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Research Article

Innovative Health and Social Care Model for Improving Quality of Life for Patients, Employees and Community: Evidence from Hamilton, Canada

Sadequa Shahrook[1]* and Jessica Sine[2]

[1]Global Health, Population Health Research Institute, A Joint Institute of McMaster University and Hamilton Health Sciences, David Braley Cardiac, Vascular and Stroke Research Institute (DBCVSRI), Hamilton, Canada.

[2]Contracts Department, Population Health Research Institute, A Joint Institute of McMaster University and Hamilton Health Sciences, Hamilton, Ontario, Canada

***Corresponding Author:** Sadequa Shahrook, Global Health, Population Health Research Institute, A Joint Institute of McMaster University and Hamilton Health Sciences, David Braley Cardiac, Vascular and Stroke Research Institute (DBCVSRI), Hamilton, Canada. E-Mail: Sadequa.Shahrook@phri.ca

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Abstract

Background: We aim to describe a recently launched innovative health and social care model initiated at the Hamilton General Hospital campus, Canada, with the following objectives: (1) to help promote recovery and quality of life of patients with chronic diseases through a therapeutic garden; and to reduce food insecurity and improve access to nutritious food options in the local community by supplying fresh organic vegetables from the garden; (2) to improve quality of life of employees across the campus.

Materials and Methods: Qualitative or descriptive report using a before-and-after design.

Results: Over 700 volunteer hours were required for the project implementation. Three Site Coordinators managed the garden operations and coordinated 63 staff volunteers (June 20 - October 19, 2017). Some 15 therapists, patients and families volunteered. Fresh organic vegetables (> 956 pounds) e.g. green onions, swiss chard, carrots and tomatoes were harvested and donated to neighbourhood food banks/kitchens yielding meals for some 797 hungry people. Future participation and positive ambience on physical and mental state was expressed by the majority of volunteers.

Conclusion: Our project can ultimately help improve therapeutic care for patients, employees' work-place physical activity, including food insecurity and nutrition status in the vulnerable community and beyond, if adopted, especially in resource-limited settings, where projects with similar multiple benefits can be more useful.

Keywords: Innovative Health and Social Care Model; Therapeutic Garden; Before-and-After Study; Non-Communicable Diseases (NCDs); Chronic Disease Patients; Food Insecurity; Fresh Vegetables; Vulnerable Community; Employees; Volunteer; Quality of Life; Sustainable Community Healthcare

Abbreviations

NCDs: Non-Communicable Diseases; HHS: Hamilton Health Sciences; PHRI: Population Health Research Institute; HVGs: Hamilton Victory Gardens; RRC: Regional Rehabilitation Centre; HGH: Hamilton General Hospital; SCs: Site Coordinators

Introduction

The ongoing surge of non-communicable diseases (NCDs) in varying age stratum remains a daunting challenge, driven partly by increasing sequelae of disease and injury due to population ageing [1]. For example, all risk factors combined, NCD associated disability-adjusted life-years globally ranked higher than joint causes: 43.8% (95% uncertainty interval [UI] 41.1 - 46.3) versus 41.6% (95% UI 40.1 - 43.0). Furthermore, declining non-fatal disease occurrence in high-income countries today is a gift of scientific advancements made to prolong human survival and mortality [1]. As a result, however, the need for rehabilitation facilities and assisted living residences is skyrocketing. Consequently, there will also be an increasing number of non-working class in the future and thus greater demand for cost-effective interventions to get the healthcare system running. Therefore, devising the most cost-effective, supportive and enjoyable milieus for improving recovery and life quality of the patients is key to public health interventions.

Gardens built at rehabilitation centers, assisted living or other similar care facilities are good examples of non-pharmacological interventions with high economic value and have proven to encourage patients' independence, sensory stimulation and improved life quality [2,3]. Therapeutic gardens provide a natural environment and are designed to stimulate patients' senses, increase physical exercise, improve ambulation, reduce stress, increase positive memories and stabilize sleep wake routine [4,5]. Therapeutic interventions that provide benefits through participation in activities such as gardening have shown to be influential on positive behavioural and psychological outputs in patients living in assisted residences [6]. Furthermore, formal rehabilitative therapies provide direct clinical benefits by reducing stroke associated disability [7] and when combined with horticultural therapy and use of sensory gardens, can encourage recovering patients to use upper extremities and perform daily activities, which may eventually improve life quality and well-being [8,9]. Regular exposure to nature can also be favourable for employees' enhanced physical and

mental health, since the increased sitting-work pattern is linked to greater risks of obesity, heart disease, and overall mortality [10].

It is therefore of primary public health interest that countries exhibit vested commitments to increasingly implement such therapeutic care settings to advance healthcare systems and delivery for a more prepared prevention of NCD epidemic. Moreover, if that care system can go beyond by offering multiple benefits (i.e. improved health in employees and local communities), it may potentially become a breakthrough model to replicate worldwide. Canada's healthcare system is well-protected by universal healthcare coverage, and a well-integrated social safety net system is enjoyed by its citizens [11]. In future health and social care models, Canada can certainly bring more innovations to make recommendable advancements for enhanced care delivery, performance and qualities with integrated physiological, psychological and social care interventions. In this research note, we report a newly implemented, innovative health and social care model in the city of Hamilton in Ontario, Canada [12,13].

