather than conducting a broad systematic review, the approach was more question-driven, focusing on practical and context-relevant findings (Grant & Booth, 2009). Search terms were refined iteratively to find literature that addressed the specific trade-offs explored in this project. The search also included references cited in key publications and grey literature sources such as government guidelines, environmental health reports, and case studies from healthcare or urban agriculture organizations (Arksey & O'Malley, 2005). This literature review helped shape the interview guide in Phase 2.

PHASE 2 CALL FOR PARTICIPATION AND SEMI-STRUCTURED INTERVIEWS

In the second phase, a call for participation was sent out and people with experience in food gardens at HO sites were invited to participate in interviews. Interviews were conducted online via Teams and each lasted for 30-60 minutes. The interviews were semi-structured (DiCicco-Bloom & Crabtree, 2006); Interview schedule (**Appendix A**) was developed and followed but questions were adjusted and modified based on each interviewee's experience and specializations. Questions were open-ended to give flexibility (Flick, 2009).

PHASE 3 INTERVIEW ANALYSIS AND REPORT WRITING

Interview transcripts were analyzed using thematic analysis, a widely used qualitative method for identifying, analyzing, and reporting patterns within data (Braun & Clarke, 2023). An inductive coding

approach was employed to allow themes to emerge directly from the data, rather than being pre-determined by existing frameworks (Charmaz, 2003). Codes were developed through multiple close readings of the transcripts and grouped into broader themes reflecting recurring challenges and opportunities in food garden planning and water management at HO sites. NVivo was used to assist with organizing and categorizing the data during the analysis process.

In the final stage of the research, the themes from the qualitative interview analysis were compared with findings from the literature review (Flick, 2009). This synthesis leads to a more context-specific understanding of the constraints and opportunities for integrating water-efficient food gardens in BC healthcare settings.

4.0 Results

This section presents the main findings of the research in two parts. The first part summarizes insights from the literature review and the second part presents results from the interview analysis.

4.1 Literature Review

This section synthesizes existing research and data relevant to the implementation of food gardens and irrigation practices in healthcare settings. The section on literature review is divided into sub-sections, including

- Water Scarcity in BC Healthcare Context,
- Comparative Water Demand: Food Gardens vs. Hospital Operations, and
- Best Practices in Water-Efficient Gardening in Healthcare

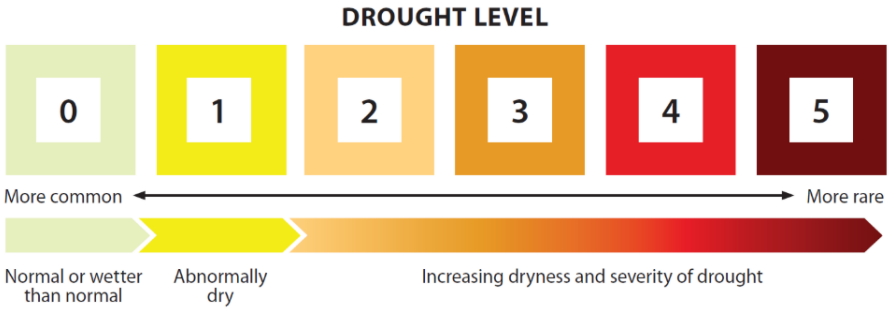
In this section, broader climate and water scarcity conditions in BC with a focus on the implications for healthcare operations were discussed. Followed by a comparison of water usage between food gardens and typical hospital operations. Some best practices in water-efficient gardening are listed, such as drought-tolerant plant species, hydro-zoning, composting, rainwater harvesting, and drip irrigation, with an emphasis on applicability to healthcare sites. Each technique is evaluated in terms of its benefits, risks, and feasibility within regulated clinical environments.

4.1.1 Water Scarcity in BC Healthcare Context

While British Columbia receives high annual rainfall, over 85% of this precipitation occurs between October and April, leaving the summer months dry (Natural Resources Canada, 2024). In recent years,

climate change has intensified this seasonal difference, contributing to more frequent summer drought events (ClimateReadyBC, 2024). In both 2022 and 2023, the province experienced Level 4 and 5 drought conditions, which are the highest levels of drought classification in BC **(Figure 4.1)** (Ministry of Water, Land and Resource Stewardship, 2025). This has led to water restrictions across Metro Vancouver (Metro Vancouver, 2025). Similarly, in the summer of 2022, Sechelt experienced Level 5 drought conditions that lasted for months and Sechelt hospital's operations, including laundry, kitchen and surgery, etc, were negatively impacted by limited water availability (Alexander et al., 2024).

Figure 4.1: Drought level classification in BC. (Ministry of Water, Land and Resource Stewardship, 2025; Vancouver Coastal Health, 2025)



Drought Level Classification

Level	Impacts	General Response Measures
0	There is sufficient water to meet socioeconomic and ecosystem needs	Preparedness actions
1	Adverse impacts to socio-economic or ecosystem values are rare	Conservation actions
2	Adverse impacts to socio-economic or ecosystem values are unlikely	Conservation actions including local water restrictions where appropriate
3	Adverse impacts to socio-economic or ecosystem values are possible	Conservation actions including local water restrictions where appropriate
4	Adverse impacts to socio-economic or ecosystem values are likely	Conservation actions including local water restrictions and regulatory action where appropriate
5	Adverse impacts to socio-economic or ecosystem values are almost certain	Conservation actions including local water restrictions, regulatory action and emergency response measures where appropriate

4.1.2 Comparative Water Demand: Food Gardens vs. Hospital Operations

Irrigation needs for food gardens are relatively modest compared to operational water uses such as sanitary or building heating, and cooling (Environmental Protection Agency (EPA), 2025). Irrigation, including landscaping water uses, only contributes to about 5% of the overall water consumption in hospitals based on the assessment by EPA among US hopitals **(Figure 4.2).** However, they are not less important and more often more visible to the public in terms of demonstrating HO sites' commitment to reducing water consumption.

