



Enhancing Employees' Health and Wellbeing: Developing a Successful Holistic Wellness Challenge

By the following second year BN nursing students in NURS 289*: Taylor Andrews¹, BScK., Ginny Crosby¹, BSc., Rebecca Carrigan¹, BSc., Casey Fewell¹, BSc., Sandy Ly¹, BSc., Monique Papworth¹, BScK., Katelynne Santos¹, Asha Timilsina¹, BSc., & Tam Truong Donnelly, RN, PhD, Professor^{1,2} (tdonnell@ucalgary.ca)

¹ Faculty of Nursing, University of Calgary, Alberta, Canada

² Cumming School of Medicine, University of Calgary, Alberta, Canada

* This paper was completed in April 2017 as part of an undergraduate course NURS 289 group project at the University of Calgary, Faculty of Nursing. All students contributed equally. The authors are listed alphabetically. Dr. Tam Truong Donnelly was a faculty expert, advisor, and instructor of this students group. She is also the Corresponding Author.

Abstract

Improving the overall health and wellness of employees is an important focus of many organizations. Healthy employees experience more job satisfaction and productivity. The University of Calgary offers programs and services that promote healthy living, a healthy work environment, and respect the employees' lives outside of work as well as their work life. Collaborating with the university's WellBeing and WorkLife department, the purpose of our community health promotion project was to develop and provide recommendations for the implementation of a successful holistic wellness challenge for faculty and staff. Drawing on the Population Health Promotion Model, the Community as Partner model, and the nursing process, a windshield survey, key informant interviews, a focused review of literature, and an environmental scan of 15 Canadian universities (U15) and Vanderbilt University (well-known for its excellent occupational health program). The information gained was used to create then pilot a holistic evidence-based challenge that aims to improve employees' physical activity, exercise, mental health, social health, financial health, and nutrition. To increase community members' awareness and participation in the wellness challenge, we developed brochures detail the health benefits to be gained and offer suggestions for implementing each component. Because our evidence-based recommendations are feasible and flexible with clear marketing strategies, they are more likely to be adopted by organizations and their employees.

Key words: Employee health and wellness; health promotion; holistic wellness challenge.

Introduction

Improving the overall health and wellness of employee is important for many organizations. Healthy employees experience more job satisfaction and greater productivity. The University of Calgary 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. The WellBeing and WorkLife, Human Resources department at the University was officially launched in Feb 2016. The primary purpose of the WellBeing and WorkLife portfolio is “to engage employees in managing their work and personal lives to achieve and maintain overall wellbeing.” (<http://www.ucalgary.ca/wellbeing/home/about>)

Currently, there are ten wellness committees within various faculties and departments. Health challenges were implemented across the university campus; however, few have been contextualized/specific to our university environment. Our project's goal was to collaborate with the WellBeing and WorkLife, Human Resources team to develop and recommend a holistic wellness challenge that could be effectively implemented campus-wide to foster health and wellness of faculty and staff. We drew on the Population Health Promotion Model (Hamilton & Bhatti, 1996; Stamler, Yiu, & Dosani, 2016), the Community as Partner model (Vollman, Anderson, & McFarlane, 2012), and the Nursing Process (Kozier, Erb, Berman et al., 2014) to guide this community health improvement project. To understand the community's background and health needs, we conducted a comprehensive community health assessment, which included a windshield survey, key informant interviews, a focus literature review, and an environmental scan for effective organizational challenges. Based on the data collected, we developed and tested a holistic wellness challenge that could be implemented with faculty and staff at our university.

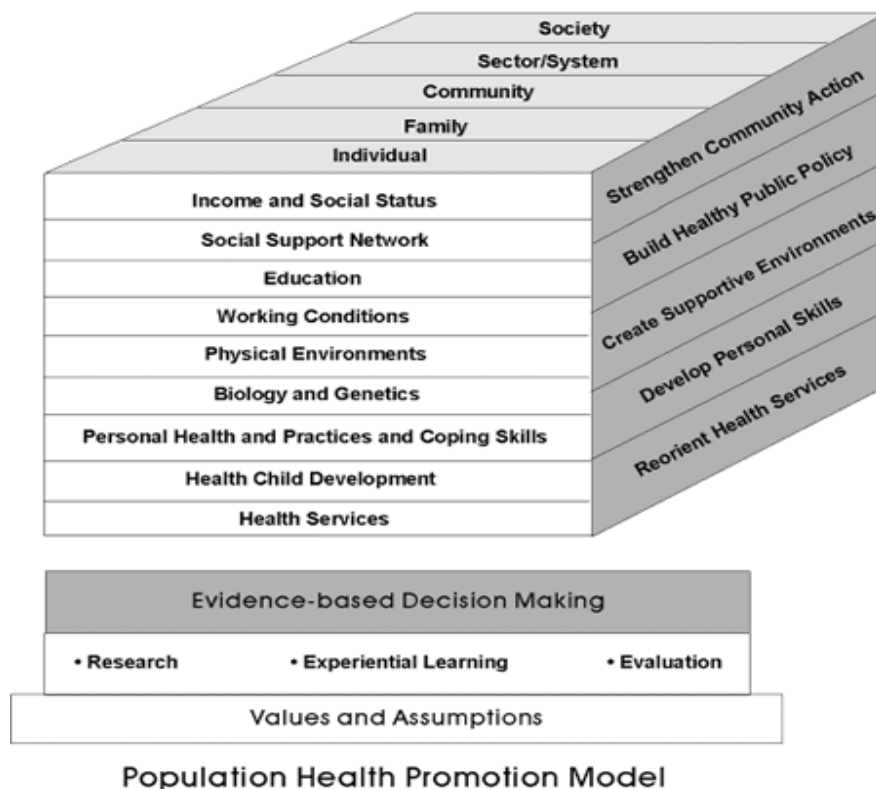
Theoretical Framework and Community Health Assessment

A community health assessment identifies strengths and needs, provides an understanding of community dynamics (Vollman et al., 2012). Assessment is the first stage of the Community as Partner (CasP) model, while the Population Health Promotion Model (PHPM) stresses the importance of assessment based on the social determinants of health (Hamilton & Bhatti, 1996; Stamler et al., 2016; Vollman et al., 2012). The CasP model incorporates the nursing process, but with the community (rather than individual patient) as client. The CasP model emphasizes community engagement in the development of health promotion initiatives. Furthermore, it is important to empower, enhance support resources, and facilitate readiness of the community member to attain and maintain health (Vollman et al., 2012). Therefore, we worked closely with the WellBeing and WorkLife team to establish and cultivate a collaborative working relationship with the university.

Developed by Hamilton and Bhatti in 1996, the population health promotion model (PHPM) (Figure 1) provides a comprehensive framework in which Socio-Ecological Determinants of Health that influence people's health can be identified and effective intervention strategies can be developed and implemented. To ensure that intervention strategies effectively address health issues with sound results, the PHPM emphasizes evidence-based decision making in three main dimensions: health determinants, comprehensive active strategies, and multiple levels of action (Hamilton & Bhatti, 1996; Stamler et al., 2016; Vollman et al., 2012). The health determinants dimension illuminates

how Socioecological Determinants of Health (SEDoH) influence individuals' health status and answers the question "On WHAT should we take action?" The SEDoHs include income and social status, social support networks, education, working conditions, physical environments, biology and genetics, personal health practices and coping skills, healthy child development, and health services (Epp, 1986; Hamilton & Bhatti, 1996). Comprehensive active strategies address HOW to take action such as reorienting health services, developing personal skills, creating supportive environments, building healthy public policy, and strengthening community action. Addressing "With WHOM should we take action?", the model includes individuals, families, communities, sectors/systems, and society as a whole (Epp, 1986; Hamilton & Bhatti, 1996).

