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**Implementation of a Biometric Screening Program and Wellness Coaching Program in a
Hospital Employee Wellness Center**

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May 14, 2023

Submitted in Partial Fulfillment of the Requirements for the Doctor of Nursing Practice Degree

Project Committee

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Abstract

Background: Wellness programs are an emerging priority among organizations concerned about employee wellness and productivity. Data from Long Island Jewish Medical Center (LIJMC) revealed that in 2019 there were 1,690 employee visits to the ER due to chronic diseases; 30% were classified as ER sick visit and 40% of employees who visited the ER had no primary care provider. Many companies use biometric screening and health risk assessment to measure the health of their employees. The purpose of this improvement project was to implement a biometric screening program (BSP) that included wellness coaching to improve the health outcomes of LIJMC employees.

Methods: Employees with known adverse biomarkers were invited to participate in the 12-week BSP program. Participants engaged in a baseline and exit assessment and six scheduled visits for wellness coaching. **Evaluation:** Biometric values (A1c, total cholesterol, systolic BP, BMI) and VPRA were compared pre (baseline) and post (12 weeks) to assess change and percent improvement. SES and CSQ scores were assessed pre and post program to assess participant and staff satisfaction with BSP program.

Results: Pre-and post- mean biometric values demonstrated reductions in A1c (\downarrow 3.74%; goal \downarrow 2%), systolic BP (\downarrow 11 mmHg; goal \downarrow 10 mm Hg reduction), and BMI (\downarrow 1.59%; goal \downarrow 5%). Pre/post measure of TC did not improve (\uparrow 0.62%; goal \downarrow 5%). VPRA scores improved 10.22% at the end of 12 weeks. The VPRA pre heart score of 55 years old showed a reduced post heart score of 51 years old. The SES score shifted from an average pre-SES (92%) to average post-SES (98%). Overall, CSQ satisfaction scale scores indicated that 69% of participants rated the program as “excellent” and 31% reported it was “good”.

Conclusion: Implementation of a biometric screening and wellness coaching program in an employee wellness program demonstrated improvements in most biomarkers as well as increased self-awareness and satisfaction. Results highlight the importance of biometric screening and wellness coaching to mitigate the epidemic of chronic diseases.

Keywords: wellness programs, biometric screening

Introduction

Employee wellness programs are designed to promote healthy practices of employees and contribute to the work culture of the company (Melnyk et al.,2018). Many industries, including Long Island Jewish Medical Center (LIJMC) in New York, have initiated employee wellness programs that focus on the health and well-being of their employees. A hospital-wide survey revealed the need of an outpatient urgent care and wellness center inside the hospital for employees. LIJMC launched *my Wellness Center* in June 2020 in response to the identified need to provide outpatient urgent care and wellness programming for employees. This pilot program has been a great success in terms of providing urgent care and wellness programming, however one limitation was that there was no mechanism in place to identify and treat employees at high risk for chronic illness.

In 2018, absenteeism and other illness- related employee conditions cost U.S. employers an estimated 530 billion dollars per year. The combined cost of employee health care benefits, in addition to other benefits such as family medical leave, workers compensation, and lost productivity due to illness related conditions has been estimated to represent a loss to US employers of 1.4 billion days of absence a year (Integrated Benefits Institute [IBS], 2018). These findings demonstrate the need for improved, integrated health strategies that include a focus on identifying employees at risk for chronic health conditions and strategies for promoting wellness and preventing disease.

Description of the Problem

Employee wellness is a vital component for the success of any organization. According to National Wellness Institute, “wellness is considered an active process through which people become aware of and make choices toward a more successful existence “(National Wellness

Institute, 2023). Wellness is seen as a conscious self-directed evolving process of achieving full potential; a multidimensional and holistic encompassing lifestyle including mental and spiritual well-being; and is positive and affirming (World Health Organization, 2015). In this context, wellness is important to overall employee success and satisfaction. In addition, wellness is important because it can influence productivity, staff satisfaction, turnover rates and most importantly the health outcomes of the employees (Long et al., 2016). Offering an employee wellness program is one trend in employer-based initiatives found in financially stable organizations (Lin Fu et al.,2016). Such programs can help to decrease the cost of providing health care and improve employee productivity (Baicker et al., 2010; Bezzina et al., 2021; Long et al., 2016;Song & Baicker, 2019).

