

Promoting Health Behavior Change in Canada: A Quality Improvement Project Integrating Prevention and Wellness in Frontline Care

Kiran Rabheru^{1,2}, David Conn^{2,3}, Daria Parsons², Ariane S. Massie², Julie Mitchell², Michael Vallis⁴, Claire Checkland², Keri-Leigh Cassidy⁵

¹Department of Psychiatry, University of Ottawa, Ottawa, Canada

²Canadian Coalition for Seniors' Mental Health, Toronto, Canada

³Department of Psychiatry, University of Toronto, Toronto, Canada

⁴Department of Psychology, Dalhousie University, Halifax, Canada

⁵Department of Psychiatry, Dalhousie University, Halifax, Canada

Email: kiranrabheru@hotmail.com, dariaparsons@rogers.com, arianes@yorku.ca, juliespencemitchell@gmail.com, Claire.checkland@gmail.com, dconn@baycrest.org, tvallis@dal.ca, keri-leigh.cassidy@nshealth.ca

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Abstract

Background: The critical need for Health Behaviour Change (HBC) for preventative care has been highlighted by the COVID-19 pandemic. This quality improvement project assessed the effectiveness and acceptability of Fountain of Health HBC tools as a minimal intervention for primary and secondary prevention among Canadian clinicians and their patients. **Methods:** Clinicians received HBC education and tools (paper tools and app-based) to assist their patients in setting a S.M.A.R.T (Specific, Measurable, Action-oriented, Realistic, Time-limited) goal at baseline and assessed four weeks later. Primary outcome measures were: 1) patient self-report of success at goal attainment; 2) patient self-reported evaluation of change in well-being and health attitudes; and 3) clinician experience and engagement. **Results:** A total of 2184 clinicians received HBC education. Of these, 759 clinicians registered to participate in the project. 961 patients set S.M.A.R.T. HBC goals using either the paper tools (PT) or the app format. Patient data revealed nearly all patients (89% of PT users and 90% of app users) at least partially succeeded in attaining their goal at a four-week follow-up. Most patients (85% of PT and 80% of app users) also reported improvement in their well-being. A significant difference in health beliefs and attitudes was found in both PT ($p < 0.001$) and app users ($p = 0.003$). **Conclusions:** HBC is challenging. Educating and providing clinicians with HBC tools as a minimal intervention was found to be a successful health prevention strategy to improve patient

well-being and health attitudes, and achieve S.M.A.R.T. goals. Results show HBC tools, education, and support for clinicians are both acceptable and effective for HBC in frontline care. These findings are relevant and timely given greater reliance on virtual care in the wake of the COVID-19 pandemic. Further research with rigorous methodology is needed to implement programs to achieve sustainable HBC to promote health on a large scale.

Keywords

Behaviour Sciences, Mental Health, Medical Education, Primary and Secondary Prevention, Health Behavior Change, Risk Reduction, Tools for Health and Wellness, Positive Psychiatry

1. Introduction

The critical role of Health Behaviour Change (HBC) to optimize patients' social connections, cognitive, physical, and mental health has been highlighted by the COVID-19 pandemic [1]. Its impact has been disproportionately felt by older persons who have suffered substantial mortality, morbidity, and a sense of severe social isolation and loneliness [2]. There has never been a more compelling need to promote virtual care [3], e-health [4] and HBC as part of primary or secondary prevention strategies to reduce the risk of chronic medical conditions, including depression [5] [6] [7], dementia [8] [9] [10], and possibly suicide [11]. Yet, clinicians cite lack of tools and training for implementing HBC in practice [12] [13] [14]. Closing this gap would simplify HBC conversations by providing useful resources, with direct benefits to patients and clinicians [15], and improve quality of care [16]. Positive psychiatry, a new branch of healthcare, invites a focus on wellness promotion in research and practice, in addition to illness prevention [17].

