



IMPLEMENTING A WINTER WELLNESS UNIVERSITY PROGRAM: A COMMUNITY HEALTH NURSING PROJECT

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Abstract

To improve the health and wellness of students, faculty and staff in a university setting, the authors developed and implemented a four-week health and wellness challenge project based on the application of the Population Health Promotion Model and the Community as Partner model to each of the steps of the community health nursing process. The purpose of this paper is to describe this community health improvement project, *The Winter Wellness Challenge (WWC)*, which involved one university faculty in Western Canada. The entire project, which occurred over a 3-month period, included the following elements: a community health assessment of the community where the university was situated, which was initiated via a windshield survey, self-evaluated health status of program participants done via Survey Monkey prior to the start of the WWC program, the four-week intervention, and a post-intervention survey. In addition, key informant interviews were conducted with 21 participants after completion of the WWC to solicit participants' feedback about the utility of the project and to seek recommendations to improve future WWCs. The salient findings showed improvement in social support, duration of sleep, and stress level. From the participants' perspective, the greatest improvement was in physical and nutritional wellness. The participants advocated for continuing implementation of the challenge in the future. Recommendations for improving the WWC were also provided.

Keywords: Community health promotion; wellness challenge; nursing education; nursing clinical practicum; community collaboration.

Improving the health of community requires partnerships, collaboration, and an in-depth understanding of the diverse health status and health care needs of the community members. Improving the overall health and wellness of employee is important goal for many organizations because healthy employees experience more job satisfaction and greater productivity. In Canada, many universities offers programs and services that promote healthy living, a healthy work environment, and respect the employee's life outside of work as well as their working life. In this paper, we report a health promotion project conducted at a community level. The format of the health promotion intervention was a wellness challenge in collaboration with the faculty of health's wellness committee at the university in one of the Western provinces in Canada. The population chosen for this project was the students, faculty, and staff of the Faculty. Winter can be difficult, both physically and mentally as gloomy weather and cold temperatures make adhering to healthy routine that much challenging. To help combat those winter blues, the Winter Wellness Challenge (WWC) was designed as a voluntary point submission system by the participants during the duration of four weeks. Our group created six specific activity profiles, one for each week of the challenge, which were Nutritional Wellness Week, Physical Activity and Exercise Week, Financial Wellness Week and Mental and Social Wellness Week. The themes were chosen to represent a holistic health approach to health promotion for the selected population. Participants of the Winter Wellness Challenge were encouraged to take part in the four-week challenge by various prize draws throughout the period. Key informant interviews and a survey post challenge were conducted to assess the impact of the challenge on the participants' perception of their health and wellbeing, and recommendations for improvement of future health promotion intervention.

We based our community health promotion project on the Canadian community-as-partner (CCAP) model and the Population Health Promotion Model (PHPM). The CCAP model is based on a social ecological foundation with community systems and related environments being central concepts (Vollman, Anderson, & McFarlane, 2017). Three central factors underpin this model: a focus on the community system, the people in the community as engaged partners in action, and the use of a problem-solving process (Vollman et al., 2017). In contrast, the Population Health Promotion Model (PHPM) focuses on helping people increase control over their health (Lind, Lind-Kosten, & Loewen, 2016). For the purpose of our project we used the CCAP model, commonly known as the CasP model for the planning of intervention. Our project aim is to promote healthy lifestyle, build capacity and empower the members of the community to take control of their health and well-being in a holistic way.

Community Health Assessment: A Windshield Survey

A community health assessment is an ongoing systemic appraisal of the community (Yiu, 2016) that allows us to identify strengths and needs to gain a thorough understanding of the community dynamics (Vollman et al., 2017). There are four types of community assessments that may be used alone or in combination: environmental scan, needs assessment, problem investigation, and/or resource evaluation (Yiu, 2016). An environmental scan is the initial assessment of the community done through a windshield survey to gain an understanding of the community in its natural state (Yiu, 2016). Our community assessment was conducted through a

windshield survey where we assessed the surrounding neighborhoods, exterior, and interior, of our target population. A windshield survey was conducted inside the faculty, and the area immediately around it, as well as surrounding communities. By scanning the environment, we familiarized ourselves with the community, the workplace, and resources necessary for improving people's health.

To effectively complete the windshield survey, our team divided into three sub teams; each one was responsible for observing areas inside the facility itself, the immediate surrounding areas, and the nearby neighbourhoods. Each sub team gathered observational data by using all senses and provided valuable information that we were able to use to identify the strengths and weaknesses of our community.

Established in 1967, the faculty is one of the younger schools in Canada (University of Calgary, 2018a). Originally conceived as an institution to train healthcare providers, the school has "broadened its spectrum of activities; from primary care to specialty care; to careers in education, management, and research" (University of Calgary, 2018a). Today, the faculty is a "national research leader in brain and mental health, chronic diseases, and cardiovascular sciences" (University of Calgary, 2018a). The academic community is ethnically and culturally diverse and is comprised of roughly 2500 undergraduate and graduate students and more than 2000 staff and faculty members (University of Calgary, 2018b). The faculty is situated in one of Canada's most recognized medical facilities and provides advanced healthcare services to over two million people (University of Calgary, 2018b).

The faculty offers a comfortable and safe environment for its community to work and study. The physical complex is served by a wide range of transit services, with numerous bus routes passing by the location, bike racks at main entrances, and a train station within walking distance. Clear sidewalks, wide hallways, elevators, well lit rooms, and wheelchair ramps at every entrance make the building widely accessible. There are numerous public spaces for social interaction that are lit with natural light, are well ventilated, and provide plentiful seating. The facility boasts a thriving economy; staff work in well paid, professional occupations and have access to food and retail services on site. Faculty, students, and staff of the school of medicine show no evidence of widespread acute or chronic conditions and have access to a variety of health and wellness services. All members of the community have access to a gym, physical and mental health programs, wellness initiatives offered by the wellness committee, and a student advising and well-being office. In addition, non-denominational spiritual centres and rooms for prayer help meet the spiritual needs of the community. As expected in an educational institution, the level of education in the population is quite high and there are lots of opportunities for continuing education.