The goal of employee wellness programs is to promote wellness with a focus on healthy lifestyles and to prevent chronic disease utilizing motivational approaches. In 2009, 58% of US employers offered a wellness program (Lin Fu et al., 2016). In 2010, employee participation in employer-based wellness programs increased from 19% to 22% (Lin Fu et al., 2016). Employer trends over the past 10 years indicate that there is increased participation in wellness programs among the top 100 companies in the U.S. especially in the health care industry (Lin Fu et al., 2016) (Breux-Shropshire et al., 2014; Harris et al., 2021)

Local Problem

Employee wellness is a priority issue at Long Island Jewish Medical Center. In 2019, 1,690 employees at LIJMC visited the emergency room (Northwell LIJ data, 2019). Data from these emergency room visits revealed that 30% of sick calls at work were related to chronic diseases such as diabetes, hypertension, hyperlipidemia, and essential hypertriglyceridemia. Of those employees who visited the emergency room, 40% of the employees had not seen a primary

care provider to manage or screen for these chronic diseases. The large number of employees calling out sick has negatively impacted the work environment at LIHMC by increasing the workload of other employees, lowering the morale of the staff, and decreasing job productivity. Additionally, the low morale of staff and burden of an increased workload, especially in the hospital setting often translates to a different quality of care provided to patients. High patient ratios have been shown to affect the delivery of patient care, length of patient stay, employee satisfaction and patient satisfaction (Zivin et al., 2017).

Given the potential importance of an employee's health and wellness program to both employees and the institution, and to address the burden of an increased volume of sick calls, LIJMC created an initial pilot program that offered urgent care and wellness activities such as a hiking club to its employees. While this was an important first step, it became apparent that this employee wellness program was missing a piece because it did not identify or focus on preventive care for employees at high risk for chronic illness and who frequently present in the emergency room. To address this need, the aim of this improvement project was to implement a biometric screening program to identify employees at greatest risk for chronic conditions and to increase utilization of the wellness coaching service offered at the Wellness Center.

Available Knowledge

To identify the evidence-based strategies that have the most impact on the health outcomes among employees, a Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guided literature search was conducted in Spring 2020. After the initial search of the literature focused on wellness programs, there were 277 articles from CINAHL and 253 from other sources. Out of 530 articles, 24 were selected for full text review and then 10 were excluded after thorough examination. Of the 14 remaining articles, four were further

excluded for the following reasons: the topic was geared toward the employer strategy, the article was published outside a 12-year span, the articles concerned topics unrelated to the topic of interest, and the outcome did not benefit the employees. See Appendix A for an overview of the final 10 studies that were selected. After a thorough examination of the study interventions, common types of interventions were grouped into the following three categories: health engagement and biometric screening, team and individual wellness management and wellness behavior approach.

Of these three categories, engaging employees through a health engagement and biometric screening program was found to be a promising multifactorial intervention to improve employee health and wellness (Long et al.,206, Lin et al.,2016, Misher et al.,2019 & Neville et al.,2011). An intervention such as this includes coaching, and online personal health assessment and health action planning (Adam et al., 2016; Neville et al., 2011). Biometric screening entails the assessment and measurement of biometric markers such as body mass index (BMI), glycosylated hemoglobin A1C, total cholesterol, and blood pressure (BP) screening.

Effective recruitment and engagement strategies were found to be key factors in the success of wellness programs. Some studies revealed that employees were offered health insurance premium discounts if they volunteered for the biometric screening program (Lin Fu et al., 2016). Other studies arranged biometric screening through a pharmacy managed by the employer-sponsored wellness program that resulted in a reduction of BP and lipid levels of the employees and their spouses (Misher et al., 2019). Having a wellness program managed by a pharmacy was also found to be an effective strategy for the convenience of compliance, ordering and refilling medication.

The wellness management programs reviewed used both an individual or team approach and a variety of formats and lengths including: (a) a 12-week lifestyle management intervention focusing on health and weight management through diet and exercise (Touger-Decker et al., 2008) (b) a 5-month intervention comprised of activities at a team and individual level such as kick-off session, vitality training session, workshop, or coaching session (Hendriksen et al., 2016) and (c) a comprehensive wellness program encompassing biometric, behavior, and educational modules (Lowensteyn et al., 2019).

The wellness behavior approaches reviewed embraced a variety of wellness modalities including walking, resistance training, and exercise to augment change of behavior. Some companies utilized administrative planning, cultural evaluation, baseline behavior, biometric evaluation, and strategies to improve communication and behavior (LeCheminant et al., 2017). Other behavioral programs added stress reduction, and the use of dietary planning to physical activity (Song and Baicker et al., 2019). Another wellness behavior approach used was an internet-mediated pedometer and weight loss program for a lifestyle-based change intervention. (Zivin et al., 2016).