The Fountain of Health (FoH) is a Canadian positive psychiatry initiative that incorporates evidence-based tools to influence HBC, well-being, and health attitudes [18] [19] by incorporating S.M.A.R.T. goal setting [20] [21]. Effective health behavior goals and interventions are minimal ones, small and doable enough so clinicians and patients alike are able to achieve them. The acronym "S.M.A.R.T." stands for the following health goal qualities:

Specific: How specifically will you achieve this goal? What concrete steps will you need to take?

Measurable: How will you measure progress? How often will you do this activity? For how long?

Action-Oriented: Is the health goal dependent on actions? What will those actions be?

Realistic: Is this goal realistic? Can this be achieved in the next few weeks? Are there obstacles to overcome, or supports that could help?

Time-Limited: What times of day or days of the week are best to work on this

goal?

The FoH's HBC minimal intervention tools consist of a paper-based Toolkit [22] (PT) and a Wellness App (app) [23] focused on known promoters of health from five lifestyle domains: physical activity [24], social activity [25], cognitive activity [26], seeking mental healthcare when needed [27], and positive thinking [28]. This project assessed the acceptability and effectiveness of the FoH HBC tools among clinicians and patients.

This project offers several novel contributions to the field of psychiatry. This is the first initiative of which we are aware to nationally scale effective HBC methods in frontline care to promote patients' health and well-being. The methods used captured not only the impact of HBC education on clinicians' practice [18], but also on patients' health behaviors and attitudes, representing a novel contribution to knowledge translation literature in psychiatry. This project also offers an innovative, positive psychiatry, public health approach to promote successful aging and well-being [29]. The availability of effective, scalable virtual HBC e-tools and the Wellness App to promote health and well-being is particularly relevant today in the context of COVID-19.

2. Methods

The Brain Health and Wellness (BHW) project was a Canadian positive psychiatry quality improvement (QI) project based on a pilot study conducted in the province of Nova Scotia in Canada that demonstrated the effectiveness of the FoH HBC tools [18] [19]. The BHW project was co-led by the Canadian Coalition for Seniors' Mental Health (CCSMH) [30] and the Fountain of Health [31].

2.1. Clinician Recruitment

Clinicians from various disciplines and practice-settings were contacted via the CCSMH's network, through healthcare organizations, and individual professional contacts. Clinicians received HBC education in English or French, through in-person, live webinars, or pre-recorded web-based sessions. Clinicians received a paper-based and an electronic version of the FoH Toolkit, including a *Goal Documentation Sheet*, *Patient Take Home Goal Sheet*, and the *Health and Resilience Questionnaire (HRQ-Pre- and Post)*.

2.2. Patient Recruitment

No stringent patient inclusion criteria were applied. Clinicians were encouraged to invite willing and able patients aged 40 years and over without a diagnosis of dementia to participate. Clinicians gathered patient data over the course of two patient visits between March and September 2019.

Visit 1: Clinicians worked collaboratively with patients to establish a baseline of each of the five health domains on the HRQ-Pre and encouraged patients to set a S.M.A.R.T. goal in one domain.

Visit 2: Approximately four weeks later, clinicians followed up to assess the

patient's success at goal attainment, well-being and health attitudes. Clinicians could conduct the follow-up in-person, by telephone, or delegate it to another clinician. Patient forms were returned by fax, email or using a postage-paid envelope. Support was provided to clinicians by coaches either in-person, via email or telephone.

2.3. Outcome Measures

The primary outcome measures were: 1) patient self-report of success at goal attainment; 2) subjective evaluation of change in well-being and health attitudes; and 3) clinician experience and engagement.

2.4. Data Analysis

Goal attainment at the four-week follow-up was measured using a validated Goal Attainment Scaling [32] [33] [34] (GAS) instrument in which participants chose among the following: no change, partially achieved, fully achieved, exceeded. Subjective change in well-being related to working toward the goal was measured using a similar scale in which participants chose among the following: no change, slightly improved, moderately improved, greatly improved. Subjective change in health attitude was assessed with a pre/post HRQ composed of five ten-point visual analogue scales assessing health beliefs and attitudes on key health domains [35] [36] [37].