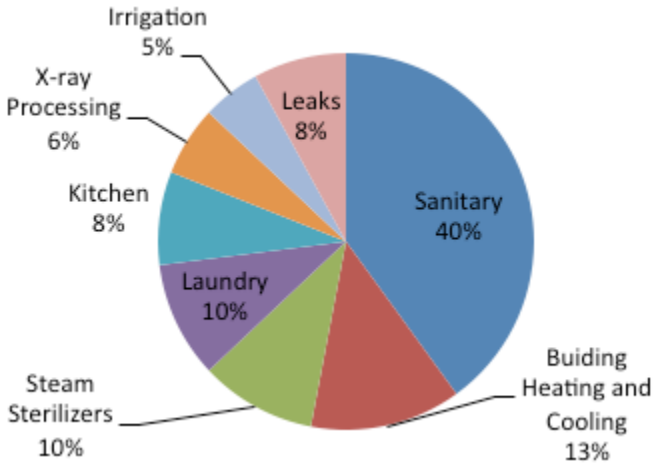


Figure 4.2: Hospital water uses by percentage (EPA, 2025)

HO sites are major water users. According to the Canadian Coalition for Green Health Care (CCGHC) (2024), hospitals consume around 1.5 WUI (m^3/m^2) per year. Water Use Intensity (WUI) is calculated as the hospital's annual water use (m^3) divided by the reported conditioned floor area (m^2). In comparison, the median WUI reported for US hospitals is 2.27 WUI m^3/m^2 (Energy Star, 2019). A 100 m^2 food garden during dry season consumes about 0.025 m^3/m^2 per week and half of this amount during shoulder seasons (de Peyster, 2014), which comes up to around 0.43 WUI (m^3/m^2) per year .

As an example, a local Hospital, with 50,000 m^2 of floor area, reported a water consumption of 95,000 m^3 in 2023 (EES internal data, 2025). In contrast, a 100 m^2 food garden, roughly the size of a basketball half court, requires only about an average annual water consumption of less than 50 m^3. This equates to less than 0.06% of the hospital's total annual water consumption. In essence, the water demand of a food garden at a HO site is a drop in the bucket compared to the overall water consumption at the facility. The marginal water required for food gardens poses a minimal impact on overall hospital consumption, especially when paired with appropriate water conservation practices.

A distinction to make here, is that while clinical operations are critical and subject to more restrictive regulatory requirements, food gardens serve a different set of purposes and therefore the priorities for managing their water use are different.

4.1.3 Best Practices in Water-Efficient Gardening in Healthcare

Although the overall water demand of food gardens is low compared to regular hospital operations, integrating water-saving strategies can help HO sites reduce their overall water use. Moreover, implementing efficient water saving practices in food gardens will demonstrate HO's commitments to sustainability, especially during water restrictions in peak summer months.

There are a range of horticultural techniques that can significantly improve water efficiency while maintaining productive food garden spaces. These strategies can be adapted to healthcare environments, taking into consideration the operational constraints, infection control protocols, and infrastructure restrictions **(Table 4.1).**

Table 4.1: Water-Efficient Gardening Techniques in Healthcare

Technique	Description	Suitability	Reasons
Drip Irrigation and Scheduling	Delivers water directly to root zones through a network of tubes.	High	Hygienic, efficient, programmable, and low-risk; ideal for staff- or volunteer-managed gardens.
Drought-Tolerant Plant Species	Use of plants adapted to the local climate to reduce watering needs and maintenance.	High	Low maintenance; contributes to climate resilience; ideal for staff- or volunteer-managed gardens.
Raised Beds and Contained Systems	Use raised bed and contained system for planting.	High	Improve drainage and water efficiency in poor soils.
Hydro-zoning	Group plants with similar water needs together to optimize irrigation and reduce overwatering.	Moderate	Low demand for watering instructions; simplifies garden care but requires certain expertise.
Mulching and Composting	Apply organic mulch to reduce evaporation.	Moderate	Composting requires careful planning to avoid pests and contamination.
Rainwater Harvesting	Capture and store roof runoff for garden irrigation.	Conditional*	Requires maintenance and pathogen risk mitigation.

*The "conditional" rating means the technique could be suitable only if certain requirements are met.

DRIP IRRIGATION AND IRRIGATION SCHEDULING

Drip irrigation systems are among one of the most water-efficient methods for urban gardening, as they deliver water directly to plant root zones with less evaporation or runoff (Tam et al., 2005). For healthcare sites, drip irrigation has multiple benefits, especially compared to sprinkler systems **(Table 4.2).**

Table 4.2: Drip Irrigation vs. Sprinkler Systems Comparison (Tam et al., 2005)

Feature	Drip Irrigation	Sprinkler System
Water Efficiency	High, minimal evaporation or runoffs	Low, higher evaporation and wind loss
Aerosolization Risk	Low, water stays near ground	High, droplets dispersed into air
Maintenance	Low, requires occasional flushing and emitter checks	High, requires regular nozzle checks and alignment
Automation Compatibility	Compatible with timers and sensors	Compatible but may require higher water pressure
Lifespan	5–10 years with proper maintenance	3–7 years depending on use and exposure

First of all, drip irrigation can be combined with programmable timers and reduce the requirements for manual efforts and improve more targeted watering efficiency. Watering early in the morning or late in the evening can be done by setting up the automatic irrigation timer and it reduces evaporation due to sun and wind exposure (Tam et al., 2005). Additionally, setting irrigation to occur outside of public hours can avoid peak demand hours, contributing to load reduction across the facility. It can also be synced with rain events and adjusted seasonally to conserve water.

Secondly, low-pressure, subsurface drip lines minimize contact risks and prevent aerosolization of water. Aerosolization refers to the process by which water droplets become suspended in the air, often as fine mist (Kanamori et al., 2016). This can occur during irrigation using sprinkler systems. Aerosolized droplets can carry pathogens such as Legionella, increasing the risk of airborne transmission (Struck, 2011). Therefore, comparably, drip irrigation involves lower risk as it avoids aerosol production.

DROUGHT-TOLERANT PLANT SPECIES

Using native and drought-resistant plants minimizes irrigation needs and improves garden resilience to climate change. Native species are naturally adapted to the local climate and typically require less maintenance, making them ideal for staff-managed or volunteer-supported food gardens on hospital grounds (Mody et al., 2020). In healthcare settings, drought-tolerant edible perennials such as sage and rosemary can be good options for both aesthetic and functional value. Additional native edible plants in

BC that are drought-tolerant can not only support the climate resilience of the food garden but also reinforce cultural and ecological connections (Kuhnlein & Turner, 2020). Some examples include salal *(Gaultheria shallon),* Saskatoon serviceberry *(Amelanchier alnifolia),* Pacific crabapple *(Malus fusca),* and nodding onion *(Allium cernuum)* (Turner et al., 2000).