Figure 1: **The Population Health Promotion Model**



Source: Hamilton N., & Bhatti, T. (1996). *Population health promotion: An integrated model of population health and health promotion*. Ottawa, Ontario: Health Canada. p.7

Adapting these models and frameworks, we conducted a community health assessment including a windshield survey, interviews with community key informants, a focused review of literature, and an environmental scan to identify strengths and needs of our university. Based on the results, we designed public health interventions to assist the university community in achieving attainable health goals. For the purpose of our project, we use the World Health Organization's definition of health: "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."(WHO, 1995)

Methods of Data Collection

Windshield Survey

A windshield survey is an observational and demographic information collecting tool used to gather a holistic idea of the community environment. The information collected can be used to identify the strengths and weaknesses of the community (Vollman et al., 2012). Data were gathered and analyzed based on the SEDoHs. Members of the community were also interviewed to gather a more comprehensive understanding.

Key Informant Interviews

Key informant interviews were conducted to gather information from individuals who had an in-depth understanding of the community (Vollman et al, 2012). Using purposive sampling, we conducted nine individual interviews with university staff members (three from WellBeing and WorkLife, two from Staff Wellness, and four members of the wellness committees). Key informant interviews were stopped when we reached data saturation (i.e., when no new information was identified). A semi-structured questionnaire consisting of nine open-ended questions was used to obtain the interviewees' feedback on previous and current wellness challenges, insights into university workplace wellness needs, and preferences for future wellness challenges. The data were analyzed to identify common themes. Interviewees' responses provided first hand perspectives that other methods of data collection did not afford and gave us crucial in-depth information for developing our own health promotion challenge.

Because this project was a community development project and not a research study, institutional research ethics board approval was not required. However, ethics principles were strictly applied. Information regarding the community project, participants' rights, and steps taken to ensure privacy, confidentiality, and anonymity were clearly explained to participants prior to obtaining their written voluntary participation.

Review of Literature

A focused literature review was conducted using search terms such as "workplace wellness", "wellness challenges", "university wellness programs", and "faculty and staff wellness" to provide guidelines for developing the framework of our project and examine related case studies. The review provided challenge ideas and evidence-based suggestions for implementing wellness programs. The literature review also highlighted current trends in workplace wellness challenges.

Environmental Scan

We conducted an environmental scan to better understand the dynamics of wellness programs and challenges, specifically those offered within universities for faculty and staff. We performed an environmental scan of university websites for 15 Canadian research universities, along with Vanderbilt University. Vanderbilt was selected based upon its international recognition and established wellness challenges.

Results

Windshield Survey

The university and surrounding area is an established section of the city that has developed into a unique community over the last 50 years. The majority of the community is

made up of students, with approximately 30,000 students and 5,000 faculty and staff (Institutional analysis-U of C, n.d). The university is ranked as the top North American research university under 50 (Times Higher Education, 2016), with 13 different faculties, which draw many international students, faculty, and staff. The majority of the population that lives on campus is aged 15-24 (The City of Calgary, 2014). However, most people who use university facilities commute from surrounding areas. Staff have a median age of 49.6 years with a gender ratio of 45% male to 55% female (Institutional analysis-U of C, n.d). Most employees are support staff and faculty.

The ethnic and cultural diversity of the university campus population was highly apparent. Organizations such as the Center for International Students, Native Center, and Faith and Spirituality Center, highlight the university's intentions to create an environment where expressing individuality is encouraged. Different ethnic restaurants (Chinese, Korean, Greek, and Mexican) were also found on campus. Advertisement for clubs centered around sports, religion, art, and academia were prominent, facilitating the connection of people with shared interests. Many indoor common areas provided people with a safe gathering space for various activities, whether it be a social group or individual activity. Well-maintained buildings and external environments indicated the attention given to the aesthetics of the campus. Well-lit rooms with adequate ventilation and natural lighting provided comfortable work settings. Recreational facilities such as the Olympic Oval, fitness center, aquatic center, climbing wall, dance studio, and various gymnasiums demonstrate the accessibility of a diverse range of physical activities to staff and students.

The university provides a plethora of health and social programs for the campus community including dental, optometry, academic support, the wellness center, pharmacy, physiotherapy clinic, mental health support, financial risk and management guidance, and food bank services. Providing access to a wide variety of health and social programs showcases the holistic approach the University utilizes. Businesses such as florists, travel agencies, banks, restaurants, bar and coffee shops can be found in students' centre building. Well maintained, large sidewalks and sheltered indoor walkways increase walkability. Other modes of transportation include public transit, cars, and bikes. The university campus values the safety of its community by having 24-hour campus security, the implementation of the Safe Walk program which provides assistance to anyone on campus with accompanying safe walk, as well as readily available fire extinguishers and automated external defibrillators (AEDs). The campus is accessible for everyone with full and limited abilities. Elevators, wheelchair accessible ramps and bathrooms are located throughout the campus.

We noted that most services were geared towards the student population. The surrounding community environment had an industrial feel, lacking heritage buildings and historical points of interest. Under-utilization of outdoor social and recreational spaces may be due to the harsh winter weather. As health and social services on campus are mostly targeted toward students' population, there is a need to foster long-term health and social supports for faculty and staff. The university employees are comprised of many sub-groups but minimal social interaction and involvement throughout the collective community were observed. Social interactions were seen to be more active depending on the weather and time of day. Lack of posters and bulletin boards targeting these sub-groups further contributes to the impression of a disconnected environment. The industrial and corporate atmosphere of the surrounding area seemed non-conducive to a holistic wellbeing within the workplace. Although, the University of Calgary has high walkability, the surrounding amenities are not

easily reached on foot. For example, walking to the nearby grocery store may not be feasible. We observed the surrounding area to have poor walkability, which could contribute to under-utilization of available services.

Key Informant Interviews

From our nine key informant interviews, we identified the following themes on what health and wellbeing in the workplace meant to the faculty and staff. All interviewees valued work-life balance, emphasizing the importance of maintaining high morale, building healthy relationships, and promoting healthy lifestyles. Many of the interviewees discussed health holistically, although mental and physical health were mentioned most frequently. One informant characterized health as the ability to “flourish in other areas of life”.

Most of our interviewees had participated in a previous wellness challenge, and all expressed interest in participating in future challenges. All interviewees believed that their coworkers would be willing to participate in a work wellness challenge. We inquired about what interviewees would want to see in a future challenge. Everyone felt it crucial for a successful wellness challenge to have support from management. Spring was suggested as an optimal time for implementing a challenge. Most informants recommended a month long challenge to achieve balance between noticing positive results and preventing participation drop off. Opinions varied on whether the challenge should be completed in teams or individually. For some informants, team dynamics provide motivation and accountability. For others, peer pressure might hinder participation. Interviewees also preferred allowing flexibility to choose their own teammates. Activities that could be performed either at work or at home were appealing to many. There was also interest in including family and friends in these activities. An electronic method of tracking activity was highly recommended for recording challenge participation results. The interviewees felt that the best ways to communicate information about wellness challenges were through e-mail and word of mouth.

We define intrinsic motivation as performing the action due to internal rewards; while extrinsic motivation refers to when an activity is done for external rewards. For example, extrinsic would be monetary rewards, but intrinsic would be increased self-satisfaction. When we asked the interviewees what can build intrinsic motivation to achieve sustained participation for the full duration of a wellness challenge, the following suggestions were offered. Several key informants believed that education and awareness of the long term benefits of challenge activities that foster health and wellness are important intrinsic motivators. Seeing positive changes and health improvements can also prevent participation drop off. Team accountability and being able to see a challenge leader board were also suggested as means of increasing motivation. However, key informants recognized that building intrinsic motivation can be difficult. Therefore, they recommended providing small external rewards, for example, water bottles or gym bags.

We also sought key informants' opinion regarding our newly developed challenge. Informants appreciated our holistic approach to wellness, range of activities, and its ease to incorporate into their work day but suggested there were too many activities, making progress hard to track. If funding were available, larger extrinsic rewards could increase participation and engagement, while decreasing drop-off. Some suggested providing quiet areas where faculty and staff could go to relax and practice self-care.