2.5. Ethics Approval

The project was deemed to be REB exempt by the Ottawa Health Sciences Network, Baycrest Health Sciences, Nova Scotia Health Authority, and University of British Columbia, as a QI project. No personal identifying patient or clinician data were collected.

3. Results

3.1. Clinician Acceptability

Figure 1 outlines the number of clinicians who participated in in-person versus webinar education. Of the 2184 clinicians who participated in education, 759 registered to participate in the BHW Project.

Table 1 and **Table 2** outline the province of practice and professional role of registered clinicians. Clinicians from across Canada participated. The largest percentage of registered clinicians was found in the following professional roles: 25% were nurses/nurse practitioners; 19% were physicians and 19% were social workers.

Figure 2 highlights feedback received from a follow-up survey that was sent to registered clinicians with a response rate of 20% ($n = 155$). Eighty-five percent of clinicians who responded to the survey reported that the PTs were easy to use; 75% reported that the Wellness App was easy to use. Eighty-two percent of respondents indicated that the BHW Project was a positive experience.

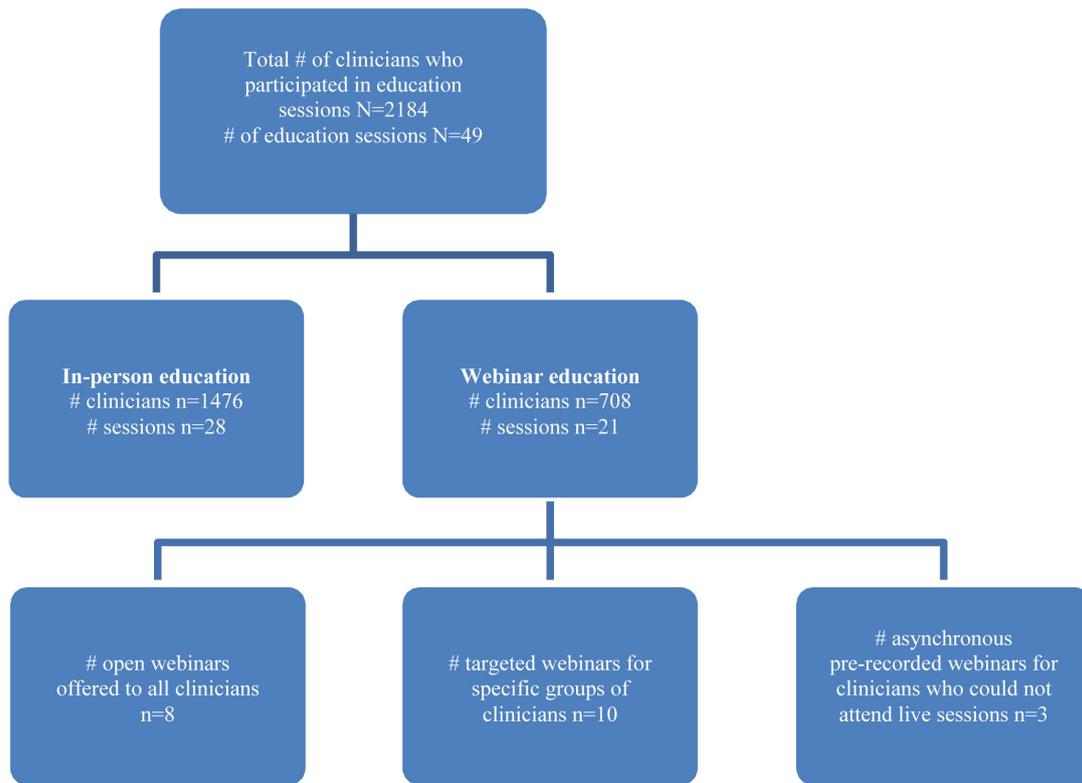


Figure 1. Clinician education summary.