RAISED BEDS AND CONTAINED SYSTEMS

Raised beds improve drainage by planting in a growing medium that allows excess water to percolate more easily compared to existing compacted or poorly draining soil (Nagai, 2014). They also help reduce runoff by containing water within a defined space, allowing more time for moisture to infiltrate into the soil. This is especially beneficial in urban environments where existing soil may be compacted, contaminated, or inconsistent in quality.

HYDRO-ZONING

Hydro-zoning is a technique that groups plants with similar water needs together in planting to optimize irrigation according to each area's needs. This practice prevents overwatering and allows for more precise application of water across zones with differing plant demands (UC Agriculture and Natural Resources (UC ANR), 2018). In healthcare food gardens, this zoning practice can also help staff manage garden beds easier with less training required.

MULCHING AND COMPOSTING

Applying organic mulch, such as straw, wood chips, or compost, can reduce surface evaporation, suppress weeds, and improve soil water retention. Studies in urban agriculture settings have shown that mulching reduces watering frequency by enhancing soil moisture retention and lowering surface temperatures (El-Beltagi et al., 2022).

Adding composted organic matter to soil increases its water-holding capacity, nutrient content, and microbial activity (Gregory et al., 2016). This can reduce the frequency of watering needed and improve the long-term productivity of garden beds. Healthcare sites may take advantage of their onsite food service and integrate composting from cafeteria food scraps or green waste as a closed-loop sustainability initiative. However, composting needs more careful consideration of sanitary and safety concerns in healthcare settings, as improperly managed compost can attract rodents, insects, and other pests (Domingo & Nadal, 2009). Decomposing organic material may also emit unpleasant odors, particularly if compost is not adequately aerated or turned. To properly manage composts, logistics,

transport and coordination also require time, effort and can be financially demanding (Galvan et al., 2018).

RAINWATER HARVESTING: BENEFITS AND RISKS

Rainwater harvesting is another well-recognized water-saving strategy that has been used in urban gardening practices. It captures runoff from roof surfaces (e.g., garden sheds or auxiliary buildings) and stores it for use in the garden. It reduces reliance on municipal potable water supplies, which is especially valuable during summer droughts (Jacque et al., 2023).

However, rainwater is typically collected during the wetter months (fall and winter) but is most needed during dry periods (spring and summer) in BC (Lu, 2022). This mismatch in timing can limit the effectiveness of rainwater harvesting.

Moreover, rainwater harvesting within healthcare settings requires careful consideration of public health risks, regulatory requirements, and infrastructure management capacity. For example, there are concerns on potential contamination with harvested rainwater (Struck, 2011). Rainwater can carry pathogens such as Legionella and E. coli introduced through bird droppings, airborne pollutants, or stagnant tank conditions (Kanamori et al., 2016). Legionella is a genus of gram-negative bacteria found in soil, water and dust. These pathogens can lead to serious illness or fatality, which is particularly risky for older and immune compromised persons. E. coli is found in the intestines of humans and warm-blooded animals, which can be carried by run-offs from bird droppings or other fecal contaminated roof surfaces. Other pathogens and contaminants are also found in roof harvested rainwater including Campylobacter, Giardia, Aeromonas, Salmonella, Cryptosporidium, etc.(Fewtrell & Kay, 2007). Therefore, the key condition for using rainwater harvesting is to combine it with a drip irrigation system (rather than sprinklers), because this lowers the risk of human contact with contaminated water and reduces filtration/disinfection requirements (Struck, 2011).

4.2 Interview Analysis

In total, nine (9) semi-structured interviews were conducted with individuals involved in food garden initiatives across various healthcare organizations in British Columbia. One of the interviews included two participants, bringing the total number of participants to ten (10).

The ten (10) participants came from a wide range of professional backgrounds, including current and former staff working in roles such as facilities maintenance and operations, food services, horticultural therapy, and emergency medical response. They work in sites such as hospitals, long-term care homes,

cancer centers, and emergency service stations. They also work across different healthcare organizations, including the Provincial Health Services Authority (PHSA), Fraser Health, Vancouver Coastal Health (VCH) and Northern Health.

The interviews were analyzed using thematic coding in NVivo software, and a framework matrix was developed to guide the analysis. Three main categories were used to answer the research questions: (1) current status and irrigation practices, (2) challenges in implementation and maintenance, and (3) perceived benefits and opportunities for the future (**Table 4.3**).

Table 4.3: Main categories and subthemes in the interview analysis.

Main Category	Subtheme 1	Subtheme 2	Subtheme 3	Subtheme 4	Subtheme 5	Subtheme 6
Current Status of Food Gardens and Irrigation Practices	HO site gardens with food plants	Drip irrigation and hand hose watering	Awareness of drought conditions	Wellbeing-oriented initiatives and goals to create social impact	Financial, leadership and maintenance support	-
Challenges in Implementation and Maintenance	Limited manpower and volunteer-based operation	Challenges integrating the garden into hospital meal services	Difficulties in garden setup and limited space in healthcare	Less available financial support for garden maintenance	Gaps in logistics and maintenance	Concerns and challenges around rainwater harvesting
Perceived Benefits and Opportunities	Community building	Enhancing wellbeing and mental health	Not complex and not financially demanding	-	-	-

4.2.2 Current Status of Food Gardens and Irrigation Practices

HO site gardens with food plants

Participants spoke about a diverse range of food garden projects in different sizes and scopes. Most gardens were small-scale and initiated by passionate staff or community members. These gardens often combined food production and community-building purposes and were additionally valued for their therapeutic benefits.

Many food gardens at paramedic units are smaller in scale, typically under 100 square meters and composed of planter boxes **(Figure 4.3).**

Figure 4.3: Photo showing a food garden at a paramedic unit in BC.

Gardens at hospitals and long-term care homes are larger and many of them utilize rooftop spaces. For instance, the rooftop garden at a hospital in Vancouver has over 100 planter boxes and 28 ground-level plots where a range of vegetables, herbs, and flowers are planted **(Figure 4.4).**

Figure 4.4: Photo showing a rooftop food garden at a hospital in BC.

In some of the long-term care homes, there are both garden spaces around the yard and contained box garden on the patio and/or roof top. One of the long-term care facilities has both an outdoor garden and an indoor hydroponic green wall system (**Figure 4.5**).

Figure 4.5: Photos showing an outdoor food garden and a hydroponic green wall system at a long-term care home in BC.