Review of Literature

From our literature review, it became clear that programs were more abundant than specific challenges. The majority of the challenges were pedometer-based and varied in their timeline and participation format. The Global Corporate Challenge (GCC) is an example. The GCC is a team-based, 16-week pedometer challenge in which individuals track their steps through a website or a smartphone application (Butler, Clark, Burlis., et al, 2015; Macniven, Engelen, Kacen., et al, 2015).

Wellness programs are a cost-effective way to create a supportive environment that can help to increase overall employee health and lower their risk of health complications (Shephard, 1996). Vanderbilt University's 'Go for the Gold', an incentive-based program, is focused primarily on physical activity, nutrition, and mental health (Byrne, Goetzl, McGown et al., 2011). Another program called 'Weight Watchers at Work' chose to improve nutrition by requiring employees to track their diets (Byrne et al., 2011). A 12-week wellness program on weight loss, blood pressure, total cholesterol, and waist circumference was discussed. Participants attended weekly sessions for 12-weeks (50-minute group sessions were held at lunchtime) and three individual appointments with healthcare professionals (Touger-Decker, O'Sullivan-Maillet, Byham-Gray et al, 2008). MacDonald and Davidson developed an early detection, outreach, and intervention program focused on reducing workplace stress, called the 'Neighbourhood Watch and Connector Program' (MacDonald & Davidson, 2000). Faculty were informed about how to recognize and report distress markers by increasing awareness and emphasizing the importance of watching for signs of distress in oneself and in others (MacDonald & Davidson, 2000).

Programs and challenges examined in the reviewed literature had varied success. Vanderbilt's 'Go for the Gold' program seemed most successful and viable over the long term, with a recorded 75.5% participation rate (Byrne et al., 2011). The 12-week wellness program examined by Touger-Decker et al. was also successful, with 75% of participants losing 1 to 23 pounds and adopting healthier eating and physical activity patterns (Touger-Decker et al, 2008). The benefits and successes of companies investing in wellness programs were also explored, and it was found that wellness programs led to decreases in overall health care spending, and a decrease in health insurance premiums (Baicker, Cutler, & Song, 2010). Approximately \$358 in annual savings were reported through these reduced health care costs per employee, which translates to a decrease of \$3.27 in medical costs for every dollar spent on wellness programs (Baicker, Cutler, & Song, 2010). Absenteeism costs were also found to decrease by approximately \$2.73 for every dollar spent on wellness programs, suggesting that healthier employees may lead to an increase in work productivity due to a decrease in absenteeism (Baicker, Cutler, & Song, 2010).

The GCC pedometer challenge examined by Macniven et al. had a significantly reduced participation rate compared to the previously mentioned programs, with only 8% of university staff participating (Macniven et al, 2015). It appeared the challenge was successful in promoting engagement, as 95% of the participants provided step count data. Participants in this challenge reported a decrease in the amount of time they spent sitting by an average of 21 minutes per day and increased their daily step average by approximately 2000 steps between week one and week 16. Macniven et al. (2015) reported that despite these positive changes, the challenge did not result in an increase in the number of participants meeting national recommendations for daily physical activity levels. It was interesting to note that 95% of these participants were already meeting recommended daily physical

activity levels, however, only 37.5% of the entire university staff were meeting these standards. This suggested that those who would benefit the most from challenges such as this comprised only 5% of the participant population.

The GCC had a 25% drop-off in survey participation through its 16-week duration (Macniven et al, 2015). It was inferred that workplace challenges could create fragmentation due to the nature of the environment, making it difficult to create a unified wellness culture despite its potential for having a broad reach. Leininger et al. observed that time constraints, schedule conflicts, and participants having their own exercise program were also significant factor influence workplace wellness challenge participation (Leininger, Adams, & DeBeliso, 2015). The way a workplace wellness initiative is executed also proved to be of importance (Zoller, 2004). Poor implementation could cause resentment among employees, create division, and alienate employees with differing perspectives about health. Zoller (2004) also identified employees feeling intimidated, having a lack of voice, and a disconnection between employees' definition of health as potential participation barriers.

All studies reviewed had some participation drop-off; however, motivational strategies that seemed to be effective at counteracting these occurrences were identified. Involving employees in planning and implementation challenges was an effective way to keep participants involved (MacDonald & Davidson, 2000). Involvement of employees could be encouraged in many ways such as informal conversations, educational workshops, seminars, focus groups, and word of mouth. In a large-scale challenge conducted at Vanderbilt University, the initial health assessment was found to be highly motivating for participants, and gave people a baseline to improve upon (Byrne et al., 2011). Extrinsic motivators, such as gift cards or financial incentives, proved to be motivating in this challenge. However, it was unclear whether this aided in developing intrinsic motivation for personal health and wellness (Byrne et al., 2011). A study showed that a larger financial incentive paid out over a longer amount of time was more attractive to individuals with high health risk (Norman, Heltemes, & Drew, 2014). Support from institutional administration and management levels for programs and challenges was also a common theme seen in the literature as an effective motivation strategy (Kaspin, Gorman, & Miller, 2013; MacDonald & Davidson, 2000; Macniven et al, 2015) Weekly emails from management were a motivating factor in one study (Macniven et al, 2015), and the importance of strong encouragement from senior management to participate was identified as effective strategies when addressing drop-off and barriers to participation (Kaspin, Gorman, & Miller, 2013).

Several recommendations for implementing programs and challenges were found. It was suggested that universities should consider implementing broader, more upstream initiatives, as well as increase participation by considering challenge length and relevance for at-risk participants (Macniven et al., 2015). Others suggested implementing wellness challenges that are applicable to multiple aspects of health, rather than focusing on just one aspect (Zoller, 2004). It was also recommended that challenges focus on factors that promote behaviour change, to inspire long term results (Macniven et al., 2015). Others have observed maximum program participation when inequities existing between employee levels were recognized (Leininger, Adams, & DeBeliso, 2015). Similarly, a study suggested there needs to be a 'leveling effect' in which all participants feel comfortable taking part (Zoller, 2004). Before work, after work, or during lunch are typically the most convenient times for employees to participate so facilitators should consider this when designing workplace challenges (Roberts, 2014). Samuel (2016) offered several strategies for designing workplace

wellness programs including being holistic in the program offering, encouraging role models and champions, and explaining the scaling methods. The researchers also underlined the importance of an effective presentation when launching the program as necessary, to ensure maximum support and participation.

Environmental Scan

We gathered information regarding wellness programs, e-learning, and wellness challenges, but only reported data about wellness challenges geared towards faculty and staff. We found valuable information about wellness programs and e-learning resources from 6 of the 15 Canadian research universities (University of Calgary, University of Alberta, University of British Columbia, McGill University, McMaster University, Dalhousie University) and Vanderbilt University. Tables 1 a, b, c highlight information about wellness programs, e-learning resources, and wellness challenges from these institutions.

The majority of challenges offered were pedometer challenges. Two universities (Calgary and Alberta universities) have annual winter walking initiatives that supplement province-wide initiatives to get Albertans moving during the winter months. The University of Calgary Cumming School of Medicine offered a 6-week pedometer challenge where individuals self-reported step counts using a mobile application (Cumming School of Medicine, n.d.). This challenge included a physical activity readiness questionnaire that was completed at the beginning of the challenge, and prizes were offered at the end of the challenge to encourage participation. McMaster University has a reoccurring 6-week pedometer challenge (McMaster University, n.d.) that allows both team and individual participation. The challenge includes prizes, and weekly newsletter updates. Readily available resources including apps for self-tracking are provided. WALKtober is an annual step challenge at Dalhousie University, where participants are encouraged to either participate individually or as a team (Dalhousie University, n.d.). The WALKtober challenge incorporates the use of the walkaboutns.ca website to facilitate self-tracking. This website provides information on ways to increase steps during the workweek. The challenge offers prizes and provides information on participant progress as motivational tools. Dalhousie University's WALKtober challenge has been very successful with high participation.