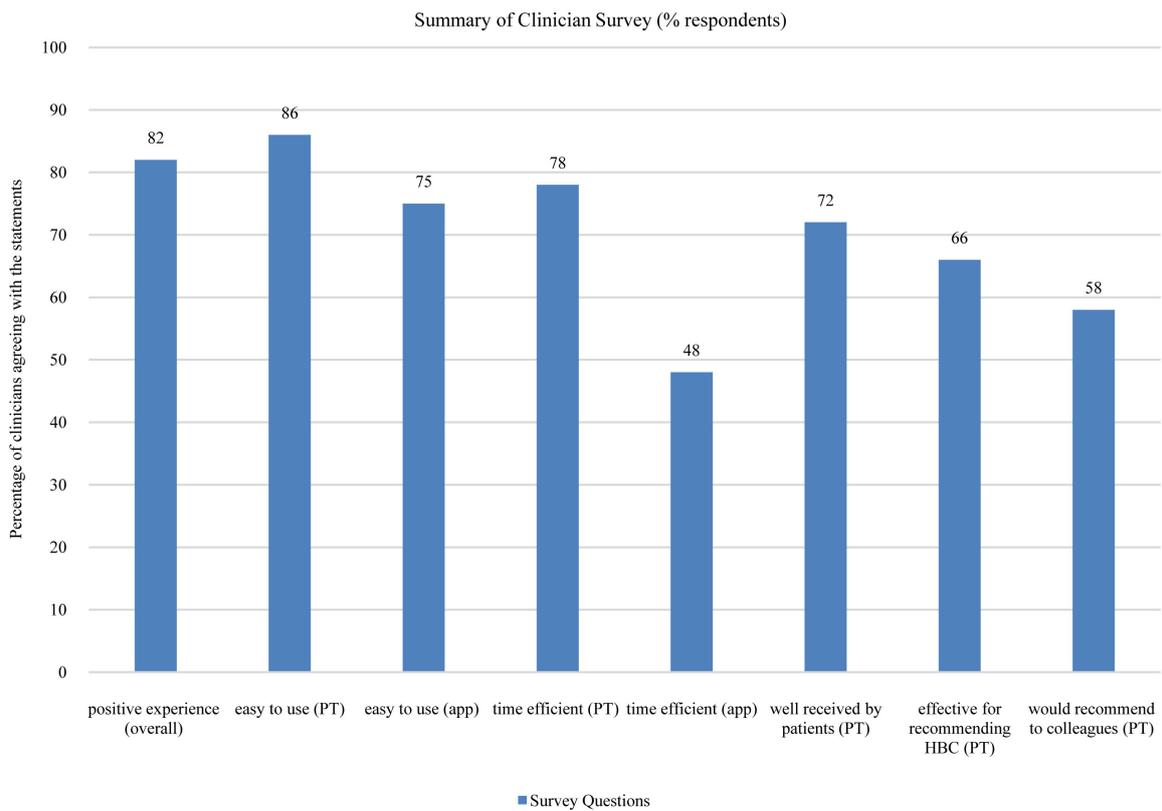


Figure 2. Clinician follow-up survey results.

Table 1. Characteristics of registered clinicians by geographical location.

Geographical location	Number of registered clinicians	
	Number of Clinicians	Percent
Newfoundland	3	0.4%
Nova Scotia	137	18.1%
Prince Edward Island	8	1.1%
New Brunswick	87	11.5%
Quebec	13	1.7%
Ontario	355	46.8%
Manitoba	18	2.4%
Saskatchewan	10	1.3%
Alberta	42	5.5%
British Columbia	65	8.6%
Yukon	5	0.7%
International	16	2.1%
Total	759	100%

Table 2. Characteristics of registered clinicians by professional role.