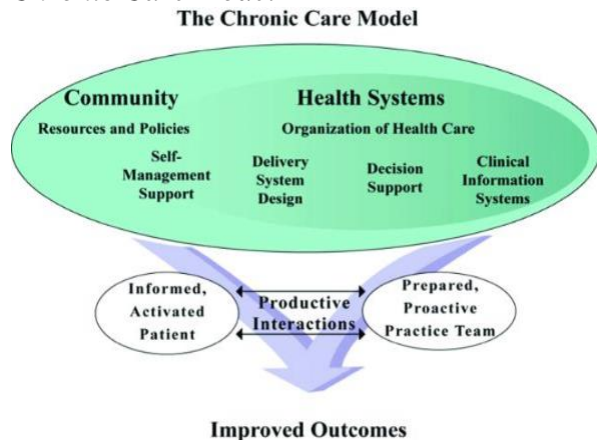
The most promising of the evidence reviewed included a national survey of institutions with 5000 or more employees, which reported that 72% of the institutions surveyed had programs in place that offered health risk assessments and biometric screening to their employees (Sherman & Addy, 2018). Such employer-sponsored health campaigns and screenings have helped identify individuals with previously unappreciated abnormal biometric values. Identifying individuals at risk serves as a basis for health improvement efforts and has provided a convenient mechanism for individuals to engage in dialogue with their clinician.

Based on the evidence reviewed and the best fit with the project site's need, a biometric screening program and health engagement through wellness coaching was chosen as the intervention to be implemented into the *my Wellness Center* at LIJMC.

Rationale

This quality improvement project was guided by the Chronic Care Model (Wagner, 1998) (See Figure 1). The Chronic Care Model (CCM) examines the partnership between the individual and the clinician and is focused on improving health care for people with chronic health conditions such as diabetes, hypertension, heart failure, and back pain (Nelson et al., 2011). The goal of the CCM is to deliver care in a way that supports informed, activated patients and a prepared, proactive practice team, and was applied to this project to improve health outcomes by screening and engaging motivated employees through self-management support.

The biometric screening and wellness coaching program (BMS) implemented in this project incorporated two major concepts from the Chronic Care Model (patient self-management and clinical decision support) to improve the health outcomes of employees with chronic diseases (See figure 1). The BMS program was designed to identify participants adverse biometric values namely elevations in A1c, lipids, blood pressure, weight, and body mass index (BMI) as the basis for health improvement. A key goal of the program was to promote participant self-efficacy primarily through prescribed techniques of social persuasion and reinterpretation of behavior, and health education during the 12-week period. If an employee has increased self-efficacy, this potentially influences the choices one makes toward self-improvement and self-management and can predict improved health outcomes (Bodenheimer et al., 2020).

Figure 1*Chronic Care Model*

Key: Source: Wagner, E.H. Chronic disease management: What will it take to improve for chronic illness? Effective Clinical Practice, August 1998, 1(1), 22-24

In addition, this project also employed the principles from Lorig's Chronic Disease Self-Management Model (CDSM). Lorig's self-management model promotes patient-professional collaboration as a means of encouraging self-care and family care. The Lorig's CDSM model also emphasizes self-efficacy theory which asserts that one's confidence in achieving a desired behavior predicts the level of success that will be achieved (Nelson et al., 2011). Derived from Bandura's Social Cognitive Theory, the concept of self-efficacy represents a person's belief in their capabilities to perform a given behavior by past mastery experiences, social modeling, social persuasion, and perception of one's emotional and physiological state (Bandura, 1977). Principles drawn from the chronic care model, the chronic disease self-management model and self-efficacy theory provided the theoretical framework that guided this quality improvement (QI) project at the *my Wellness Center*.

Specific Aims

The purpose of the proposed QI project was to improve employee health and wellness outcomes at LIJMC. The overarching aim was to develop, implement and evaluate a biometric

screening program and link employees to health coaching and resources within the existing *my Wellness Center* at LIJMC. The specific aims of the project were as follows:

1. Identify at least 50 employees who visited *my Wellness Urgent care center* with elevated biomarkers for chronic disease risk including: hemoglobin A1c $\geq 5.7\%$, total cholesterol ≥ 200 mg/dl, systolic blood pressure ≥ 130 mmHg, and BMI ≥ 25 ; and who were not on medications to control diabetes, cholesterol, hypertension, or weight.
2. Of the 50 employees with identified elevated biomarkers, enroll at least 25% to join the biometric screening program, attend 6 visits during the 12- week program and utilize the recommended wellness modalities.
3. Reduce abnormal values of A1C by 2%, TC by 5%, systolic BP by 10 mm Hg, and BMI by 5% from baseline (1st week) to post-program (12-weeks).5. LIJ employee participants and program staff will be satisfied with the LIJ BSP.
4. Increase participant's awareness and self-efficacy pre/post program participation.
5. Participants and staff will be satisfied with the program.