The University of British Columbia held a 30-day online mindfulness challenge that cost participants \$25 to participate (University of British Columbia, n.d.). This included evidence-based online training of 10 minutes per day focused on reducing stress, increasing happiness, and enhancing leadership capabilities. Training also explored interpersonal communication, conflict management, and decision-making in the workplace.

McGill University designed a challenge called '5/30' (McGill University, n.d.). The 5/30 challenge focused on getting employees to eat five servings of vegetables and exercise 30 minutes per day. The challenge did not include extrinsic incentives; however, resources such as meal plans were provided. The university's wellness website also provided health information. McGill University held a three-week scavenger hunt aimed at increasing physical activity and time spent outdoors. The scavenger hunt included one grand prize drawing at the end of the challenge as an extrinsic motivator. Vanderbilt University's 'Go for Gold' program requires a mandatory employee health assessment to determine baseline health status. The program offers tip videos and reference sheets that focus on health improvement. The program has cash incentives if certain health levels are reached.

Table 1a: Environmental Scan - On-Campus Programs

The on-campus programs of the various universities. Similar programs are categorized by row.

University of Calgary (n.d.)	University of Alberta (n.d.)	University of British Columbia (n.d.)	Vanderbilt University (n.d.)
Lunch and Learn	Lunch and Learn		Lunch and Learn (Wear Red day - Topic on Heart Disease)
Workshop (Continuing Education)	Workshops (Health Promotion)	Ongoing Workshop	
Employee Well Being Month (Physical/Mental and Social Health Habits)	Office Yoga (Physical/Social)		Work Life Connections Employee Assistance Programs
National Depression Screening Day (Mental)		Thrive at UBC (Mental Health)	Know your Numbers (February - Cholesterol and Glucose Screening; speak to Cardiologist and Dietician)
Free Yoga / Meditation (Physical/Social)		Mental Health First Aid Training	Healthy Steps (by Health Plus: Mental Support)
UFlourish (Mental health) Website: Lynda.com)		Annual Travelling Health Fair (Mobile clinic)	Faculty and Physician Wellness Program (Mental Support)
Snore Center		Virtual Health Fair (Screening, tools/resources)	
Kinetic Orthotics Inc. (Orthopedic Clinic)		50/50 Yoga Pilates (Physical/Social)	
Straighten Up Alberta (Posture and Spine Health)			

Drum Circle – Weekly from September to April (Spiritual)			
Money Mentors (Financial)	Managing Your Money (Financial)		

McGill University (n.d.)	McMaster University (n.d.)	Dalhousie University (n.d.)	Queens University (n.d.)
Lunch and Learn- (Boost your Health, Feel Good Fridays)	Lunch and Learn	Lunch and Learn	Lunch and Learn
Workshops (Mindfulness, exercise for mood, Stress Management, Time management, Happiness)	Workshops (Mental Health First Aid Training)	Workshops (Positivity, Meditation, Resilience Training)	
Support groups	Counselling (retirement, crisis)	Counselling	Counselling, coaching, information, and support
Employee and Family Assistance Plan	Employee and Family Assistance Program	Employee and Family Assistance Program	Employee and Family Assistance Program
			Gentle yoga, Barre Pilates

Table 1b: **Environmental Scant - E-Learning (Online Resources)**

University of Calgary (n.d.)	University of Alberta (n.d.)	University of British Columbia (n.d.)	Vanderbilt University (n.d.)
Homewood Health online courses	Homewood Home Health	Homewood Health (Workplace Resource)	Well cast: Podcasts offered by the University
My Health Alberta (Online Health Resource)	Pathway Learning Series (Self-directed learning)	Course by Shepell (Emotional Intelligence and Wellbeing;	Webinars on Health Topics

		Lynda.com)	
Joint Matters at Work (Arthritis)	EFAP Online Courses (Health and Wellbeing)		Living Healthy, Feeling good (resource article)
Newsletter and Resource Articles	Newsletter and Resource Articles	Newsletter and Resource Articles	Newsletter and Resource Articles

McGill University (n.d.)	McMaster University (n.d.)	Dalhousie University (n.d.)	Queens University (n.d.)
Voice Care and Breathing	Stress Management	Stress Management	During work stress releasers
Managing Mental Health	Mental Health First Aid training	Mental Health - (Thrive)	Workplace Mental Health
Living well eating well		Healthy Eating	Nutritional Health
Butt out (smoking)	Smoking cessation	Quitting smoking	
Healthy Blood Pressure	Physical Wellness	Fitness and Exercise	Physical wellness
Surviving the desk job (proper workstation setup)	Workplace accommodations		Occupational Illness or Injury, Workstation self assessment checklist
Organizational learning and development	Professional development, Leadership development		Professional development

Table 1c: Environmental Scant - Wellness Challenge

University of Calgary (n.d.)	University of Alberta (n.d.)	University of British Columbia (n.d.)	Vanderbilt University (n.d.)
Winter Walk Day	Winter Walk Day	Walking at UBC	National Walking day (Health Plus; April 6): Tips for Mindful Walking
Guided Wellness	U of A on the Move	Walkabout	National Walking

Walk (3km outdoor/indoor run)		(9 Week)	Day Photo Challenge
Annual Pedometer Challenge	Walking Trails and Events	Pick Your Peak Stair Challenge (4 week)	Nashville Hiking Meetup
	Stair Use and Sustainability	Walk the Walk (30 mins daily)	Think You Can Run A 5K?
	Corporate Challenge (2 week Sports Events)	Sports Day	Vandy Walks
	12 Weeks to Weight Loss and Wellness Challenge	30-Day Online Mindfulness Challenges (\$25)	Mayor’s Workplace Challenges
			Go for the Gold
			Online Workout

Community Diagnosis

Based on data collected through windshield surveys, key informant interviews, literature reviews and environmental scans, we identified several community diagnoses that demonstrate the strengths of community and areas for improvement. These diagnoses consist of both positive and negative statements on the actual or potential health problem, the cause of the problem, and the evidence that supports statements (Table 2).

Table 2: Community Diagnosis

Description	Focus	Etiology	Manifestation (evidence)
Positive attributes related to the implementation of challenges that promote wellbeing in the workplace	Faculty and staff at the University of Calgary	Related to... <ul style="list-style-type: none"> ● Willingness to develop and implement a challenge ● Willingness to collaborate with Community Health Nursing students ● Existence of previous challenges ● Existing organization of wellness committees 	As manifested by... <ul style="list-style-type: none"> ● Key informant interviews demonstrating interest in wellness challenges ● Increased awareness of health, existence of our project ● Creation of WellBeing and WorkLife ● 10 wellness committees

Lack of workplace wellness challenge initiatives	Faculty and staff at the University of Calgary	<p>Related to...</p> <ul style="list-style-type: none"> ● Newness of programs ● Newness of WellBeing and WorkLife ● Limited wellness challenge implementation resources 	<p>As manifested by...</p> <ul style="list-style-type: none"> ● Key informant Interviews expressing limited opportunity to participate in a wellness challenge at work ● Limited number of wellness challenge occurrences ● WellBeing and WorkLife recently established in 2016
Risk of barriers to implementing a campus-wide challenge	Faculty and staff at the University of Calgary	<p>Related to...</p> <ul style="list-style-type: none"> ● Limited funding ● Limited access to information ● Human Resources (HR) regulations and limitation ● Limited top-down support 	<p>As manifested by...</p> <ul style="list-style-type: none"> ● Key informant interviews expressing concerns about top down support and heavy workloads preventing their ability to participate ● Limited funding for extrinsic rewards or implementation of wellness challenges ● Inability to contact or survey community members to identify needs due to institutional regulation
Risk of low participation and drop off	Faculty and staff at the University of Calgary	<p>Related to...</p> <ul style="list-style-type: none"> ● Inappropriate duration and timing of challenge ● Lack of institutional support ● Participant motivation ● Potential lack of buy in ● Conflicting schedules and heavy workloads ● Limited advertisement and disbursement of information 	<p>As manifested by...</p> <ul style="list-style-type: none"> ● Key informant interviews and literature review expressing loss of interest due to length and timing of challenge ● Low participation in previous pedometer challenge ● Limited budget for incentives and advertising

Based on the data collected from all assessment methods, analysis, and further collaborative feedback from WellBeing and WorkLife staff members and key stakeholders, a Logic Model (Figure 2) was developed to connect the key themes and goals with the community current inputs, programs, and outputs (Kozier et al., 2013; Dwyer, 1997; Taylor-Powell & Henert, 2008). In the Logic Model, we identified specific, measurable, achievable, realistic, and short-term and long-term outcomes that can be evaluated by the institution’s staff and other health care providers/researchers.