Clinician Discipline	Number of registered clinicians	
	Number of Clinicians	Percent
Nurse/NP	192	25.4%
Social Worker	146	19.2%
Physician	140	18.5%
Occupational Therapist	52	6.9%
Mental Health and Addictions	40	5.3%
Educator	30	4.0%
Recreational Therapist	24	3.2%
Dietician	23	3.0%
Physical Therapist	21	2.8%
Pharmacist	10	1.3%
Psychologist	9	1.6%
Psychotherapist	4	0.5%
Other	68	9.0%
Total	759	100%

3.2. Patient Acceptability

A total of 961 patients used PTs and/or app; of these, 380 patients used PTs and 581 used the app, with clinician support. Only 18% [106/581] of app users completed Visit 2 versus 92% [349/380] who used PTs. The average age of app users was 16 years younger than PT users (**Table 3**) and 68% of PT users versus 81% of app users were female (**Table 4**). Fifty-seven percent of patients selected their goal in the physical activity domain. The goal domains that patients selected are outlined in **Table 5**.

Table 3. Age of patients by intervention format (paper tools and app users).

Intervention format	Age of patients		
	<i>N</i>	<i>Mean Age (years)</i>	<i>Age Range (years)</i>
Paper Tool (PT) Users	362	67.8 years	38 - 59
Wellness App Users	550	52.4 years	18 - 95

Table 4. Sex of patients by intervention format (paper tools and app users).

Patient Sex	Intervention format			
	<i>Paper Tool Users</i>		<i>App Users</i>	
	<i>n</i>	<i>Valid Percent</i>	<i>n</i>	<i>Valid Percent</i>
Male	118	32.1%	103	18.8%
Female	250	67.9%	443	80.7%
Other	0	-	3	0.5%
Total	368		549	

Table 5. Patient goal domains by intervention format (paper tools and app users).

Health Domains Category of S.M.A.R.T. Goal Setting	Intervention format			
	<i>Paper Tool Users</i>		<i>App Users</i>	
	<i>n</i>	<i>Valid Percent</i>	<i>n</i>	<i>Valid percent</i>
Physical activity	212	56.4%	258	62.1%
Social activity	68	18.1%	52	12.5%
Mental health	42	11.1%	36	8.7%
Brain challenge	38	10.1%	34	8.2%
Positive thinking	16	4.3%	36	8.7%
Total	376		415	

3.3. Effectiveness for Patient Goal Attainment, Well-being, and Health Attitudes

Patient Goal Attainment and Well-Being Scores indicated that 89% (309/349) of PT users and 90% (95/106) of app users at least partially attained their goal (Table 6). At least a slight improvement in well-being was reported by 85% (286/338) of PT users and 80% (74/92) of app users. Statistically significant differences in health attitudes were observed in Pre-/Post-HRQs (PT users $p < 0.001$ and app users $p = 0.003$) using t-tests.

4. Discussion

This project demonstrated both the acceptability and effectiveness of a minimal intervention—clinicians using HBC tools with patients. Acceptability among clinicians was demonstrated by voluntary attendance at HBC education and use of the tools by a large, diverse group of clinicians from a variety of busy, frontline clinical settings. The effectiveness of the HBC tools was demonstrated

Table 6. Patient goal attainment and well-being scores.

Health Domains Category of S.M.A.R.T. Goal Setting		Intervention format			
		<i>Paper Tool Users</i>		<i>App Users</i>	
<i>Measure</i>	<i>Response Category</i>	<i>n</i>	<i>Valid Percent</i>	<i>n</i>	<i>Valid percent</i>
Goal Attainment	Exceeded	56	16.0%	8	7.5%
	Fully	111	31.8%	28	26.4%
	Partially	142	40.7%	59	55.7%
	No Change	40	11.5%	11	10.4%
	Total	349		106	
Well-being	Greatly	46	13.6%	5	5.4%
	Moderately	121	35.8%	30	32.6%
	Slightly	119	35.2%	39	42.4%
	No Change	52	15.4%	18	19.6%
	Total	338		92	

by the high rate of patients' success at S.M.A.R.T. goal attainment and enhanced self-reported well-being and health attitudes by working collaboratively with their clinicians. The vast majority of patients at least partially attained their HBC goal (89% PT users; 90% app users) and reported improved well-being. Improvement in well-being was reported by a majority of PT users (85%) and app users (80%). Note that additional data analysis to compare results of PT versus app users in this project are published elsewhere and highlight the importance of the role of clinician-patient relationship for outcome measures as well as the importance of S.M.A.R.T. goal setting methodology [38].