The neighbourhoods immediately surrounding the school also possess strengths. Within walking distance of the school, there are a wide variety of different types of housing suitable for families of any size. The neighbourhoods are well maintained, with neat lawns, cleared sidewalks, and roads in good repair. The local economy looks strong; there are numerous malls, grocery stores, boutiques close by and signs of considerable home and road construction.

Options for social interaction in the community are plentiful as the area boasts many coffee shops and restaurants, some with outdoor patios. There is no shortage of options for recreation; within a short distance of the faculty there is a sport stadium, recreation centre, aquatic centre, and a myriad of parks and playing fields. Educational needs are met by number of public schools for students of all ages and several options for post-secondary education.

Though this community has many positive attributes, we did note a number of weaknesses that could present barriers to wellness. Much of the new construction in the area is of high priced condominiums and apartments that will be inaccessible to those with a lower socioeconomic status. Likewise, many of the restaurants and cafes in the community are quite expensive, which students and those with little money would not be able to afford. While the area is easily traversed by car, travelling by foot or bicycle is made difficult by the major roadways that run throughout the area. Transit is a viable option for those without a car, but delays and inconsistent runtimes can prove frustrating. The high volume of traffic passing through the community likely has a negative impact on air quality and poses a potential threat to those with respiratory conditions (Appendix A: Windshield Survey Results). Using the Canadian community-as-partner (CCAP) model, community windshield survey data provided us with useful information to develop community nursing diagnosis (Table 1: Nursing Diagnosis) and an intervention plan and strategies (Table 2: Logic Model) to begin a community health improvement project.

Table 1: Nursing Diagnosis

Description	Focus	Etiology	Manifestation (evidence)
Positive attitudes toward the implementation of the Health and Wellness Challenge promoting wellbeing in the workplace	Faculty, staff, and students	<p>Related to:</p> <ul style="list-style-type: none"> -Willingness to execute the challenge -Willingness to collaborate with Community Health Nursing Students -Strong team dynamics among work colleagues and peers -Existing organization of the Wellness Committee 	<p>As manifested by...</p> <ul style="list-style-type: none"> -<u>Pre- and post-challenge Survey</u> -Participants' positive responses stating they would participate in the challenge again -E-mails showing interest in the challenge and reported enjoyment of the challenge once completed -<u>Key Informant Interviews</u> -Stating positive feedback after the challenge -Positive feedback towards participating as a team -Increased awareness of Holistic areas of Health and Wellness -Promotion of activities and participation due to inactivity during winter

Limited Workplace initiatives on Holistic Health and Wellness Challenge	For Faculty, staff, and students	<p>Related to...</p> <ul style="list-style-type: none"> -First time implementing the holistic challenge -Newness of Holistic Health and Wellness -Only summer implementation of pedometer challenge for the past several years. 	<p>As manifested by...</p> <ul style="list-style-type: none"> -<u>Pre and Post challenge Survey Monkey</u> -Reported areas of holistic health needing improvement -Lack of previous challenges including various aspects of Holistic Health and Wellness -<u>Key Informant Interviews</u> -Concluded limited awareness towards specific areas of Holistic Health and Wellness challenge.
Barriers to implementing a Faculty wide challenge	For Faculty, staff, and students	<p>Related to...</p> <ul style="list-style-type: none"> -Insufficient amount of funding -Restricted access to information and resources -Institutional regulations, procedures, and limitations -Unclear roles regarding planning and organization with sponsored committee 	<p>As manifested by...</p> <ul style="list-style-type: none"> -<u>Pre and Post challenge Survey Monkey</u> -Stating low participation rate of faculty members and students -Insufficient funding restricting prizes, advertising, and kick-off and wrap up event
Decline in participation and increase in drop off during the challenge	For Faculty, staff, and students	<p>Related to...</p> <ul style="list-style-type: none"> -Limiting winter weather conditions -Participant low motivation to continue and complete the challenge -Conflicting schedules and heavy workload -Not all activities appropriate for participants 	<p>As manifested by...</p> <ul style="list-style-type: none"> -<u>Key informant interviews</u> -Expressed difficulty due to varying winter weather conditions -Potential missed deadlines for submission of points

Table 2: Logic Model

Goal →	Target Population →	Component →	Short-Term Objectives →	Short-Term Indicators →	Long-Term Objectives →	Long-Term Indicators →	Resources
Improved overall wellness of students, faculty and staff	Faculty of Health students, faculty, and staff.	Engagement	Implement successful wellness challenge	50+ people participate in the challenge 90%+ of participants are tracking and self reporting < 25% drop off rate	Increased interest and participation in health initiatives	Increased participation in Wellness initiatives Decreased drop-off Increased utilization of available tools	Pamphlets, website, Wellness Committee, Faculty Marketing Department, University Administration, previous nursing group project report.
			Improved health outcomes	Post survey shows participants improved in at least one area of wellness	Increased student, faculty and staff health literacy. Decreased utilization of benefits due to illness Increased support for holistic wellness initiatives	Increased attendance at lunch and learn sessions. Increased wellness website viewership Reduced illness-related insurance claims/use of sick days	
	Wellness Committee and Faculty Administration	Advocacy	Funding for wellness challenge provided by the Wellness committee.	Budget provided for kick-off event, wrap-up event, and prizes. Webpage created on website for Wellness Challenge	Increased institutional support for	Wellness challenge adopted as annual Winter event Wellness seminars held throughout challenge	
			Marketing	Building awareness of the Winter Wellness Challenge in the target population.	Advertisement distributed around faculty Kick-off event attended by 40+ people Communicated through multiple mediums	Increased resources available and improved communication	