Materials and Methods

This health and social care model was adopted and implemented by Hamilton General Hospital (HGH) and Population Health Research Institute (PHRI), together with Hamilton Victory Gardens (HVGs). The primary goal was to build a therapeutic garden to help achieve recovery of the patients admitted at different surrounding hospitals e.g. the Regional Rehabilitation Centre (RRC), Well-Health Center, and HGH. The next key aim was to help improve diminishing food insecurity and improve nutrient consumption in the disadvantaged community of downtown Hamilton by producing fresh, culturally-suitable organic fruits and vegetables in the garden. The third goal was to encourage employee engagement by providing a meaningful, outdoor activity where they could be active and connect with co-workers and patients while enjoying a refreshing break from their duties. Here we report the findings using a before-and-after study design.

Hamilton has the fourth highest poverty rate among the 13 Ontario cities/regions with populations > 200,000; Toronto, Essex (including Windsor) and Peel were top on the list [14]. According to the recent population census by Statistics Canada [14], 15% Hamiltonians were poverty-stricken. The estimate was far concerning, i.e. 20.6% in children aged < 18 years. Furthermore, 80% of the hungry households were reported of having diabetes [15]. Moreover, due to increasing housing prices, the citizens compromise spending on food, e.g. 30% - 70% (based on area and income) of income went on housing and resulted in more dependence on community food banks. During the World War I and II, the 'War Gardens for Victory' concept was initiated in various countries to address the shortage of food in local communities, particularly healthy, nutritious options [16]. After many decades, the concept was revitalized in Canada, and in 2011 HVGs, a not-for-profit organization, planted the first seeds to reduce food insecurity in the Hamilton community. By January 2017, with the use of empty urban plots, HVGs had built more than 16 gardens (> 661 raised beds). In 2016, 43,000 pounds of fresh vegetables were donated to local food banks and hot meal community programs [16].

In summer 2017, in partnership with HGH, a team of three Site Coordinators (SCs) from PHRI's recently established Social Committee led the management and implementation of the garden [12,13,17,18]. After some eight months of planning, coordination and substantial hours devoted by HGH, HVGs, PHRI SCs, and student volunteers, 11 garden beds were built on the HGH campus, beside the RRC. Wheelchair accessibility is the main uniqueness of this garden where patients with attending care-givers can effortlessly move around, whether for gardening or just to enjoy the smells, tastes and touch of the garden as a therapeutic remedy. The garden's specialty was further extended through its beds of different heights, with two beds accessible from a seated position (e.g. wheelchair) and one bed at a standing height. The tallest bed provides an accessible option to patients unable to bend over, while also motivating patients to exercise their balance (e.g. practice standing from a wheelchair or with artificial limbs). The garden began full operation on June 20, 2017 and ran until October 19, 2017. Prior to supervising the garden, various training courses were attended by the SCs to fulfill the HVGs volunteering requirements (e.g. handling vulnerable populations). The garden operates two weekly shifts for some three hours under the direct supervision of the SCs, except in case of a thunderstorm. Volunteering in the garden does not require any prior experience and training was provided by HVGs whenever needed. The volunteers e.g. employees of HGH, PHRI and other adjacent care facilities signed up online during the scheduled shifts to help with planting, watering, weeding, harvesting and other needed tasks. During the study period, RRC patients and their families, under the supervision of their caregivers, also participated in gardening or light physical activities, whether during or outside of scheduled shifts. A structured logbook was regularly maintained by the SCs to record all the gardening activities to track the study progress and challenges. The grown vegetables were harvested, cleaned, and weighed by the volunteers, and were delivered to neighbourhood food banks and community kitchens by HVGs. Below we describe the preliminary data of this model project.

Image 1: Rehab patient planting seeds in the garden bed

Image 2: The HGH therapeutic community garden.

Image 3: Rehab patient at the garden with attending therapist and volunteer bee.

Image 4: Harvested produces ready to deliver at the community food banks.

Results

A Steering Committee of 11 members including HGH and PHRI staff volunteered > 700 hours to plan, coordinate and implement the project. Over 97 volunteer hours from the students and residents from the schools and neighborhood and HVG were required to build the garden took place on June 2017. Three PHRI employees acted as SCs, managed weekly garden operations and the coordination of 63 individual volunteers over the course of 5 months (June 20 - October 19, 2017). The majority of volunteers were PHRI and HGH employees however, some 15 therapists, patients and patient families also volunteered in the garden. The volunteers varied in age but mostly were in their 30s to 40s. In its inaugural season, the garden grew and harvested (as of October 16, 2017) a total of > 956 pounds (lbs) of fresh organic vegetables including green onions (241.5 lbs), swiss chard (208 lbs), cucumbers (131 lbs), potatoes (49 lbs), green beans (46 lbs), carrots (42 lbs), tomatoes (34 lbs), and other fresh produce (204.5 lbs). The vegetables were donated mainly to Eva Rothwell Centre, Mission Services Hamilton, HVGs sponsor/partner Betula Restaurant and other neighbourhood food banks and community kitchens depending on the demand of meals on the harvest day.