One of the hospitals collaborates with a farm which grows food and supplies their produce to the hospital (**Figure 4.6**). In this case, the farm is not located on the HO site but neighbouring the HO site, and is much larger than a garden, with about 7 acres of land.

Figure 4.6: Photo showing a partnering farm next to a hospital in BC.

Most of these onsite gardens focus on food plants or feature a blend of food plants and flowers. Frequently mentioned food plants include lettuce, tomatoes, radishes, Swiss chard, and a variety of herbs such as sage, basil, and mint. One site also emphasized an Indigenous component by incorporating native sage and other medicinal plants into their garden beds.

Across several interviews, there was a strong focus on growing *"snackable"* foods that could be picked and enjoyed on the spot. As one participant shared,

> *We really focused on having things that people could pick and add to their lunches, because there were picnic tables out in the rooftop, a lot of staff choose to eat their lunch out there.*

Another echoed this sentiment, noting,

> *So that people can actually pick them and eat them where there's not any requirement for food preparation, that nothing needs to be cooked, they just need to be rinsed, and they're kind of a single serving size, is kind of the ideal, so people can just enjoy them right there.*

Drip irrigation and hand hose watering

The most common irrigation methods reported across sites were manual watering using hand hoses or basic drip irrigation systems. Given the relatively small scale of most healthcare food gardens, often limited to a few planter boxes or raised beds, manual watering was seen as sufficient and manageable for many teams. As one interviewee put it,

> *Like farming is a different thing, but planting in a hospital facility, I can't see that being elaborated to beyond what is just manageable with hand hoses.*

In many cases, the location and infrastructure constraints of garden spaces made it difficult to implement more complex irrigation systems. Gardens situated areas without nearby water connections often relied on staff members to water manually. One participant shared,

> *So, in the evening, one of the crew would take it as a responsibility to water. It was all hand water, no sprinklers or anything, and they would just hose it all down.*

However, some gardens benefited from being located in previously landscaped areas with existing irrigation infrastructure. These underused or neglected spaces were repurposed, which offered a good foundation for food gardening. As one interviewee recalled,

> *Both of the gardens were kind of neglected spaces on the rooftop, it had been landscaped and then not really maintained. The irrigation system was installed at the time of the building of the space.*

This pre-existing infrastructure lowered the barrier to entry for starting and sustaining garden projects in such locations.

A few sites were able to implement drip irrigation systems with automatic timers, which reduced manual labor and made garden maintenance more feasible, especially when volunteer or staff availability was limited. One interviewee emphasized the importance of automation in their rooftop garden, saying,

> *Especially the rooftop one, we would not be able to keep up with the watering. Again, because it's so exposed and that we're there only once a week. So, the only reason the garden exists is that there's the [automatic] irrigation.*

Awareness of drought conditions

Awareness of drought conditions and the pressure to reduce water usage was high among participants. One participant, referencing the Sunshine Coast's water restrictions, observed,

> *The problem on the Sunshine Coast is that we're low on water, like every summer we go into stage four, at least stage three water restrictions.*

In response to these constraints, participants shared that they have adopted or are considering more water-conscious gardening practices. These include scheduling watering during cooler parts of the day to reduce evaporation, selecting drought-tolerant or low-maintenance plants, and exploring the use of more efficient irrigation systems. As one participant noted,

> *Everything has to be kind of drought tolerant, able to take some neglect.*

Many have taken pragmatic approach to align food garden initiatives with broader sustainability and resilience goals. It shows people's awareness when it comes to balance what is required to maintain

vibrant, functional gardens in healthcare settings while remaining responsive to ongoing water conservation mandates.

Wellbeing-oriented initiatives and goals to create social impact

A key theme emerging from the interviews was the intentional design of food gardens to enhance wellbeing and create meaningful social impact within healthcare settings. Participants frequently emphasized that these gardens serve purposes beyond just food production. They are spaces that foster relaxation, connection, and community care, particularly important in high-stress healthcare environments.

Several interviewees described how gardens were introduced as wellbeing-oriented interventions. For example, one participant shared,

> *We really tried to make it a just a place that the crew could go and hang out, just something peaceful, quiet away from the normal rat race, which it worked.*

Some gardens were deliberately developed to offer staff a restorative escape from their daily routines, especially in high-pressure environments like emergency service stations. This sentiment was echoed by another interviewee who explained,

> *We wanted to make our station prettier, more engaging and nice to kind of hang out. So, we thought, okay, well, maybe if we put some garden beds and have some flowers, it'll be nicer in the summer. And also, if we can actually plant and grow our own food, that would be pretty cool.*

Here, the aesthetic and sensory value of the garden was just as important as its food production benefits. The presence of plants was seen as a way to create a calming space that improved the experience for both staff and visitors.

Beyond their therapeutic role, some gardens were explicitly designed with social impact in mind. One participant described how their rural healthcare station, which serves a village of 1,200 residents without a grocery store, used the garden to help improve food access for staff:

> *And it was a way to try and grow a few vegetables, lettuce and things like that, salad greens, to just try and make things a little bit easier for the staff working at the station.*

This shows the potential of gardens to serve as micro interventions in food security, particularly in remote locations.

The gardens also supported learning and community-building initiatives. One respondent mentioned,

> *So, a lot of that training was to train the people, not just about the food and the gardens.*

In this case, the garden was integrated into broader cultural and educational programs. Therefore the garden is not only a place to harvest produce but also a place to foster skill-building among the communities.

Financial, leadership and maintenance support

The development and sustainability of food gardens in healthcare settings are also influenced by the availability of financial resources, leadership encouragement, and ongoing maintenance support.

Financial support for food gardens at HO sites came primarily through small grants and community donations. Several participants noted that their garden projects were only possible because of initial funding, even if modest in size. One interviewee reflected,

> *… we had money. That was probably the main reason why it was able to get going.*

Participants also accessed some grants designed to support innovation and sustainability, some mentioned applying for support through programs like the Health Promotion Initiative Fund at PHSA or receiving targeted funding for specific components. Some projects had sustained multiple small grant funding over multiple years. Although most of those grants were in small amounts with no more than a few thousand dollars in value, they were still a catalyst for initiating gardens.

Leadership support and encouragement also played a role in gardens' success and visibility. Some interviewees emphasized how validation from leadership encourage their contributions to the garden. At the facility level, clinical and operations leadership were frequently described as being helpful and accommodating.