Intervention

To address issues identified from the nursing diagnosis, we implemented a four-week Winter Wellness Challenge. Prior to the commencement of the Winter Wellness Challenge, an initial assessment survey, created on SurveyMonkey, was designed and sent out for completion by students, faculty and staff who had registered for the challenge. This allowed us to get a better understanding of the current perceived health status within the community. According to Van Selm and Jankowski (2006), surveys provide data that can allow for visualization of trends and patterns. The survey consisted of 15 multiple choice questions, including Likert scale questions, each having a range of two to six options to choose from (Table 3: Pre-Challenge Survey Questionnaire). The survey had an estimated completion time of two to five minutes. A post-assessment survey after the Winter Wellness Challenge ended was also conducted to allow for tracking of participants' perceived results of the four-week challenge. It showed where participants believed they experienced the greatest improvement in their health and highlighted which areas of the challenge were most successful (Table 4: Post-Challenge Survey Questionnaire).

The goal of the challenge was to improve the overall health and wellness of the participants by having students, faculty, and staff participate in various suggested activities and collect points for engaging in these activities in the six components of holistic health. The six areas of health focus were social wellness, mental wellness, physical activity, exercise, financial wellness and nutritional wellness. The activities chart (Appendix B: Activities Chart) listed potential points participants could earn for participating and completing activities in each of the six different areas of holistic health. The difficulty of the task correlated with increased points received for different activities in each area of health. The intent was to increase awareness of and participation in different activities that can improve health and build healthy habits that would eventually become part of the participant's daily routine. Participants entered the challenge as individuals or in teams of four members. Each week points were accumulated based on the activities completed. The participants were given a tracking sheet (Appendix C: Tracking Sheet) on Excel to keep track of their weekly points. When engaging in an activity, the participant simply had to put a check mark beside it, record the number of times they did the activity and the total points automatically would get updated. At the end of each week, points were reported to our participant group via an online points tracker system. Those who participated in the challenge each week were entered into a draw for prizes. The prizes were meant as extrinsic motivation for participants to complete the challenge whereas intrinsic motivation was fostered through effective advertisement of the challenge and a weekly email sent to all participants to encourage continued participation.

Prior to implementation of the challenge, a general email was sent out to all faculty, staff and students in the faculty announcing the Winter Wellness Challenge and a Kick-Off event was implemented at the start of the challenge. We used posters and teleprompters to assist with marketing. Upon commencement of the challenge, we sent out weekly emails to announce weekly themes, remind participants to submit points, provide fun facts, and encourage all participants. The agency wellness committee gave us space on their main website to promote the

challenge and it was updated with new information on a regular basis. Upon completion of the challenge we hosted a Wrap-Up event to share the results of the challenge with participants, celebrate their success, and give out prizes. To acknowledge all the hard work and effort put in by the participants, a “Certificate of Completion” (Appendix D: Certificate of Completion) was given to every participant during the final Wrap -Up event.

Pre-Challenge Survey Results

Of 92 individuals who signed up for the challenge, we received a survey response from 66 individuals (a response rate of 69.5%), including 2 students (3.2%), 3 faculty members (4.8%), and 58 staff (92.1%). The majority of participants were between the ages of 30-39 (40.6%) and described their overall health and wellness as good (62.5%). The survey results showed that more than half of the participants (54.7%) considered their greatest strength was social wellness, indicative of a close-knit community. Almost half (46.9%) of the individuals reported engaging in low levels of exercise per week consisting of less than 150 minutes of moderate intensity or less than 75 minutes of vigorous intensity. The majority of the participants (73.4%) were getting between six to eight hours of sleep each night. When it comes to eating a balanced healthy diet, participants answered always (6.3%), most of the time (53.1%), sometimes (39.1%), and rarely (1.6%). Within every community, stress is prevalent and the results from the survey indicated our participants experienced on average moderate levels of stress (57.8%). The survey participants considered areas that need improvement as follows: physical (54.7%), exercise (53.1%), nutritional wellness (51.6%), mental health (46.9%), financial wellness (42.2%), and social wellness (21.9%). As indicated by the strength in social wellness, most participants described good (38.7%) to excellent support systems (33.9%). When asked about financial wellness, 51.6% of participants described it as good. A result that was surprising was that 65.6% of individuals reported feelings of loneliness sometimes and about 7.8% experienced this feeling often or always. Finally, the participants were asked whether they take advantage of the programs that the faculty wellness committee offers in order to gain a sense of their current involvement, and we found that over 70% of participants were actively engaged. This result was similar to the response that indicate individual familiarity with the faculty wellness committee, as over 70% of individuals were aware of what activities this committee offers to members of faculty.

Table 3: Pre-Challenge Survey Questionnaire

Are you
Student
Graduate student
Faculty
Staff
What is your age?
20-29
30-39
40-49
50-59
60+

How would you describe your overall health and wellness?
Poor
Fair
Good
Excellent

Select the area(s) which you feel are your greatest strengths?
Physical
Mental
Exercise
Nutrition
Social
Financial

How many minutes of exercise do you engage in per week?
High: 300 minutes of moderate intensity or 150 minutes of vigorous intensity
Moderate: 150 minutes of moderate intensity or 75 minutes of vigorous intensity
Low: less than 150 minutes of moderate intensity or 75 minutes of vigorous intensity

How many of hours of sleep do you get per night?
More than 10 hours
8-10 hours
6-7 hours
Less than 6 hours

How often do you feel you eat a balanced healthy diet?
Always
Most of the time
Sometimes
Rarely

How would you describe your stress level?
High level of stress
Moderate level of stress
Low level of stress

Select the area(s) of which you feel need most improvement?
Social wellness (relationships and interactions with others)
Financial wellness
Mental health
Exercise (planned, targeted, routine physical activity)
Nutritional wellness
Physical activity (body movement that increases overall energy)