The harvest yielded some 797 meals [19] for hungry Hamiltonians. Interest for future participation was expressed by all volunteers, and in particular the Hamilton Brain Injury Association (HBIA), Recreation Therapy, and Rehabilitation teams across campus. The majority of volunteers expressed having a positive experience in the garden and an improved physical and/or mental state following the short refreshing break from daily office/clinical work.

Discussion and Conclusion

This study reports rationale and institution of a therapeutic garden at the General Hospital in Hamilton, which was warranted to provide greater care support in patients' recovery and life quality, including enhanced physical activity of the employees. The garden also created opportunity to improve access to and consumption of fresh nutritious produces for the vulnerable Hamiltonians, for whom food insecurity is a common issue. Since its inception, the garden fed some 797 hungry people in the community by making a donation of over 956 pounds of fresh vegetables. Patients, families and staff volunteers showed excitement in the garden, especially regarding its unique features, and delightfully participated in the activities. Patients, families and staffs have access to enjoy the garden on a daily basis at their leisure and 24 PHRI and HGH staff volunteered more than once on a regular basis. Volunteers e.g.

hospital and research institute staff, and patients mentioned that their physical and/or mental state improved as a result of their experience in the garden.

Although all volunteers were required to sign up prior lending a hand in the garden, only one young patient filled in a sign-up sheet; however, we know from observation and verbal reports that more patients visited or weeded the garden at their ease. Two points are noteworthy: we observed patients and families visiting the garden on a daily basis at different times and assume that the therapists started incorporating garden activities into their regular treatment plans as a recommended strategy. We also think that at this point, the patients were more willing to enjoy the ambience of the garden as this is a new hospital initiative and may take some time for both the patients and therapists to adopt and incorporate the activities on a regular basis. However, as anticipated, the garden started adding values to patients' recovery process and life quality for which clearer evidence can be shown in future reports. Furthermore, the majority of our volunteer staffs mentioned that engaging in the garden activities overall felt positive for their physical and mental health. Based on our current lessons learned from this project, we have already started planning to efficiently address the challenges and hope to present further evidence in our future reports.

Canada's overall health system performance ranking was far behind (i.e. 30th) than other developed countries [20] and warrants advances. Our innovative model has great potential to help improve the ranking and eventually become a landmark cost-effective initiative to more efficiently provide therapeutic care for patients, a healthy work place for employees, and to help avert food insecurity and impaired nutrition status in the vulnerable population. If adopted, the model can offer similar manifold benefits especially in resource-limited settings, where improving life quality of the patients including employees is still a mere healthcare strategy in the place, and consumption of nutritious food is a persistent complex challenge to mitigate.

Limitations

This is a descriptive study and includes limited data from a short observation period. However, our study offers valuable information on: a) the importance of implementing a community care project providing multiple benefits and in doing so, volunteers' contributions as a massive asset especially at today's resource limited era and possibly, for sustainability; b) issues in accessibility to and affordability and consumption of nutritious food even in a developed country like Canada with well-integrated social safety net system. For this study, we didn't aim to objectively assess health status improvement in any of the included population. Such assessment should be based on sufficient observation period, whereas, ours was very short. Nonetheless, objective measurement of the vulnerable population's health status will be difficult since the nutrients are consumed at the food banks or community kitchens where foods from other donations are also served. We also think that absence of an appropriate control group to detect a before-and-after intervention impact is a crucial limitation of our study design. Furthermore, some patients did not fill in the sign-up forms and because of their health condition, SCs did not urge them to do so. Since we want to accurately track all the patients using the garden as a therapeutic benefit, this point was noted down for future improvement. Patients' exposure to nature was previously associated with reduced pain, certain agitated behaviors, drug use, falls and improved attention [8]. However, since our intervention is currently at a premature phase, detecting the intervention effect on quality of life of the patients and employees, including patients' recovery and improved nutritional status of the community were not possible, and our present study did not intend to do so. Such assessment would require a suitable design e.g. controlled before-and-after or follow-up study and reasonable follow-up time. We believe, if attempted, future studies employing an appropriate design would detect the relationships and would add important knowledge on these areas for improving quality of life of the patients/employees and nutritional status and physical measurements e.g. basal mass index, blood pressure, blood sugar, height, and weight in the community.

Authors' Contributions

SS conceptualized the idea and designed the study. SS extracted, analysed and interpreted the data, and wrote the initial draft report. JS commented on the drafts and helped in some data extractions and analysis. SS and JS contributed to all draft versions. The authors read and approved the final version of this report.

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Competing Interests

None declared. SS and JS are two of the three garden SCs.

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Disclaimer

The views, results, interpretations, and conclusions in this study are solely those of the authors and do not reflect those of the respective organisations.

Availability of Data and Material

All data are accessible with permission from HHS. All hyperlinks are publicly open.

Ethics Approval and Consent to Participate

All participants read, completed and gave consents to participate.

Consent for Publication

All participants read, completed and signed data and photo release forms.

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