Figure 2: **Logic Model: Improvement of Overall Wellness of Faculty and Staff**

Goal →	Target Population →	Component →	Short-Term Objective →	Short-Term Indicators →	Long-Term Objective →	Long-Term Indicators →	Resources
Improved overall wellness of faculty and staff at the University of Calgary	University of Calgary Faculty and Staff	Engagement	Implement successful wellness challenge	More than 20% participation	Increased interest in health initiatives	Positive feedback from initiatives	Pamphlets, Website, Our Challenge, Human Resources, WellBeing and WorkLife Portfolio, University of Calgary Faculty of Nursing, Faculty Wellness Committees, University Administration
				More than 90% of participants are tracking and self-reporting		Decreased drop off	
				Decreased drop off in challenge		Increased utilization of tools available	
			Improved health outcomes	Participants noticing health improvements	Increased faculty and staff wellness literacy	Increased attendance at lunch and learn	
				Self-reporting improved health status		Increased wellness website viewership	
				Engagement survey results		Utilization of challenge information pamphlets	
	University Administration	Advocacy	Funding for wellness challenge provided by the University administration	Budget for incentives and prizes	Increased top-down support for wellness initiatives	Reduced illness-related insurance claims and/or utilization of sick days	
						Increased funding provided by the University administration	
						Increased number of wellness related questions in the University’s annual engagement survey	
						Implement an assessment tool to gauge health status of faculty and staff	
Marketing	Distributing the wellness challenge	Placed on the wellness website	Advertised in the newsletter	Emailed to all faculty and staff	Increased resources available and improved communication	Online wellness tools accessible on the website	
						70% of faculty and staff have heard about the wellness challenge	
						Communicated through multiple mediums	
						Print advertisement distributed through the faculties (at least one in each faculty)	

Overall Goals and Recommendations

We developed the following goals and recommendations to address our community diagnoses. Our goal is to improve the overall health and wellness of the faculty and staff at our University by developing a successful workplace wellness challenge that can be implemented by WellBeing and WorkLife. Table 3 details recommendations for implementation to achieve this goal.

Table 3: Overall Goals and Recommendations

Recommendations	Action Strategies	Level of Action	Implementation
<p>Successful communication and advertising for wellness challenge promotion.</p>	<p>Use multiple, effective, and broad reaching communication tools to inform and capture the attention of faculty and staff about wellness challenges and available support. Promote the wellness challenges towards the faculty, staff, and university administration, while clearly identifying participation expectations. Promote collaborative peer communication regarding challenge participation and information.</p>	<p>Individual and Community</p>	<p>Use email, websites, newsletters, posters, handouts, brochures, and word of mouth to distribute information about wellness challenges. Host launch and wrap up events for each wellness challenge to further promote faculty and staff interest. Provide wellness committee chairpersons with tips on successful communication and advertising skills. Create a supportive peer communication forum for challenge participants. Simplify and condense communication content to maximize readership. Use intriguing subject headings, creative content, and imagery.</p>
<p>Increase institutional support for implementation of wellness challenges.</p>	<ul style="list-style-type: none"> ● Facilitate adoption and gain acceptance of the program by university administration. ● Pursue funding opportunities and resources for implementation of wellness challenges by enhancing community support networks. ● Encourage multi-level management participation in 	<p>Individual and Community</p>	<ul style="list-style-type: none"> ● Involve university leadership planning and implementing of wellness challenges. ● Encourage the university's executive administration team to provide funding for wellness challenges by placing emphasis on the financial benefits of investment in workplace health. ● Work with university leaders to identify and overcome constraints

	<p>wellness challenges, acting as role models for the promotion of a positive health culture.</p> <ul style="list-style-type: none"> ● Provide awareness of the WellBeing and WorkLife portfolio and their initiatives during training for new employees. 		<p>preventing participation.</p> <ul style="list-style-type: none"> ● Place priority on implementing new policies that support and promote employee and management participation in health programs within the workplace. ● Host workshops for new employees that promote WellBeing and WorkLife and available wellness challenges.
<p>Increase engagement of faculty and staff in wellness challenges and decrease participation drop off.</p>	<ul style="list-style-type: none"> ● Provide an inclusive environment, creating situations in which all faculty and staff feel safe participating in wellness challenges. ● Identify internal or external factors that may enhance motivation for healthy behaviour. ● Emphasize positive short-term health benefits that can be gained by positive lifestyle behaviours to encourage participation. ● Provide information regarding long-term health benefits to maintain and sustain participation and healthy lifestyles. ● Provide extrinsic motivation and facilitate intrinsic motivation to promote engagement and prevent drop off. 	<p>Individual and Community</p>	<ul style="list-style-type: none"> ● Implement wellness challenges that include a wide variety of inclusive activities that are easily achievable, regardless of health literacy or ability level. ● Promote team based participation opportunities for those individuals that would benefit from peer motivational support, while allowing opportunity for individual participation if preferred. ● Consider the appropriate season, length of challenge, and time commitment required to complete challenge activities. ● Regularly provide faculty and staff with information about short-term and long-term health benefits

			<p>related to participating in challenges.</p> <ul style="list-style-type: none"> ● Provide incentives and recognition programs for faculty and staff who are participating, or to motivate those who are contemplating participation.
<p>Increase the ability to promote and sustain challenges through modification based on feedback from faculty or staff.</p>	<ul style="list-style-type: none"> ● Provide a method for participants to anonymously contribute feedback and express their goals. ● Evaluate wellness challenges by identifying and measuring indicators of success through appropriate research methodology. ● Make the challenge design flexible allowing for modification based on feedback. 	<p>Individual and Community</p>	<ul style="list-style-type: none"> ● Design and conduct anonymous feedback surveys after each wellness challenge delivery. ● Create easy to use forms to collect data to assess and evaluate the success and sustainability of wellness challenges. ● Modify and refine wellness challenges by prioritizing faculty and staff feedback, while considering sustainability and affordability.
<p>Increase available resources to raise awareness of health problems and support health initiatives.</p>	<ul style="list-style-type: none"> ● Develop and provide resources through multiple mediums that are written at a level appropriate to all faculty and staff. ● Increase utilization of currently available resources. 	<p>Individual and Community</p>	<ul style="list-style-type: none"> ● Create and host workshops, lunch and learns, and health promotion events. ● Create self-directed resources available to faculty and staff including brochures, web resources, and e-learning opportunities. ● Provide professional services for those seeking support via available resources (e.g. Homewood Health).