Maintenance support, often from facilities teams, landscaping staff, or building services, was another enabling factor. Some participants have strong working relationships with these teams which had helped them secure necessary resources, resolve minor technical issues, and sustain garden care over time.

4.2.3 Challenges in Implementation and Maintenance

Limited manpower and volunteer-based operation

One of the most consistent challenges across all interviews was the lack of dedicated manpower to sustain food garden initiatives in the long term. Without formal roles or systems in place, the burden of maintenance often falls to staff volunteers or interested staff during their limited spare time. One interviewee put it plainly:

> *The hospital staff, they are here to work a job. They are here to fulfill their shift.*

This highlights a fundamental barrier: while staff may support the idea of a garden, it often falls outside their job responsibilities. As another participant explained,

> *Everyone is paid for the time that they work, and the time that they work is filled with the responsibility for why that position is established. If someone needs to do this, and this is not within their job description, it will be at their break time, before or after work. And that's the very minimum commitment you can ask from these people.*

Even when staff are motivated, the reality of limited time and high workload often means the garden works become more challenging. Participants stressed that garden maintenance requires ongoing efforts.

> *The very beauty of planting is that you have to keep planting it. You have to keep investing into it, nurturing. The beauty of it is exactly the barrier of it*

This is slightly different at paramedic stations, where staff often have some downtime between calls, making gardening during shifts more feasible.

> *At least with the ambulance service, that's where you're going to see a better improvement — the stations where people can do it on their shift, and they feel okay about doing it because they're already being paid to be there.*

For those managing therapeutic or hospital gardens, staff volunteers (staff who are volunteering to manage gardens), clients, or horticultural therapy sessions help meet basic maintenance needs. Still, when sessions aren't running or staff volunteers are unavailable, the responsibility often returns to staff:

> *If nobody's available, I, for the most part, end up doing it.*

Therefore, without institutional integration, gardens remain vulnerable to staff turnover or changes in interest. One participant noted,

> *This kind of thing runs with the initial enthusiast, and that person may move on — and then the vision moves on with them.*

Another participant also seconded this opinion,

> *In order to initiate a program, there needs to be a system to operate it in the long run, not just relying on a certain individual that wants to do it.*

Across all settings, it was clear that reliance on individual passion is not a sustainable strategy. Gardens require structured, long-term support mechanisms, whether that means designated garden coordinators, embedded maintenance duties in staff roles, or robust volunteer programs with institutional backing.

Challenges integrating the garden into hospital meal services

As food gardens at healthcare facilities continue to gain recognition for their therapeutic and environmental benefits, there is growing interest in integrating their harvests into hospital meal services. Many interviewees expressed enthusiasm for this possibility, seeing it as a sustainable and meaningful way to connect patients and staff to fresh, locally grown produce.

Integrating food gardens into hospital meal services is a complex and challenging endeavor, and this has not been an easy task for people who took up the challenges. One thing to consider is the scale and reliability required in institutional food preparation. Most of the gardens are small and cannot produce enough volume or variety to reliably contribute to the hundreds, or even thousands, of meals prepared daily. One food services professional noted,

> *…, we are talking about 6 million meals per year that our department provide to all the patients and residents ....*

Other participants agreed on this, said,

> *What we grow is pretty small scale, so that it would not be enough to, you know, do a regular kind of contribute to regular meals.*

In addition to supply, interviewees highlighted the rigidity of institutional meal planning. Institutional kitchens operate using tightly programmed nutrition software, which defines every ingredient and quantity for each meal. This system makes it difficult to accommodate ad hoc or unpredictable harvests.

Nevertheless, several interviewees are working to overcome those challenges. Herbs, dressings, and other garnishes are being used in some cases because they can be included when available and omitted when not (**Figure 4.7**).

Figure 4.7: Photo showing fresh herbs from a food garden at a HO site being used in hospital meal services.

It has been seen as a valuable addition, increasing diet diversity and encouraging staff and patients to enjoy food from the site instead of providing large quantities.

> *Community gardens don't tend to be economic in that way that I'm going to replace my vegetable shopping… it's a different conversation.*

Harvest has been more commonly used in garnishes, salad and snacks. This approach provides a low-risk way to incorporate garden harvests while maintaining operational consistency.

As one of the interviewees said,

> *even if only a little bit, they still impact the flavor for everyone…We cannot grow enough food right now…But just to supplement it, it's good for the residents to be involved, and there's more like well being and like mental health benefits.*

They also noted that staff meals and snacks offer more flexibility than patient meals (**Figure 4.8**), making them a better avenue for initial integration.

Figure 4.8: Photos showing produce from a food garden at a long-term care home in BC. Left: harvest berries for sharing. Right: radish used in salads.

Communication between food service teams, garden volunteering staff, horticultural therapists and dietitians was also mentioned. One participant also mentioned that they regularly walk dietitians through the rooftop garden to help them understand what can be harvested and used.

Interviewees described how whole fruits and vegetables brought into the kitchen were exempt from the Food Premises Regulation, so long as they remained unprocessed. Washing protocols already in place

for commercial food applied equally well to homegrown produce, and health officers were typically supportive when sites followed basic food safety procedures.

At Northern Health, formal steps were taken to support this vision through a recently published policy on on-site gardens and produce for patient/resident consumption (Northern Health, 2023). The policy was developed to facilitate the use of fruits, vegetables, and herbs from on-site gardens in Northern Health kitchens.

Northern health indicates their institutional openness to using onsite produce. It was recognized that garden programs allow people in care to have a hands-on connection to their food, participate in meaningful activities, and consume locally grown food which may have increased flavor and nutrition. The policy emphasizes the use of safe water sources, limited pesticides and fertilizer, and proper food handling procedures, providing a safe but flexible pathway for local garden integration. As indicated in the policy document:

> *Fruits, vegetables and herbs produced from the on-site gardens may be used:*
>
> - *When the same item is being offered on the menu,*
> - *In addition to the set menu items or*
> - *As part of a snack*

Difficulties in garden setup and limited space in healthcare

Establishing food gardens within healthcare settings can come with a different set of difficulties. One barrier was the difficulty of physically setting up gardens in non-traditional spaces, especially at urban hospitals. At one site, extensive work was required just to make the rooftop viable for planting. Nearly 20 cubic yards of soil had to be removed and replenished on the fourth floor of an active hospital. Community volunteers coordinated to haul dozens of heavy bins of soil through elevators using old recycling carts through a hospital space.