How would you describe your support system?
Excellent
Good
Adequate
Poor

How would you describe your financial wellbeing?
Excellent
Good
Adequate
Poor

How often do you experience feelings of loneliness?
Always
Often
Sometimes

Never
How often do you take advantage of the programs that [the Wellness Committee] offers?
Always
Often
Sometimes
Never
How familiar are you with [the Wellness Committee] events?
Not familiar
Somewhat familiar
Very familiar
Would you be willing to talk with us after the Winter Wellness Challenge?
Yes
No

Post-Challenge Survey Results

With 92 registered participants for the Winter Wellness Challenge, 61 individuals completed the post-challenge SurveyMonkey (a response rate of 66%), of which 96.7% were staff, and the remaining 4% were faculty and students. The majority of participants were between the ages of 30-39 (50%), and 2 of them were over the age of 60 with 64.4% of the participants describing their overall health and wellness as good, 20.3% describing it as excellent, and less than 1% reporting it as poor. After completing the WWC, the areas that participants identified as their greatest strengths were physical (55.7%) and nutritional wellness (57.4%). There was an overwhelming majority of 62.3% that engaged in moderate levels of exercise after the challenge, with 9.8% and 27.9% reporting a high level and a low level of intensity, respectively. Similarly, about 80% of the participants reported they were getting between 7 to 9 hours of sleep. It was found that only 5% of participants described their stress level as high; the majority reported moderate (55.7%) or low levels of stress (39.3%). After completing the WWC, only 35.6% of individuals reported feelings of loneliness sometimes (pre-challenge report was 65.6%). The greatest improvement was made in exercise (48.3%) and nutritional wellness (51.7%). More than half of the participants (53.3%) reported that they *often* had a balanced healthy diet, while 26.7% reported they *always* had a balanced healthy diet. In terms of support system, 57.4% of individuals experienced an improvement. The results showed a similar trend in improvements of financial well-being, with 52.5% saying yes to improvements of financial well-being and 47.5% saying no improvement. In terms of the thresholds that were set according to the challenge, 83.61% of individuals felt that they were realistic to achieve. The survey results also showed that all participants were either somewhat likely (60.7%) or very likely (39.3%) to participate in wellness programs again. Participants also provided feedback which included compliments, areas for improvement, and comments pertaining to the challenge (Appendix E: Post-Challenge Survey Participants' Feedback).

Table 4: Post-Challenge Survey Questionnaire

Are you:
Student
Graduate student
Faculty
Staff
What is your age?
20-29
30-39
40-49
50-59
60+
How would you describe your overall health and wellness?
Poor
Fair
Good
Excellent
After completing the Winter Wellness Challenge, select the area(s) of which you feel are your greatest strength(s)
Physical
Nutrition
Mental
Social
Exercise
Financial
After completing the Winter Wellness Challenge, how many minutes of exercise have you engaged in per week?
High: 300 minutes of moderate intensity or 150 minutes of vigorous intensity
Moderate: 150 minutes of moderate intensity or 75 minutes of vigorous intensity
Low: less than 150 minutes of moderate intensity or 75 minutes of vigorous intensity
After completing the Winter Wellness Challenge, how many of hours of sleep have you been getting each night?
More than 10 hours
10 hours
7-9 hours
6 hours
Less than 6 hours
After completing the Winter Wellness Challenge, how often did you eat a balanced healthy diet?
Always
Sometimes
Often
Rarely
After completing the Winter Wellness Challenge, how would you describe your stress level?
High level of stress
Moderate level of stress
Low level of stress

After completing the Winter Wellness Challenge, select the area(s) where you felt most improvement

- Social wellness (relationships and interactions with others)
- Financial wellness
- Mental health
- Exercise (planned, targeted, routine physical activity)
- Nutritional wellness
- Physical activity (body movement that increases overall energy)

After completing the Winter Wellness Challenge, did you experience an improvement in your support system?

- Yes
- No

After completing the Winter Wellness Challenge, did you experience an improvement in your financial well-being?

- Yes
- No

After completing the Winter Wellness Challenge, how often did you experience feelings of loneliness?

- Never
- Sometimes
- Often
- Always

Were the threshold limits (350 for individuals/1400 for teams) realistic to achieve?

- Yes
- No
- Not sure
- Other (please specify)

After completing the Winter Wellness Challenge, how likely are you to participate in the wellness program?

- Very likely
- Somewhat likely
- Somewhat unlikely
- Very unlikely

Key Informant Interviews

Key informant interviews are a qualitative method of data collection in a community health assessment. They are useful to gain insider insight and are a reflection of views and opinions of the community at large (Vollman, 2017). Our key informant interviews took place following the conclusion of the Winter Wellness Challenge and were used as an assessment tool for improvement of future challenges. Key Informants who had participated in the four-weeks challenge were recruited via email and personal interactions. Using a semi-structured interview questionnaire consisting of seven open ended questions, a total of 21 individual interviews were completed with participants who completed the challenge, as well as the community liaisons from the wellness committee. The goal of the key informant interviews was to solicit feedback regarding the challenge and to seek recommendations to improve future challenges. The interview responses were analyzed to identify the main themes and patterns. This approach was useful to obtain information that other data collection methods cannot capture (Vollman, 2017).

We used the information collected from 21 key informant interviews to identify both the strengths and weakness of the challenge. Overall, participants reported a positive experience while completing the challenge. Most participants stated the challenge motivated them to try new activities while some mentioned that although they were already doing some of the activities, it was encouraging to get points for their already established healthy habits. Being able to participate as a team was a great motivator for many participants to enter the challenge and they reported that the encouragement from their team members helped to keep them motivated throughout the four weeks. Others were intrinsically motivated to improve the various areas of their health. Participants mentioned that weekly emails (Monday and Friday) were a motivational factor for the activities during the work week and provided tips and great suggestions for ways to collect points during the weekend. The most reported highlight for participants was the social aspect of the challenge. For example, a participant commented “I’m very grateful for all that you do! It makes coming to work fun and worthwhile. You are all making a huge difference in our lives!”. Reaching the weekly point goals and being eligible for prizes were also reported as highlights by participants. Participants were pleased with how fairly the challenge’s reward system was implemented in terms of the prize draw, indicating that it helped eliminate inaccurate reports of achieved weekly points.