			<ul style="list-style-type: none"> ● Encourage supervisors to direct faculty and staff towards utilization of available health resources provided through WellBeing and WorkLife.
--	--	--	--

Community Intervention

Based on our analysis, holistic challenges would be most beneficial for the health of faculty and staff. Data indicate that time constraints act as a significant barrier to exercise for faculty and staff. Therefore, physical activity - simple tasks that encourage movement that can be incorporated into daily routines and are not time consuming – is included as a component in our wellness challenge. The intent is to turn simple tasks from the challenge into healthy habits over time. Nutrition is another component in the wellness challenge because nutrition aids in improving health physically and mentally (Molteni, Barnard, & Ying et al., 2002). The nutrition activities are incorporated to improve eating habits. The review of literature indicated that exercise was important for overall health and is the most ubiquitous aspect of health. We also include mental health in our challenge due to its impact on overall health and employee productivity (Burton, Schultz, & Chen et al., 2008) Another important aspect related to mental health is social health. Social health helps strengthen social cohesion in the workplace, creating and improving a positive work environment for faculty and staff (Seeman, 1996). Another way to improve health would be to have financial stability (Joo & Grable, 2000). We chose financial health activities to encourage faculty and staff to explore ways to improve their financial status.

Proposed Wellness Challenge

The proposed wellness challenge we developed is holistic in nature. It focuses on improving the overall health and wellness of faculty and staff at our University. The challenge concentrates on incorporating six components of health: social, mental, physical, nutrition, financial, and exercise. Within the six components of health there is a variety of activities for participants to choose from, in accordance with their individual preferences and abilities.

Pilot Study and Development of an Activities Tracking Device

Once the challenge prototype was developed, its usability was tested by piloting it with two groups: eight nursing students and four university staff. We participated and tracked our activities for one week to establish a reasonable baseline for scoring purposes. Each group then provided feedback on feasibility and potential improvements.

Quantitative results were similar between the two piloted groups, with average daily point counts ranging between 55 and 86, and weekly totals ranging from 430 to 604. These averages were used to determine scoring recommendations to guide challenge users. Based on both group's feedback, we were able to refine and revise the challenge.

Staff feedback suggested decreasing the amount of activities to simplify tracking, avoiding activities that could not be completed daily, and running the challenge only during the workweek. They noted that working in a team was enjoyable and beneficial because it encouraged them to track their activities together at the end of the work day.

Both groups shared similar challenge experiences; however, the students were not as successful at tracking their activities. Of the eight students, only three continued to track for the entire week due to time constraints and complexity. This result emphasized the need for a simplified tracking system. Both pilot groups enjoyed the holistic approach to the challenge and found the varied activities achievable. Both groups recommended combining similar activities to simplify the challenge.

We developed a user-friendly tracking device. Participants recorded their daily points based on completing activities listed on the challenge chart, and self-reported their results on the tracking sheet provided. A tracking sheet was developed as an excel spreadsheet. Participants clicked on an activity and entered the number of times it was completed. The daily total was automatically calculated. An example of a daily tracking sheet is shown in figure 3.

Developed Brochures

We developed six brochures as a tool to encourage participation and provide information to supplement our challenge. The brochures were intended as a marketing strategy to raise awareness about the challenge's components of health among faculty and staff and provided information on available workplace resources. The brochures included information regarding the benefits of n specific challenge activities, recommendations on how to implement, and tips related to the specific topics. The intent of these brochures is also to encourage participants to develop self-initiative to make lifestyle changes that can improve health and wellness and increase intrinsic motivation.

Figure 3: Tracking Sheet

		Date	03-Apr
OVERALL TOTAL		39	
Task	Multiplier	Points	
PHYSICAL ACTIVITY TOTAL		39	
<input checked="" type="checkbox"/> Incorporate a 5 minute walk break into your work day	5	10	
<input checked="" type="checkbox"/> Work standing for 30 minutes	2	10	
<input checked="" type="checkbox"/> Take your bike instead of driving	1	10	
<input checked="" type="checkbox"/> Take the stairs instead of elevator	2	4	
<input type="checkbox"/> Go for a family walk after dinner	1	0	
<input type="checkbox"/> Shovel your neighbour's sidewalk or mow their lawn	1	0	
<input type="checkbox"/> Stand up while talking on the phone or stretch while watching TV	1	0	
<input checked="" type="checkbox"/> Go bowling, play bocce, try curling, play disc golf or mini golf	1	5	
<input type="checkbox"/> Clean your house for two hours	1	0	
<input type="checkbox"/> BONUS: Complete the health assessment through Homewood Health	1	0	
EXERCISE TOTAL		0	
<input type="checkbox"/> Go for a walk for at least 20 minutes	1	0	
<input type="checkbox"/> Do cardio for 30 minutes (swimming, jogging, etc.)	1	0	
<input type="checkbox"/> Go skiing, snowboarding, showhoeing, or skating	1	0	
<input type="checkbox"/> Complete an exercise burst (check challenge chart for ideas)	1	0	
<input type="checkbox"/> Skip rope 5 sets of 20	1	0	
<input type="checkbox"/> Do one hour of full body weight training at moderate effort	1	0	
<input type="checkbox"/> Wall sit while brushing your teeth	1	0	
<input type="checkbox"/> Track your steps for a day (give yourself a 2x multiplier if you hit 10000 steps)	1	0	
<input type="checkbox"/> Attend a fitness class	1	0	
<input type="checkbox"/> BONUS: Summit a mountain	1	0	
MENTAL HEALTH TOTAL		0	
<input type="checkbox"/> Meditate or practice mindfulness for 5 minutes	1	0	
<input type="checkbox"/> Get 6-8 hours of sleep	1	0	
<input type="checkbox"/> No social media for a day	1	0	
<input type="checkbox"/> Take a power nap or quiet break (30 minutes maximum)	1	0	
<input type="checkbox"/> Incorporate and care for a plant into your work space	1	0	
<input type="checkbox"/> Spend 10 minutes writing down your worries then put it away	1	0	
<input type="checkbox"/> Write down 3 personal strengths or 3 things you're thankful for	1	0	
<input type="checkbox"/> Read a book instead of watching TV	1	0	
<input type="checkbox"/> Attend a lunch and learn	1	0	
<input type="checkbox"/> BONUS: Complete a lynda.com course	1	0	
NUTRITION TOTAL		0	
<input type="checkbox"/> Pack a lunch	1	0	
<input type="checkbox"/> Try a new healthy recipe	1	0	
<input type="checkbox"/> Complete a pantry purge	1	0	
<input type="checkbox"/> Replace coffee/energy drink/soft drink with water	1	0	
<input type="checkbox"/> Go a day without consuming refined sugar	1	0	
<input type="checkbox"/> Track your food consumption, calorie count, and sodium intake for one week	1	0	
<input type="checkbox"/> Make a homemade salad dressing (vinaigrette)	1	0	
<input type="checkbox"/> Replace your regular milk with skim and choose whole grain over white	1	0	
<input type="checkbox"/> Read all your food labels while grocery shopping	1	0	
<input type="checkbox"/> BONUS: Consult with a Registered Dietician (through Homewood Health)	1	0	
SOCIAL HEALTH TOTAL		0	
<input type="checkbox"/> Eat lunch with others	1	0	
<input type="checkbox"/> Call or write to family or a friend who you haven't spoken to in a while	1	0	
<input type="checkbox"/> Perform a random act of kindness to a stranger	1	0	
<input type="checkbox"/> Instead of email/text message, go speak in person	1	0	
<input type="checkbox"/> Go for dinner with family or friends	1	0	
<input type="checkbox"/> Join a shared interest group (e.g. intramurals, book club, etc.)	1	0	
<input type="checkbox"/> Give someone a sincere compliment	1	0	
<input type="checkbox"/> Take and treat a coworker to coffee	1	0	
<input type="checkbox"/> Put your phone away for the duration of a social outing	1	0	
<input type="checkbox"/> BONUS: Sign up and participate in a volunteer activity	1	0	
FINANCIAL TOTAL		0	
<input type="checkbox"/> Bring your own coffee and snacks instead of buying them	1	0	
<input type="checkbox"/> Go one day without spending money or use cash only for a day	1	0	
<input type="checkbox"/> Complete a financial wellness score	1	0	
<input type="checkbox"/> Download and regularly check your banking app to track your account	1	0	
<input type="checkbox"/> Set a budget and stick to it	1	0	
<input type="checkbox"/> Track your expenses for one week	1	0	
<input type="checkbox"/> Start a piggy bank for loose change	1	0	
<input type="checkbox"/> Meet a financial advisor or make a contribution to your savings	1	0	
<input type="checkbox"/> Start or contribute to an emergency fund	1	0	
<input type="checkbox"/> BONUS: Pay off your credit card in full and on time	1	0	

Instructions: Once you complete an activity, click the check box and change the multiplier to how many time you completed the activity in one day. For example, if you walked for 40 minutes, click "walk for 20 minutes" and change multiplier to 2. Complete a sheet daily for the duration of the challenge to retrieve your daily score. Record your overall total for the day and you can reuse the sheet for each day or use a new sheet.