With limited real estate, particularly in high-demand urban environments, space is prioritized for core hospital functions. Even when outdoor space is available, the infrastructure to support garden functionality, such as access to water, can be lacking. This limits automation and increases the reliance on manual labor.

Moreover, composting, a practice people consider essential to sustainable gardening, is often discouraged in healthcare due to the risk of attracting pests such as birds or rodents. One participant noted,

> *We don't compost. It's mainly to discourage animals, birds, rodents at the hospital.… which is unfortunate, because there's lots of green waste.*

Less available financial support for garden maintenance

Initial grants, donations, and community support have helped many gardens get off the ground. However, sustaining these gardens over time can be more challenging without dedicated funding for ongoing maintenance, upgrades, and program expansion. One interviewee described their experience:

> *There's a lot of money for the idea when it first comes off… people are all excited. No money for the follow-up, no money for the five-year look-back analysis plan, and that's kind of a shame, because, you know, a lot of them do fail.*

While start-up funds are often available through innovation grants, consistent operational funding is less common. Some gardens rely entirely on voluntary contributions or internal staff funds.

> *Right now, we're funding ourselves. We're paying it through our station dues. We don't mind.*

Although this do-it-yourself approach showcases the passion and commitment of staff, it also places a limit on what can be achieved. For example, one team had hoped to install a rain barrel system to improve irrigation sustainability but had to shelve the idea due to budget constraints:

> *We wanted to actually buy a rain barrel… I don't think we ended up doing it because I think we ran out of funds.*

Others expressed interest in making low-cost improvements that could extend the growing season, such as building lids or mini greenhouses for garden beds, which requires some additional funding.

> *Because it's been so cool of a season, we were thinking for next year if we are able to get some plastic covering or whatever, make a lid for the garden beds… that would probably help the plants out quite a bit.*

Many participants expressed hope that institutions will recognize this need and consider more structured support for the long-term care of food gardens at HO sites.

Gaps in logistics and maintenance

Participants acknowledged that logistical coordination and long-term maintenance can pose challenges that require creative problem-solving and strong cross-departmental collaboration. One is that gardens generally fall outside the operational scope of healthcare facility departments like Facilities, Maintenance, and Operations (FMO). As one interviewee explained,

> *FMO has two main budgets, maintenance and operations... [food garden] is not like a commercial project that we're using public funds to support.*

Another layer of complexity is regarding integrating garden harvests into food service systems. This requires not just growing and harvesting food, but also planning how to clean, store, and process it in ways that are compatible with healthcare kitchen protocols.

> *It takes a bit of effort, and as a matter of fact, quite a bit of effort and time, before those harvests can be transformed into usable ingredients*

As gardens became more established, participants emphasized the importance of building logistical planning into the program design.

Concerns and challenges around rainwater harvesting

Rainwater harvesting can be a sustainable and resource-efficient irrigation strategy. With many facilities observing significant runoff from their rooftops during rainy seasons, the potential seems promising. As one participant described,

> *The water that comes off the roof is quite a lot sometimes... in one corner, when it rains, you actually see a waterfall coming off the roof.*

However, despite this visible opportunity, there have been a range of concerns. The primary hesitation centered on the potential risk of contamination from rooftop runoff. Participants worried that they are not able to control or guarantee what materials, residues, or pollutants might be introduced through this water source:

> *It's difficult to know for sure what's on the roof, if something's leaking oils or whatever... then that gets in the food or impacts that food's ability.*

Northern Health's 2023 policy on on-site garden produce also clearly prohibits the use of non-potable water for irrigating edible plants, aligning with broader food safety guidelines. The policy states:

> *Use potable water to irrigate, to water plants and to wash all produce; and,*
> *Do not use collected water on the gardens growing edible items as they may contain bird feces.*

4.2.4 Perceived Benefits and Opportunities

Community building

Participants emphasized that food gardens serve as more than just spaces for growing produce. Gardens act as bridges between healthcare institutions and the communities they serve. For many, growing a food garden on hospital grounds offers an opportunity to build relationships with their communities.

One interviewee reflected on the powerful symbolism of the land itself, noting that the ground where their collaborated farm is located was once a farm for a nearby residential school and the hospital itself is also on the land from the Sechelt Nation.

> *all around us, we only have one neighbor…be part of the community is an important thing for a large employer like a hospital.*

Others described intentional efforts to involve new immigrants to Canada living in the community. Their approach extended beyond food production to community empowerment, with training programs designed to educate locals not just about gardening, but also about social skills and culture.

> *We always try to involve the community… a lot of that training was to train the people, not just about the food and the gardens.*

The gardens also offer opportunities for social connection within the hospital itself. As one staff member put it,

> *the goal is to build social activities for staff, increase connection ...*

Improving dietary diversity with fresh, local ingredients

Participants appreciated the way food gardens introduced more variety and freshness into meals. The availability of herbs, greens, and small vegetables from on-site food gardens made it easier to add nutritious ingredients to hospital menus. One participant noted,

> *the benefit is to have locally grown, healthy food for your patients, also much less processed food.*

The gardens were not seen as a replacement for bulk food sourcing but as an enhancement that brought freshness and flavor to dishes (**Figure 4.9**).

> *It's like, oh, we grew some of this on our garden. That can be just some of the lettuce on the side of the plate, or some of the herbs that went into it. And that's a good, positive thing*

Figure 4.9: Photo showing vegetables from a food garden at a HO site in BC.

Sometimes, food gardens also provide a more responsive approach. A team described how they began sourcing herbs from their own garden to create a fresh dressing during supply chain disruptions:

> *…[this project] started when the Fraser Valley was flooded and that highway one broke into pieces, and that we had such a difficulty bringing in supplies from around.*

Staff and patients also benefitted from being able to harvest directly from the garden. Miniature crops like carrots, peppers, and cucumbers were grown specifically for their ease of consumption, small, snackable,

and not requiring cooking. In some sites, things like tomatoes, lettuce and strawberries were planted so staff could add them to their lunches or share them with patients (**Figure 4.10**).

> *so that people can actually pick them and eat them where there's not any requirement for food preparation, that nothing needs to be cooked. They just need to be rinsed, and they're kind of a single serving size, is kind of the ideal, so people can just enjoy them right there.*

Figure 4.10: Photo showing a variety of berries harvested from a food garden at a long-term care home in BC.

Importantly, the goal of these food gardens wasn't framed as cost saving. Instead, they were recognized for their contribution to health, flavor, and dietary diversity.