The most frequently reported limitation of the challenge involved the point system. Participants reported some difficulties in correctly tracking the points and reporting them before the weekly deadline. Participants reported some misunderstanding on ways to compound points. It was also noted that some of the bonus activities were difficult to achieve given the winter weather, thus a broader variety of activities would have been better. Participants felt the activities for financial wellness were the most difficult to achieve given the short four-week period. When asked about how the challenge could be improved for future challenges, the most common suggestion was adding more activities and including more of the activities offered by the agency wellness committee. An easier way of tracking and reporting points was another common suggestion. Some participants felt the challenge could be made more competitive by increasing the weekly points threshold and adding more prizes.

Limitations

While we did our best to address various aspects of the Winter Wellness Challenge project, it possesses certain limitations. The biggest limitation is the time constraint we faced, as we only ran the challenge for four weeks. Four weeks is not adequate to develop sustainable healthy habits in participants. Furthermore, given both privacy concerns and time constraints, we were not able to evaluate whether participants developed any long-term maintenance of the healthy habits we were advocating for once the project is completed. Limited financial resources for the team to achieve the goals of the project was another limitation, as we were not directly provided with a budget to complete this work. The faculty wellness committee provided us with necessary in-kind amenities to attract participants but we did not have any control over those resources directly.

Recommendations for Future Wellness Challenge

Our goal for this project was to improve the overall health and wellness of the faculty, staff and students by engaging them in a wellness challenge. While our analysis of results from the pre and post survey and key informant interviews indicate that we had achieved some success, to improve success of future challenges, we offer the following recommendations:

1. Increase the extrinsic motivation for participants by announcing the prizes at the Kick Off Event.
2. Make the Frequently Asked Questions (FAQ) more prominent and comprehensive by adding more questions and answers, by drawing attention to this section of the website during the Kick Off event and by making this section more visible on the Winter Wellness Challenge website. This would reduce the number of email questions from participants and would make information easily accessible and consistent for all participants.
3. Include more activities in the Activity Chart to increase choice and variety.
4. Streamline the process for tracking and submitting points to make participation easier and more accessible for participants. Ideally, this would be achieved by creating an app specifically for the challenge.
5. Create a more comprehensive point tracking system. It would be beneficial to track which activities participants did, to collect points. This way we would know which areas of health participants were most and least engaged in. This would also promote maximum accountability and accurate reporting.
6. Adjust the way participants are awarded points and gain entry to the grand prize draw. We recommend that only participants who completed the entire four weeks challenge be entered into the grand prize draw. Participants who submit points on a weekly basis should be eligible for weekly prizes for those weeks.

Discussion

Our research on the outcomes of the Winter Wellness Challenge intervention found an improvement in many holistic areas of health of the participants. We are able to compare both the pre and post survey results because 66 participants (a response rate 69.5%) completed the pre-survey and 61 participants (a response rate 66%) completed the post-survey. Participants were able to identify social support as a strength, and positively confirmed the presence of social support groups after the challenge. This was evident through the drop off rate, where we found that individuals were less likely to submit their points as opposed to participants that were part of a team. A study by Chung and Kim in 2017 suggests that a strong social support increases job satisfaction, fewer turnover, and low levels of stress among employees. We were very encouraged with the post-challenge survey results which showed a significant reduction of individuals (35.6 %) reporting feelings of loneliness sometimes (pre- challenge report was 65.6%). There was an indication of improvement to the hours of sleep by participants. Initially the majority of participants reported getting an average of 6 to 8 hours of sleep per night, however, post survey results showed an increase in the hours of sleep, averaging 7 to 9 hours per night. Although the difference is small, gaining one hour of sleep each night can make a

difference in improving participants' well-being, and this might affect workplace productivity. This positive improvement in the number of hours of sleep aligned with recommendations from the National Sleep Foundation, which states adults should be getting between 7 to 9 hours of sleep each night (Lichtenstein, 2015). There were also positive changes in physical and nutritional wellness. Before the intervention, many participants felt that these components needed improvement the most. The variety of activities that were suggested in the activity chart (Appendix B) gave participants the opportunity to engage in a wide range of healthy options for both nutrition and engaging in exercise, and to be easily incorporated into their daily routines. This might explain why there was significant improvement in these areas. Thus future challenges could focus on these aspects. This is also consistent with the findings that many participants were engaging in moderate to high levels of exercise per week. Finally, another important finding showed that the moderate to high levels of stress reported in pre-challenge survey was shifted to low and moderate levels of stress at post-challenge survey. The General Adaptation Syndrome (GAS), suggests our body responds differently to external stressors and the process goes through the stages of alarm, resistance, and exhaustion (Baffy, 2017). Based on the feedback we received from the participants in the key informant interviews where they stated physical exercise helped them become more aware of their stressors, the Winter Wellness Challenge might have helped participants reduce levels of stress and better cope with external stressors.

Conclusion

This project was designed as an initiative in the form of a wellness challenge for our identified population. The aim of this project was to introduce and implement a holistic approach to improve the overall health and wellbeing of faculty, staff, and students. By collaborating with the faculty wellness committee, our group was able to successfully implement a Winter Wellness Challenge with positive outcomes. It was encouraging that the participation rate was higher than initially anticipated, 92 participants which comprised of 30 individuals, 15 teams of four, and one team of two signing up for the challenge. Although the drop off rate was significant during the first week for individuals, participation gradually increased throughout the four weeks. For teams, the drop off rate was very low with only one team not completing the challenge. The low attrition rate demonstrates that extrinsic motivational tools such as prizes to recognize participant's achievement can be used to increase motivation. Intrinsic motivation can also be fostered through effective advertisement of the challenge, weekly email blasts encouraging continued participation, and increased awareness of the health benefits.