Developed by University of Calgary, Nursing 289 group: Taylor Andrews, Ginny Crosby, Rebecca Griffing, Casey Jin, Sandy Ly, Monique Papworth, Katelynne Santos, Asha Timilsina, and Tam Truong Donnelly

Direction for Future Implementation of Challenges

We developed the following implementation recommendations based on the information collected during the literature review, environmental scan, key informant interviews, and results of our pilot study. We recommend the duration of a challenge to be four to six weeks during the spring season. Participation can either be individual or team based, with a scoring system where results are normalized to reflect fairness and remove potential bias of team size.

Suggested activities are to be completed on weekdays, with the exception of “bonus” activities. Where applicable, points can be compounded daily when participants complete an activity multiple times. Activities must be easily achievable to encourage participation and increase motivation to obtain higher scores as the challenge progresses. Based on our pilot study, we recommend an individual goal of 50 points per day.

Weekly totals can be displayed to increase motivation. Challenge facilitators increase participant motivation by hosting launch and wrap up events. The launch event should describe the challenge. The wrap up event should be focused on recognizing participants' efforts by giving prizes, reinforcing the benefits of challenge participation, encouraging continued engagement in healthy lifestyle changes, and celebrating participants' achievements. Extrinsic motivational tools such as prizes and participant recognition can also be used to increase motivation. Intrinsic motivation can be fostered through effective advertisement of the challenge, weekly email blasts encouraging continued participation, and increased awareness of the health benefits via distribution of the brochures.

Effective advertisement of the challenge should include email communications that are simplified, condensed, and that utilize intriguing subject headings, content, and imagery. Information should be posted on the WellBeing and WorkLife website that summarizes challenge benefits and how to participate, and faculty and staff should be directed to this resource for supplemental materials. Wellness committee members are also encouraged to promote the challenge by word of mouth to coworkers. Posters and brochures should be placed in faculty lounges and other common areas.

Limitations

We had three months to complete our project. We were unable to fully implement the challenge. However, we were able to get an idea of the challenge efficacy through our pilot study. The university's financial considerations were incorporated in creating the challenge. Direct recruitment of faculty and staff as key informants was not possible, therefore, we used a community liaison to communicate with the faculty and staff on behalf of our team. This limited the number and variety of key informants interviewed.

Conclusion

The purpose of this project was to collaborate with the University of Calgary's WellBeing and WorkLife portfolio to improve the overall health and wellbeing of faculty and staff. To identify community assets and needs, we assessed the community and examined the existing resources and potential barriers for implementing a holistic wellness challenge. The willingness of the University's current wellness committees to develop a challenge with Community Health Nursing students was a strength. Given the recent establishment of WellBeing and WorkLife, there is a strong emphasis on promoting workplace health and wellbeing for faculty and staff. However, few workplace challenges are currently available. Other areas for improvement include resolving barriers to implementation and mitigating low participation and high drop off.

Using the nursing process, the Population Health Promotion Model, and the Community as Partner Model, we developed an evidence based wellness challenge focused on engaging faculty and staff in various components of health (i.e., physical activity, exercise, mental health, social health, financial health, and nutrition). We created a self-tracking spreadsheet to support the implementation of our challenge and brochures that promote the benefits of health improvement, to increase engagement. We provided evidence-based recommendations for implementing the challenge, such as specific challenge parameters (i.e. time, location, participation, and structure), how to effectively advertise participation, and how to engage and motivate faculty and staff. We also provided recommendations for increasing institutional support, health awareness within the population, and utilization of available resources. Our research, community diagnoses, interventions, and recommendations, can be used to effectively implement a wellness challenge in the university environment or other workplace settings.

List of Abbreviations

AED: Automated external defibrillator
CasP: Community as Partner
GCC: Global Corporate Challenge
PHMP: Population Health Promotion Model
SEDoH: Socioecological Model Determinants of Health

Acknowledgements

We are grateful to the WellBeing and WorkLife Portfolio staff for the opportunity to work with them on our Community Health Report. Special acknowledgements to Jodie Jeworski, Manager of WellBeing and WorkLife, and Robbyn Hesch, Coordinator of WellBeing and WorkLife, for their contributions and support. Thank you to the Human Resources team, Jodie Jeworski, Robbyn Hesch, Katie Chapman, and Heather Barton-Browne for piloting our wellness challenge. Thank you to the nine key informants that provided us with the information we needed to enrich our project.

International Journal of Nursing Student Scholarship (IJNSS). Volume 6, 2019. Article # 32.
ISSN 2291-6679. This work is licensed under a Creative Commons Attribution Non Commercial 4.0 International License <http://creativecommons.org/licenses/bync/4.0/>

References

- Abbott, R. A., & Baun, W. B. (2015). The multi-dimensions of wellness: The vital role of terms and meanings. *American Journal Of Health Promotion, 29*(5), TAHP8-10.
- Baicker, K., Cutler, D., & Song, Z. (2010). Workplace wellness programs can generate savings. *Health Affairs, 29*(2), 304-311. doi:10.1377/hlthaff.2009.0626
- Burton, W. N., Schultz, A. B., Chen, C. Y., Edington, D. W. (2008). The association of worker productivity and mental health: A review of the literature. *International Journal of Workplace Health Management, 1*(2), 78-94. doi: 10.1108/17538350810893883
- Butler, C. E., Clark, B. R., Burlis, T. L., Castillo, J. C., & Racette, S. B. (2015). Physical activity for campus employees: A university worksite wellness program. *Journal of Physical Activity and Health, 12*(4), 470–476. doi: 10.1123/jpah.2013-0185
- Byrne, D. W., Goetzel, R. Z., McGown, P. W., Holmes, M. C., Beckowski, M. S., Tabrizi, M. J., ... Yarbrough, M. I. (2011). Seven-year trends in employee health habits from a comprehensive workplace health promotion program at Vanderbilt University. *Journal of Occupational and Environmental Medicine, 53*(12), 1372–1381. doi: 10.1097/JOM.0b013e318237a19c
- Cumming School of Medicine. (n.d.) 2016 Pedometer challenge: Let's get moving! Retrieved from <https://www.ucalgary.ca/woww/pedometer>
- Dalhousie University Health and Wellness. (n.d) . For faculty and staff: A holistic approach to health and wellness on campus. Retrieved from: https://www.dal.ca/campus_life/health-and-wellness/faculty-staff.html
- Dwyer, J. (1997). Using a program logic model that focuses on performance measurement to develop a program. *Canadian Journal of Public Health, 88*(6), 421–425.
- Epp, J. (1986). Achieving health for all: A framework for health promotion. *Canadian Journal of Public Health, 77*(6), 393–424.
- Hamilton, N., & Bhatti, T. (1996). Population health promotion: An integrated model of population health and health promotion. Ottawa, ON: Health Canada.
- Health and Wellness Vanderbilt Faculty and Staff. (n.d.) Retrieved from <http://healthandwellness.vanderbilt.edu/>
- International Journal of Nursing Student Scholarship (IJNSS). Volume 6, 2019. Article # 32. ISSN 2291-6679. This work is licensed under a Creative Commons Attribution Non Commercial 4.0 International License <http://creativecommons.org/licenses/bync/4.0/>

Institutional Analysis - U of C (n.d.). Fact Book 2015 - 2106. Retrieved from

<https://oia.ucalgary.ca/fact-books/fact-book-20142015#STUDSUM>

Joo, S.-H., & Grable, J. E. (2000). Improving employee productivity: The role of financial counseling and education. *Journal of Employment Counseling*, 37(1), 2–15.