Enhancing wellbeing and mental health

Interviewees often talked about the impact that healthcare food gardens have had on mental health, stress relief, and overall wellbeing, both for staff and patients.

Many noted that simply being surrounded by greenery and engaging with nature (**Figure 4.11**), even passively, created a significant improvement in staff's mental health.

> *… [the benefit is] being connected with the nature, having the nature right in front of you*

Figure 4.11: Photo showing collected flowers from a food and flower garden at a hospital in BC.

The act of gardening itself was frequently described as *"therapeutic, very calming"* and even meditative. Whether it was patients taking part in planting and harvesting or staff escaping high-pressure indoor environments, gardens offered a peaceful reprieve. As one participant reflected,

> *it was an escape from the high pressure, clinical, bright lights, sharp over amped sort of energy environment into a peaceful, soothing thing where you can tend plants.*

For healthcare professionals, who often work under intense and emotionally demanding conditions, gardens were seen as a rare opportunity to relax and reset. Others emphasized how simply getting outside and having that momentary *"disruption in your daily… sitting behind a desk"* can offer *"huge mental health benefits".*

> *when they're in a hospital, where there's often not as many opportunities to engage in leisure activities, to teach leisure activity that they may like to continue after discharge is a big thing. And to give people confidence in in trying something new, and seeing the results of being successful, confidence and self esteem. And also encouraging social skills, encouraging people to interact with each other as they are gardening, … so many goals for the clients that actually go beyond the gardening itself.*

Not complex and not financially demanding

Interview participants emphasized that the costs associated with starting and maintaining a small-scale garden were relatively low, especially compared to the range of benefits they bring. Even modest financial support could have a meaningful impact. As more than one participant stated,

> *a couple hundred bucks would go a long way*

In practice, many programs operated with small grants, which still enabled the purchase of tools, soil, or plants to sustain the initiative (**Figure 4.12**). Overall, gardens were not perceived as a a financial burden. Rather, they were seen as accessible, low-cost projects that could be gradually expanded and sustained with some financial support along the way.

Figure 4.12: Photo showing a food garden at a paramedic unit started in 2023 after receiving a small grant.

5.0 Discussion

In terms of water conservation, interview participants emphasized that most healthcare gardens are relatively small in scale, their irrigation needs are comparatively much lower than other hospital operation activities. The majority of healthcare gardens discussed were maintained using simple irrigation methods, primarily hand-watering or drip irrigation. These approaches were often selected out of necessity, given limited infrastructure or funding. Drip irrigation was welcomed for its efficiency, particularly where it had been paired with automated timers to reduce labour demands (Tam et al., 2005). Participants were aware

of water saving practices and have been implementing water efficient irrigation practices where the infrastructure allows.

The literature review identified rainwater harvesting as a conditional water-saving strategy in healthcare settings, suitable only when paired with a drip irrigation system to reduce pathogen risks. Interview findings further reinforced this caution, with participants citing additional barriers such as food safety concerns and potential contamination. Participants voiced apprehension about bacteria, roofing materials, and mosquito control . Northern Health's current policy also prohibits the use of non-potable water for food plant irrigation (Northern Health, 2023).

In sum, the current scale of healthcare gardens does not place a heavy burden on water systems at the site or facility level, however it is a good practice to incorporate water conservation into garden design and maintenance whenever possible.

This project also shows that food gardens at healthcare facilities offer a wide range of benefits. These gardens are appreciated not only for their beauty and atmosphere but also for their ability to foster community, improve dietary diversity, and support patient and staff wellbeing. They are generally seen as low-cost, low-risk initiatives that yield social, therapeutic, and environmental returns.

Interviewees described how gardens have been incorporated organically into healthcare settings, without needing major structural or policy changes. Staff often took the lead, either by involving staff volunteers or horticultural therapy clients to participate in garden maintenance. O-site harvest was starting to be incorporated into hospital meals, and policy has been developed to facilitate this transition. While no facilities currently use gardens as a primary food source, the symbolic and supplemental value of garden produce can support ongoing transitions toward more sustainable and nutritious food systems.

Other benefits such as stress reduction also resonate with healthcare organizations' goals to foster supportive work environments. In high-pressure clinical settings, having a calm outdoor space can provide a much-needed mental reset.

Another one of the most consistent themes was that gardens can flourish with minimal investment. Participants emphasized how modest budgets could go a long way when spent on seeds, tools, or starter plants. Some noted that gardens can be positioned as *"value-add"* projects with minimal financial demand but substantial symbolic and wellness returns, particularly as part of hospital sustainability goals.

Although these gardens have been implemented in diverse ways, they are overwhelmingly volunteer-driven. Most sites operate without formal staff roles dedicated to garden maintenance, relying instead on passionate individuals or small groups who work beyond their job descriptions to coordinate planting, watering, and harvesting. This grassroots model has allowed gardens to flourish organically, but it also creates fragility: gardens are often tied to the presence and energy of one or two champions, and can decline quickly if those individuals leave or burn out. While this low-cost, low-barrier approach has proven effective at launching initiatives, long-term sustainability requires more institutional support, particularly in the form of modest, recurring funding and the designation of formal roles for coordination and care.

Overall, the discussion points to a clear opportunity: food gardens at HO sites are not inherently high-cost or high-risk, but they require a shift in how institutions value and support them. Many participants expressed a strong desire to continue and expand what they have started. Modest, recurring budgets and designated staff for maintenance could go a long way in enabling these projects to thrive. There is an opportunity to build on these success stories and support the natural momentum already underway.

LIMITATIONS

This research draws on a small number of participants (n=10), primarily from individuals already engaged in garden projects. Therefore, it may underrepresent the views of facilities that have not initiated gardens or those who faced barriers.

The participant pool consisted mostly of advocates and active contributors to food garden initiatives, which could introduce bias towards positive experiences and overlook challenges faced by less involved or non-participating sites.

Future studies should aim to include a wider range of healthcare facilities and stakeholders to capture a more comprehensive understanding of barriers, opportunities, and diverse perspectives on food gardens and water conservation in healthcare settings.

6.0 Conclusion

This project set out to examine how food gardens are established and maintained in healthcare settings across British Columbia, with a specific focus on irrigation and water conservation practices. It also sought to understand the broader opportunities and challenges associated with sustaining these gardens, especially in the context of institutional sustainability targets and the 2030 water reduction goals.