The results of the challenge were reflected in the participant post-challenge survey. When comparing the pre-challenge survey results with the post-challenge, there was an overall enhancement in multiple general areas of health of the participants. This challenge has a potential for future implementation in various work and leisure settings, including places outside of the healthcare-related and academic facilities. The format of the challenge allows it to be applicable for various settings and circumstances, and varied participant groups. From a technological point of view, there is a potential to create a mobile online application that would accompany the challenge and assist both the organizers and the participants.

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Appendix A: Windshield Survey Results

	Inside Building	Walking Group	Driving Group
I.1. History	New modern building, some short term and some long-term employees, high term over (students), clean and tidy.	Mix of older (60's and 70's) single family homes and newer SF homes and townhouses. Large apartment buildings in the area.	Lots of housing- many apartments/condos, mix of modern and old housing, construction is seen both on roads and houses.
I.2 Demographics	Various ethnicities, males and females, middle age adults, middle to high socio-economic status.	Mix of older established residents and younger families and students. Did not note significant homeless population.	Mix of younger adults (students) and older adults, runners/biker along river are seen, upper-class people based on new housing, some homeless around Safeway.
I.3 Ethnicity	Bulletin boards- advertising, artwork may reflect ethnicities.	In neighbourhoods around hospital, few markers of different ethnicities, cultural groups.	Restaurants and clothing stores vary in ethnicity, cultural parades around communities.
I.4 Values & Beliefs	Access to prayer rooms or other spiritual rooms, courtyards, outdoor spaces, trees outside and around the building.	Several protestant churches in St. Andrews Heights, another near University. Lawns and green spaces well cared for. Several art pieces located on University grounds.	Many churches of varied faiths, houses are for the most part clean and decorated.
II.1 Physical Environment	Natural lighting in public spaces, well lit rooms, many interior offices with no windows, common spaces are appealing, good ventilation, areas for social interactions, spaces for group classes, gatherings, high ceilings, overall pleasing appearance, safe.	Community looks clean, well organized. Mix of single family homes, apartments, and townhomes. Large park at eastern edge of St. Andrews Heights, several other parks and playing fields present. Many sidewalks in area, but are interrupted by major roadways.	Restaurants with patios, green areas/fields, some solar panels, good air quality, most communities are lacking in art.
II.2 Health & Social Services	No evidence of acute or chronic conditions among the faculty, staff or grad	No noted acute or chronic conditions noted outside of	An assortment of clinics are seen, including health clinics, vet clinics, spas, dental

	students, access to all health care services, access gym, wellness initiatives, mental health services, student advising and wellbeing office, very good access to a wide range of services.	hospital. Hospital, pharmacies, health and dental clinics present. No homeless shelters nearby. Two nursing homes in the neighbourhoods close to hospital. Three mental health/child advocacy groups in the area.	offices, physiotherapy clinics, massage chiropractors/massage therapy clinics, women's clinics, pharmacies, and herbal clinics.
II.3 Economy	Thriving economy, high level of employment, some access to food and retail, not really accessible to lower-income groups, the university has access to food bank.	Neighbourhoods seem comfortable, middle-upper middle class. University and hospital are largest employer in the area. One thrift store in University Heights to the west of the university. Food bank available at St. Andrews Church.	Many stores are seen around the area, including several malls, thrift stores, boutiques, grocery stores, and departments stores. The area appears to be thriving due to the gentrification of housing, and construction of roads.
II.4 Transportation & Safety	Walkable, big hallways, elevators, stairs, lots of signs, bike racks, access to public transit, some parking problems due to construction around the building, accessible wheelchair ramps, campus security evident on campus, no obvious racism	Train line to the east of the hospital, with closest stations at the University and National Park Trail. Many bus lines in area. Long biking trail by the river to the south. Fire, police and sanitation services present. Crimes in the area are largely property crimes. No obvious signs of racism.	A significant amount of public transit is around the area, including buses and LRT trains. Bike lanes are implemented in many areas. The sidewalks are cleared and provide walkable access. The roads are cleared of snow and gravel is placed to prevent ice.
II.5 Politics & Government	No obvious signs of political or government activity, May change depending on time of year, Some sub-committees for different areas	No obvious signs of municipal, provincial, or federal political activity. Student Union Elections at the University. Municipal government in charge with 14 ward councillors. Last municipal election 58.1% turnout.	Some law offices are seen, and insurance companies. Due to the time of the year there are no election posters around the area.

II.6 Communication	Open common areas with tables and chairs, student and faculty lounges, lots of technology present, TV advertising, email communication among members.	Newspapers are provided, many bars and coffee shops convenient for socializing. Cell phones, televisions widespread.	Newspapers are provided, many bars and coffee shops convenient for socializing.
II.7 Education	This community is an educational institution, some separation between school of medicine and main campus (physical and social), high level of “educational stress”, lots of opportunity for continuing education.	University, 3 elementary schools, Montessori school, and middle school in area. Medical Science Library and Health Science Library at the city hospital. Five libraries at university.	A mix of schools is seen, elementary, middle, and high schools; Several prominent universities and colleges nearby.
II.8 Recreation	Gym/fitness facility upstairs and in the basement (affordable option), wellness committee initiatives (yoga/fitness class, health challenges), no young children visible	Numerous parks in surrounding neighbourhoods. Playing fields at school, Riverside Club and Aquatic Centre also present. Museum on university grounds. Sport stadium is located within the area that hosts a various amount of events, anywhere from CFL games to local high school events.	Playgrounds are seen all around the area. Many places for recreation such as the Recreation centers and the recreation building on the university campus. Sport stadium is located within the area that hosts various events, anywhere from CFL games to local high school events.
III.1 The Residents	Residents appear to be professional and well educated, Students and medical professionals, Support staff: security, custodian, tellers, middle-age adults		Residents appear to be very diverse, both in age and ethnicity. Since there is high traffic in the area we assume that the rent for housing and business buildings is expensive, and the prices in coffee shops/stores are increased by a slight margin.
III.2 Your Perceptions	Overall a healthy community (based on appearance alone), inaccessible to all social demographics, divide between main campus and the faculty, wellness		The overall health of the community seems to be good, businesses support health plans. The community seems to be social and collective. The population seems to be somewhat