<https://doi.org/10.1002/j.2161-1920.2000.tb01022.x>

Kaspin, L. C., Gorman, K. M., & Miller, R. M. (2013). Systematic review of employer-sponsored wellness strategies and their economic and health-related outcomes. *Population Health Management*, 16(1), 14–21. doi: 10.1089/pop.2012.0006

Kozier, B. J., Erb, G., Berman, A. T., Snyder, S., Buck, M., Yiu, L., et al. (2013). *Fundamentals of Canadian nursing: Concepts, process, and practice* (3rd Canadian Ed.). Toronto, ON: Pearson Education Canada.

Leininger, L. J., Adams, K. J., & DeBeliso, M. (2015). Differences in health promotion program participation, barriers and physical activity among faculty, staff and administration at a university worksite. *International Journal of Workplace Health Management*, 8(4), 246–255. doi: 10.1108/IJWHM-10-2014-0045

Lovato, C. Y., & Green, L. W. (1990). Maintaining employee participation in workplace health promotion programs. *Health Education Quarterly*, 17(1), 73–88.

MacDonald, N. E., & Davidson, S. (2000). The wellness program for medical faculty at the University of Ottawa: A work in progress. *CMAJ: Canadian Medical Association Journal*, 163(6), 735–738.

MacNiven, R., Engelen, L., Kacen, M. J., & Bauman, A. (2015). Does a corporate worksite physical activity program reach those who are inactive? Findings from an evaluation of the Global Corporate Challenge. *Health Promotion Journal of Australia*, 26(2), 142–145. doi: 10.1071/HE14033

McGill Human Resources Health and Wellbeing. (n.d.). Retrieved from

<https://www.mcgill.ca/hr/benefits/health-well-being>

McMaster University. (n.d.) Working at McMaster. Retrieved from

<http://www.workingatmcmaster.ca/index.php>

Merriam Webster. (2015). Merriam Webster. *Online Dictionary*. Retrieved from

<http://www.merriam-webster.com/dictionary/context>

International Journal of Nursing Student Scholarship (IJNSS). Volume 6, 2019. Article # 32.

ISSN 2291-6679. This work is licensed under a Creative Commons Attribution Non Commercial 4.0

International License <http://creativecommons.org/licenses/bync/4.0/>

Merrill, R. M., & Hull, J. D. (2013). Factors associated with participation in and benefits of a worksite wellness program. *Population Health Management, 16*(4), 221–226. doi: 10.1089/pop.2012.0064

Molteni, R., Barnard, R. J., Ying, Z., Roberts, C. K., & Gómez-Pinilla, F. (2002). A high-fat, refined sugar diet reduces hippocampal brain-derived neurotrophic factor, neuronal plasticity, and learning. *Neuroscience, 112*(4), 803–814. [https://doi.org/10.1016/S0306-4522\(02\)00123-9](https://doi.org/10.1016/S0306-4522(02)00123-9)

Norman, G. J., Heltemes, K. J., & Drew, J. (2014). Examining incentive design strategies for worksite wellness program engagement. *Population Health Management, 17*(6), 324–331. doi: 10.1089/pop.2014.0008

Plotnikoff, R., Collins, C. E., Williams, R., Germov, J., & Callister, R. (2015). Effectiveness of interventions targeting health behaviors in university and college staff: A systematic review. *American Journal Of Health Promotion, 29*(5), 169-87. doi:10.4278/ajhp.130619-LIT-313

Queens' University Human Resources. (n.d.) Retrieved from <http://www.queensu.ca/humanresources/wellness-and-accessibility>

Roberts, T. L. (2014). Worksite wellness culture: An assessment of the needs and interests of the faculty and staff of a mid-western state university. *North Dakota State University*. Retrieved from <https://library.ndsu.edu/ir/handle/10365/27444>

Samuel, K. (2016). 7 steps to a payback on workplace wellbeing initiatives. *Occupational Health & Wellbeing, 68*(10), 16-17.

Seeman, T.E (1996). Social ties and health: The benefits of social integration. *Annals of Epidemiology, 6*(5), 442-451. doi:10.1016/S1047-2797(96)00095-6,

Shapiro, V., & Moseley, K. (2013). The real value of wellness programs: A comprehensive review of the literature. *Population Health Management, 16*(4), 283–284. doi: 10.1089/pop.2013.1641

Shephard, R. J. (1996). Worksite fitness and exercise programs: A review of methodology and health impact. *American Journal of Health Promotion, 10*(6), 436-452. doi: 10.4278/0890-1171-10.6.436

Stamler, L., Yiu, L., & Dosani, A. (2016). *Community health nursing: A Canadian perspective* (4th ed.). Toronto, Ontario: Pearson Canada.

Taylor-Powell, E., & Henert, E. (2008). Developing a logic model: Teaching and training guide [Internet]. Available from:

<http://www.uwex.edu/ces/pdande/evaluation/pdf/lmguidecomplete.pdf>

The City of Calgary. (2014). University of Calgary profile. Retrieved February 1, 2017, From

<http://www.calgary.ca/CSPS/CNS/Pages/Social-research-policy-and-resources/Community-profiles/University-of-Calgary-Profile.aspx>

Times Higher Education. (2016). Times Higher Education World University Rankings.

Retrieved from <https://www.timeshighereducation.com/world-university-rankings>

Touger-Decker, R., O'Sullivan-Maillet, J., Byham-Gray, L., & Stoler, F. (2008). Wellness in the workplace: A 12-week wellness program in an academic health sciences university.

Topics In Clinical Nutrition, 23(3), 244-251.

U15 (n.d.). U15 Group of Canadian Research Universities. Retrieved from <http://u15.ca/>

University of Alberta (U of A) (n.d.) University of Alberta Human Resource Services Health and

Wellbeing. Retrieved from <https://www.ualberta.ca/faculty-and-staff/health-wellbeing>

University of British Columbia (UBC) (n.d.). UBC Human Resources Workplace Wellbeing &

Benefits. Retrieved from <http://www.hr.ubc.ca/wellbeing-benefits/>

University of Calgary, Faculty of Nursing. (2016). *NURS 289: Integrating Nursing Roles and Practices I Course Syllabus*. Calgary, Canada: Author.

University of Calgary. (n.d.). University of Calgary Wellbeing and WorkLife. Retrieved from

<http://www.ucalgary.ca/wellbeing/>

Vollman, A. R., Anderson, E. T., & McFarlane, J. (2012). *Canadian community as partner:*

Theory & multidisciplinary practice (3rd ed.). Philadelphia: Wolters Kluwer Health/Lippincott, Williams & Wilkins.

Vanderbilt University. (n.d.) Health and Wellness Vanderbilt Faculty and Staff. Retrieved from

<https://healthandwellness.vanderbilt.edu/>

World Health Organization. Constitution of the World Health Organization [Internet]. (1995).

Available from: http://apps.who.int/iris/bitstream/10665/121457/1/em_rc42_cwho_en.pdf

Zoller, H. M. (2004). Manufacturing health: Employee perspectives on problematic outcomes in a workplace health promotion initiative. *Western Journal of Communication*, 68(3), 278–301. doi: 10.1080/10570310409374802

International Journal of Nursing Student Scholarship (IJNSS). Volume 6, 2019. Article # 32.

ISSN 2291-6679. This work is licensed under a Creative Commons Attribution Non Commercial 4.0

International License <http://creativecommons.org/licenses/bync/4.0/>