Key findings for Research Question 1 (current irrigation and water conservation practices):

- Healthcare food gardens are typically small-scale and volunteer-run.
- Drip irrigation and hand watering are the most common methods, chosen for their simplicity and low cost.
- A small number of sites use timer-controlled drip systems, which reduce labour but require upfront infrastructure and funding.
- Water-saving practices are generally known and supported, but implementation depends on access to existing equipment and infrastructure.
- Rainwater harvesting is not currently used for food gardens at HO sites due to contamination and food safety concerns.
- Expanding the use of drip irrigation could further reduce both water consumption and labour demands.

Key findings for Research Question 2 (benefits, challenges, and opportunities):

- Gardens deliver diverse benefits, including:
    - Improved dietary diversity and access to fresh produce.
    - Enhanced wellbeing and stress relief for patients and staff.
    - Stronger community engagement and cultural connections.
    - Visible contributions to sustainability and climate resilience goals.
- Most gardens rely on unpaid, voluntary staff contributions, making them vulnerable to staff turnover, changes in interest, or shifting departmental priorities.
- Ongoing institutional support, such as modest recurring budgets, designated roles, or integration into operational planning, is critical for long-term sustainability.
- Gardens are low-cost to maintain; even a few hundred dollars annually can support tools, seeds, and small improvements.

Overall conclusions:

- Food gardens align naturally with healthcare priorities around mental health, staff wellness, equity, and climate resilience.
- They do not pose a barrier to water reduction targets and can complement broader sustainability strategies.
- With modest, ongoing funding and embedded maintenance support, healthcare food gardens can thrive, supporting environmental objectives while creating more vibrant, health-promoting environments for patients, staff, and surrounding communities.
- Many participants expressed hope that institutions will recognize contributions from food gardens and consider more structured long-term support for food gardens at the HO site.

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APPENDIX A Interview Schedule

As part of this research, semi-structured interviews were conducted with individuals involved in food gardens at healthcare sites in BC.

Each interview lasted approximately 30–60 minutes and was conducted under informed consent, with all participants remaining anonymous. Interviews were tailored to each interviewee's experience and role. As the research progressed, questions evolved to reflect emerging themes and recurring challenges raised in earlier interviews. Some later participants were asked to respond to commonly raised issues in order to gather a broader range of perspectives.

The interview questions were grouped into four categories: main interview questions, general reflection questions, tailored questions (specific to the interviewee's experience or expertise), and closing questions. The following list provides a consolidated view of the interview schedule, with identifying details or site-specific references removed to ensure confidentiality.

Interview Schedule

- **Introduction and Consent**

Thank you for taking the time to speak with me today. I'm conducting research through the UBC Sustainability Scholars Program in partnership with the Energy and Environmental Sustainability (EES) team. This project explores the trade-offs between food gardens and water conservation at healthcare sites.
The interview will take about 30–60 minutes. With your permission, I would like to record this conversation. Transcripts will be analyzed for the final report, and any quotes used will not include your name or identifying details. If you'd like to receive a copy of the final report, I'd be happy to send it to you once it's complete.

- **Main Interview Questions**

Garden Setup and Purpose

- Can you tell me a little bit about the garden you're working with? [Why does this garden exist, what are the hopeful outcomes of it existing? Is it food production, education, community, therapy…]

  Prompt: What's the size and purpose of the garden? How is it maintained? What kinds of plants do you grow?

Water Use and Irrigation

- What kind of irrigation system do you currently use? Are any non-potable water sources involved, like rainwater?
    - If yes, what is it and is there any approval involved? And how is it managed?
    - If not, why not?
    - Do you have a rough idea how much water the garden uses?
    - Are there concerns about the long-term maintenance of these systems?
- What water-saving practices do you think could be useful for food gardens in your facility?

Organizational Context

- Who is involved in supporting the garden (e.g., teams, departments, volunteers)?
- How does the healthcare setting influence your garden planning and irrigation choices?
- What kinds of leadership or institutional support are involved?
- What challenges have you faced in implementing or maintaining the garden?

  Prompts: funding, space limitations, infrastructure, infection control, staffing, volunteering
- What kinds of support or partnerships would make this work easier?

- **General Reflection Questions**

- What challenges have you encountered when implementing or maintaining the garden?

  Prompt: funding, volunteering, space limitations, infrastructure barriers, or infection control concerns, site support/approvals?
- What types of support or collaboration would make it easier to implement or maintain a garden? Are there concerns about long-term maintenance?
- Is there something surprising during this project? [positive/negative surprises]
- If you could design your ideal food garden for this site, what would it look like?
- What advice would you give to others starting or improving a food garden at a healthcare site?

  Prompts: location, size, irrigation needs, integration with hospital operations
- What do you see as the key benefits of the garden?

  Prompts: therapeutic value, staff wellbeing, cultural significance, ecological benefits

- **Examples of Tailored Questions**

These questions were asked based on the interviewee's experience or role and reflect themes that emerged throughout the interview process. They include but are not limited to:

- What is the purpose or focus of your garden program (e.g., horticultural therapy, food production, staff engagement)?
- What kinds of plants do you grow, and how did you decide what to plant?
- How are harvested ingredients used within the facility (e.g., in staff meals, patient meals, therapy programs)?
- What are the main challenges or barriers to using garden-grown ingredients in healthcare food services? Are there differences in integrating produce into staff vs. patient meals?
- How is the garden maintained day-to-day and throughout the growing season? What teams or departments provide support for the garden?
- How do you ensure continuity in garden maintenance, especially when staff or volunteers change?
- What challenges have you faced in ensuring the longevity of the garden beyond a single champion or short-term interest?
- How is the work of garden maintenance embedded into existing roles, if at all?
- What organizational or community supports have been most helpful in maintaining the garden over time?
- How is your work connected to other teams within the healthcare organization?
- How did collaborations with partners, internal or external, come into place, and what lessons can be learned from that experience?
- What are the limitations of scaling or replicating this kind of garden in other healthcare settings?
- What benefits have you observed from the garden, for patients, staff, or the broader healthcare environment?
- How has your team addressed or prepared for seasonal drought or water restrictions?
- What lessons have you learned that could help other healthcare facilities establish or sustain similar garden projects?
- If you were to replicate this project at another site, what would you do differently?

- **Closing Questions**

  - Would you recommend anyone else I should speak with for this project?
  - Do you have any photos of your garden that could be used in the report (with your permission)?
  - Do you have any final thoughts or suggestions for resources I should check out?