	committee is the main supporter/promoter of health and wellbeing.		educated or have a respect for education due to all levels of schools in the area.
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Appendix B: Activities Chart

PHYSICAL ACTIVITY			MENTAL HEALTH			SOCIAL		
2 Points	5 Points	10 Points	2 Points	5 Points	10 Points	2 Points	5 Points	10 Points
Incorporate a 5-minute walk break into your day (complete this every hour to compound points)	Work standing for 30 minutes	Walk for a part of your journey to school or work. (Get off the bus one stop early, or park further away)	Meditate for 5 minutes or practice mindfulness (coloring, crossword, sudoku, calm.com)	Get 6-8 hours of sleep	No social media for a day	Eat lunch with others	Introduce yourself to someone new	Perform a random act of kindness to a stranger
Take the stairs instead of the elevator	Get active outside (walk your dog, for a walk with friends/family)	Shovel your neighbour's sidewalk	Take a power nap or quiet break (30 minutes maximum)	Take some time to clear clutter (at your desk or home)	Take a new route to or from work or school	Instead of email/text, speak to someone in person or on the phone	Spend an evening with family or friends	Sign up and participate in a volunteer activity
Take a stretch break in the day	Clean your house	Sign up for a WOWW membership	Write down 3 personal strengths or 3 things you are thankful for	Read a book instead of watching TV	Attend a WOWW lunch and learn event	Give someone a sincere compliment	Take and treat a co-worker or friend to coffee	Put your phone away for the entire duration of a social outing
EXERCISE			NUTRITION			FINANCIAL		
2 Points	5 Points	10 Points	2 Points	5 Points	10 Points	2 Points	5 Points	10 Points
Try a new exercise	Do cardio for 30 minutes (swimming, jogging, cycling, treadmill)	Play a sport for 1 hour	Pack a lunch	Try a new healthy recipe (available in WOWW newsletter)	Complete a pantry purge and get rid of 5 items with more than 10 ingredients	Bring your own coffee and snacks instead of buying them	Go one day without spending money or use cash only for one day	Complete a financial score (http://www.etherbonomywv.com/public/etherbonomywv/food_resources/finance_quiz)
Make a fitness goal (SMART)	Complete an exercise burst (e.g. 20 situps, side bends, jumping jacks, squats, pushups)	Do 1 hour of full body weight training at moderate effort	Replace coffee/energy/soft drink with water	Go one day without consuming refined sugar	Track your food consumption including calorie and sodium count for one day	Download your banking app and check your account once a day	Set a budget. If you already have one, practice sticking to it	Track your spending and expenses for one week
Wall sit while brushing your teeth	Track your steps for a day (recommendation: 10000 steps)	Attend a fitness class (available through WOWW)	Include a fruit or vegetable at every meal in your day	Replace your regular milk with skim and choose whole grain bread or rice instead of white	Compare food labels and choose healthier options	Set a financial goal (SMART)	Start a jar for loose change	Start or contribute to an emergency fund
BONUS – 50 Points						Revised by: Bassem Abdel-Rahman, Gurjot Deol, Seema Ganesh, Brittney Kuzio, Diana Mukhametzyanova, Kiril Plehanov, Stephanie Schroeder, Michael Webb, and Tam Truong Donnelly		
Physical Activity	Summit a Mountain – go for a hike		Nutrition	Consult with a Registered Dietician				
Exercise	Participate in a winter activity (e.g. skating, skiing)		Social	Join a shared interest group (e.g. intramurals, knitting, book club)				
Mental Health	Bring a friend to a WOWW lunch and learn		Financial	Pay off your credit card in full and on time				