The results of the present study are important, suggesting FoH HBC tools facilitated effective, shared decision-making between clinicians and patients, making HBC advice personally relevant, more motivating, and bridging the intention-behaviour gap for patients [15] [38]. Clinicians in this project were successful in incorporating FoH HBC tools into their practice, and in promoting primary and secondary prevention during routine care to enhance patients' physical, mental and social well-being.

The BWH project and its results offer several significant contributions to the field of psychiatry. This is the first psychiatric initiative of which we are aware to nationally scale effective minimal intervention HBC methods in frontline care. The scope and nature of the project also responds to a recent call to action to take a positive psychiatry approach to go beyond illness prevention to promote successful aging and well-being on a public health scale [28]. Methods used captured positive changes not only in clinicians' practice, but also in patients' health behaviours and attitudes; the inclusion of both clinician and patient behaviour measures is a significant contribution to health knowledge translation literature. The accessible, online resources including The Wellness App to support clinicians to promote HBC and well-being in patients are relevant innovations in the

context of COVID-19 and need for effective population health promotion tools.

Future research should compare the outcomes of HBC interventions with the use of technology-augmented clinician support to those using technology independently, without clinician support. Further longer-term research with rigorous methodology is needed to not only implement HBC programs, but also to sustain HBC on a large scale [39].

5. Limitations

Despite substantial investment of resources and effort, there was significant attrition in the final uptake of the HBC tools in practice as measured by PT forms returned, reinforcing that behavior change is inherently challenging for patients and clinicians [40]. This is consistent with HBC literature where application of knowledge-into-practice lags significantly behind rapidly evolving science [41].

Berkman outlines the neuroscience of goals and behavior change, the way people set, pursue and eventually succeed or fail in accomplishing their goals [42]. Extrapolating and generalizing from these results must be done with some prudence as it was a QI project, where clinicians and patients volunteered to participate in a non-randomized, non-blinded fashion with no control group. Most patients were aged 40 years and over, given the focus was on HBC targeted at reducing the risk of age-related ailments. A self-selection bias for clinicians and patients is inherent in terms of being attracted to a project on HBC. The high levels of reported success in goal attainment may have been influenced by the desire of both patients and clinicians to report positive results and possibly greater likelihood of follow-up by patients who were successful at attaining their goal. Completion rates of Visit 2 by app users were five times lower than PT users suggesting that reliance on technology alone may have its limitations especially for older populations. The quality and degree of clinician-patient interaction was likely a key factor influencing the outcome [38] [41].

6. Conclusions

This novel Canadian QI project demonstrated that, with education and support, evidence-based HBC tools (PT and a web-based app) are acceptable to and can be implemented successfully by a variety of clinicians across many practice settings. When FoH HBC tools were utilized by clinicians in frontline care, patients reported benefits in health outcomes as measured by successful S.M.A.R.T. goal setting and improved well-being and health attitudes.

The positive impact of a minimal, scalable HBC intervention on clinicians' practice and a majority of their patients' health behaviors and attitudes is a noteworthy finding. This is the first positive psychiatry initiative of which we are aware to nationally scale an effective HBC method in frontline care to promote patient well-being on a public health scale [28]. The acceptability, effectiveness, and accessibility of these virtual resources to clinicians and the public to promote well-being is relevant today in the context of COVID-19. These HBC tools

may have utility for primary and secondary prevention, employing in-person or virtual clinical encounters, offering an important and timely intervention for many patients to better manage stress and promote well-being.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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