Appendix C: Tracking Sheet

Name:		Date	26-Feb
OVERALL TOTAL		0	
Task	Multiplier	Points	
PHYSICAL ACTIVITY TOTAL		0	
<input type="checkbox"/> Incorporate a 5 minute walk break into your day (2 Points)	1	0	
<input type="checkbox"/> Work standing for 30 minutes (5 Points)	1	0	
<input type="checkbox"/> Walk for a part of your journey to school or work (10 Points)	1	0	
<input type="checkbox"/> Take the stairs instead of elevator (2 Points)	1	0	
<input type="checkbox"/> Get active outside (walk your dog, walk with friends/family) (5 Points)	1	0	
<input type="checkbox"/> Shovel your neighbour's sidewalk (10 Points)	1	0	
<input type="checkbox"/> Take a stretch break in the day (2 points)	1	0	
<input type="checkbox"/> Clean your house (5 Points)	1	0	
<input type="checkbox"/> Sign up for a WOWW Membership (10 Points)	1	0	
<input type="checkbox"/> BONUS: Summit a mountain (or go on a hike) (50 Points)	1	0	
EXERCISE TOTAL		0	
<input type="checkbox"/> Try a new exercise (2 Points)	1	0	
<input type="checkbox"/> Do cardio for 30 minutes (swimming, jogging, etc.) (5 Points)	1	0	
<input type="checkbox"/> Play a sport for 1 hour (10 Points)	1	0	
<input type="checkbox"/> Make a SMART Fitness goal (2 Points)	1	0	
<input type="checkbox"/> Complete an exercise burst (check challenge chart for ideas) (5 Points)	1	0	
<input type="checkbox"/> Do one hour of full body weight training at moderate effort (10 Points)	1	0	
<input type="checkbox"/> Wall sit while brushing your teeth (2 Points)	1	0	
<input type="checkbox"/> Track your steps for a day (give yourself a 2x multiplier if you hit 10000 steps) (5 Points)	1	0	
<input type="checkbox"/> Attend a Fitness Class (10 Points)	1	0	
<input type="checkbox"/> BONUS: Do a winter activity (skating, snowboarding etc) (50 Points)	1	0	
MENTAL HEALTH TOTAL		0	
<input type="checkbox"/> Meditate or practice mindfulness for 5 minutes (2 Points)	1	0	
<input type="checkbox"/> Get 6-8 hours of sleep (5 Points)	1	0	
<input type="checkbox"/> No social media for a day (10 Points)	1	0	
<input type="checkbox"/> Take a power nap or quiet break (30 minutes maximum) (2 Points)	1	0	
<input type="checkbox"/> Have a "Clear the Clutter" Day (5 Points)	1	0	
<input type="checkbox"/> Change your route to/ from work/school (10 Points)	1	0	
<input type="checkbox"/> Write down 3 personal strengths or 3 things you're thankful for (2 Points)	1	0	
<input type="checkbox"/> Read a book instead of watching TV (5 Points)	1	0	
<input type="checkbox"/> Attend a WOWW lunch and learn (10 Points)	1	0	
<input type="checkbox"/> BONUS: Bring a friend to a WOWW Lunch and Learn (50 Points)	1	0	
NUTRITION TOTAL		0	
<input type="checkbox"/> Pack a lunch (2 Points)	1	0	
<input type="checkbox"/> Try a new healthy recipe (Available in WOWW newsletter) (5 Points)	1	0	
<input type="checkbox"/> Complete a pantry tour (10 Points)	1	0	

Instructions: Once you complete an activity, select the check box and edit the multiplier column to indicate how many times you completed the activity for each day. For example, if you took 3 five minute walks during your day, click "Incorporate a 5 Minute walk break into your day" and change the multiplier to 3. Complete one sheet each week for the duration of the challenge to retrieve your weekly score. Update the sheet daily, and submit your weekly score on Sunday of each week. Click anywhere in this box to take you to the link.

Appendix D: Certificate of Completion



Appendix E: Post-Challenge Survey Participants' Feedback

#	RESPONSES	DATE
1	The items in the points categories seemed a bit arbitrary - for example within the nutrition category, you could have items like "ate 3-5 servings of leafy greens per day" or "achieved the Canada Food Guide recommended servings every day for a week" Could add points for flossing teeth It was ambiguous as to how often/how to collect points for the bonus items.	4/2/2018 8:18 AM
2	This was a great addition to something we could do over the winter months as it can be demotivating! Excellent work	3/29/2018 4:42 PM
3	Great job. I had lots of fun completing this with my team	3/29/2018 4:38 PM
4	Suggest you do this again next year! Some of the line items were unclear and should be revised, but otherwise, a fun group activity!	3/29/2018 9:01 AM
5	I loved the challenge format. I actually find the pedometer challenge very demotivating given the ability for people to convert steps so it is really more of an activity challenge than a pedometer challenge. You can essentially not do well in the challenge unless you convert your steps and that would likely keep me from participating again in the future. However, for this challenge, I loved the different components and the focus on small wins/opportunities to gain points. I would say I already rate myself high on exercise/physical activity and am doing quite a bit to work on my mental wellness so I don't think the challenge specifically improved those things. It did however make me more aware of ops in those areas.	3/28/2018 12:20 PM
6	Perhaps co-ordinate more events with WoWW to coincide with the weekly challenges.	3/28/2018 11:48 AM
7	Already made suggestions in the interview :)	3/28/2018 11:28 AM
8	Include tracking for 7 days a week, not just during the work week. Or if to keep it to within the work week, change some of the items, like summit a mountain, which would be impossible to do during.	3/28/2018 11:22 AM
9	We were encouraged to try a new recipe or workout each week and it would have been more helpful if those were included in the weekly summaries for the following week. Then people would have it at their finger tips and this may help decrease the drop-out stats. The problem with trying to encourage people to uptake a health and lifestyle change is that most people are already starting off not motivated. When it's made easy for them to begin that motivation, the uptake can be much faster and they are more inclined to stick with it until it becomes habitual for them. All in all, I enjoyed this challenge and am looking forward to part-taking in the next one! :) Thanks for this!!	3/28/2018 11:10 AM
10	The tracking sheet was a lot of work and some team members just quick tracking. Also, some activities were not designed for March (eg. hike a mountain). Overall I liked the broad range of wellness ideas. We had no consistency in interpreting how to track points - every person did their own thing.	3/28/2018 10:29 AM
11	I would suggest you have a daily column where we can enter our activities instead of weekly. It was hard to keep track on a weekly basis. Really liked the challenge! Thank you to the organizers.	3/28/2018 7:37 AM
12	Challenge was good, I would suggest trying to make the activity points more spread out with a range of things to do	3/27/2018 9:46 PM
13	Great initiative. I appreciate the students putting in so much effort into creating the challenge. Very effective and clear to complete!	3/27/2018 6:43 PM
14	I think this was a fantastic idea ! Would like something similar in the summertime	3/27/2018 6:40 PM
15	I liked having specific goals to strive for and different domains to focus on. Great job WOWW team	3/27/2018 4:35 PM
16	Make the challenge more clear.	3/27/2018 2:10 PM
17	should be implemented again	3/27/2018 12:49 PM
18	Tracking activities online would be helpful as some people found it hard to keep track of what they did during the week.	3/27/2018 12:42 PM