Methods

Context

Northwell Health is a parent program of the Long Island Jewish Medical Center (LIJMC) and is one of the largest health systems in New York State, particularly in boroughs of New York City. As part of its commitment to employee health, the Northwell Health System created its first wellness center at LIJMC entitled *my Wellness Center*. The center opened on June 15, 2020, in New York City and is composed of an Urgent Care Center and Employee Health Service. The urgent care component provides episodic care for employees every Monday, Tuesday, and

Thursday from 7:00 am to 7:00 pm. The Employee Health Service is open every Wednesday and Fridays from 9:30 am to 2:30 pm and provides specific services such as annual employee health assessments, TB/ PPD testing and respiratory fit testing as part of corporate compliance.

In addition to episodic care, the urgent care center provides outpatient services such as routine blood work, pre-op blood tests, titers for school requirement, and treatment for common episodic conditions such as complains of urinary tract infection, rashes, sore throat, knee pain, abdominal pain, body fluid exposure, workplace accidents and other outpatient care. In addition, the urgent care center makes referrals for diagnostic studies such as X-ray, ultrasound, CT scan and MRI which can be performed at the hospital. The *my Wellness Urgent Care Center* is also accredited to perform vision eye exams that meet the requirements for the New York State Department of Motor Vehicle and refers employees as needed to medical specialists and primary care providers.

The *my Wellness Center* is designed to provide a one-stop shopping experience for employees who want to improve their health outcomes. The center is located on the main floor of the hospital across from the outpatient pharmacy and thus is convenient for employees, especially after work, because they can make either a scheduled or walk-in appointment. Prescriptions can be easily filled in the pharmacy and tests can be ordered as needed on site. As a pilot program at LIJMC, *my Wellness Urgent Care Center* is staffed with two medical office assistants, two access service representatives, and one nurse practitioner. Like most outpatient clinics, in order to receive services, an employee needs to have health insurance to pay for the episodic visit.

The clinic has a comfortable reception area, four exam rooms, one laboratory room, one consult/office room, one medication room with pyxis, a soiled utility area, and a staff lounge.

The Employee Health Services (EHS) component is staffed by EHS personnel who come to *my Wellness Center* on their regularly planned Wednesday and Friday schedule. However, unlike urgent care, employee encounters with Employee Health Services does not require health insurance.

A Clinical Microsystem map was developed to assist the team to visualize the flow and key processes in *my Wellness Center* (see Appendix E. External mapping). The external mapping demonstrated the abundance of resources of the clinical microsystem (*my Wellness Center*) to increase employee awareness of their biometric markers. The anatomy of clinical Microsystem (see Appendix B) highlighted the project's 5 P's namely purpose, patient, professional, process and pattern. This tool offered a systematic assessment of the clinical microsystem (*my Wellness Center*) to formulate recommendations and the improvement plan to be initiated in this QI project.

A Fishbone Cause and Effect diagram was developed to help team members brainstorm the factors associated with elevated biomarkers in LIJMC employees (see Appendix C). The members of the LIJ BSP QI project identified several factors that increased the risk profile of employees. These risk factors included employees who had no health insurance, those who did not have primary care providers, availability of staff who worked long shifts to meet with their primary providers, no BP machines or glucometers, no available program to screen staff for biomarkers, as well as poor employee literacy regarding their health care needs. Each of these factors was taken into consideration during the planning phase for the biometric screening and wellness coaching intervention implemented in this improvement project.

The development of a Force Field Analysis enabled project staff to identify and continually assess the driving factors and restraining factors which could influence the successful

implementation of the LIJ BSP project (see Appendix D). This QI tool provided a structured approach to decision making which helped the project to consider those forces that drive or resist successful implementation of the biometric screening program and wellness coaching program. The support of senior leadership of *my Wellness center* was one of the strongest driving forces of the QI project.

On the other hand, a persistent restraining factor that caused the delay of the project was union concerns over billable costs for the project. The hospital employee population consisted of union and non-union members. The union members were initially not allowed to do biometric screening through *my Wellness Urgent Care Center* due to high reimbursement billing from urgent care. Instead, union members were instructed to go to their primary care providers. However, some union members don't have any primary care providers and used *my Wellness Urgent Care* for their primary care needs due to accessibility and availability of the center inside the hospital premises. In the end, it was ultimately determined that the decision would be left to the union members to decide if they would like to join the project. All 13 participants were union members and used their individual insurance to join the project.

Intervention

The LIJ BSP project implemented a 12-week biometric screening and wellness coaching for LIJ employees with known elevated biometric markers including glycosylated hemoglobin $A1c \geq 5.7\%$, total cholesterol (TC) ≥ 200 mg/dl, systolic blood pressure (BP) ≥ 130 mmHg, and body mass index (BMI) ≥ 25 . Employees who had visited *my Wellness Center Urgent Care* at some point and had elevated biomarkers in their medical records were invited to enroll in the 12-week program.

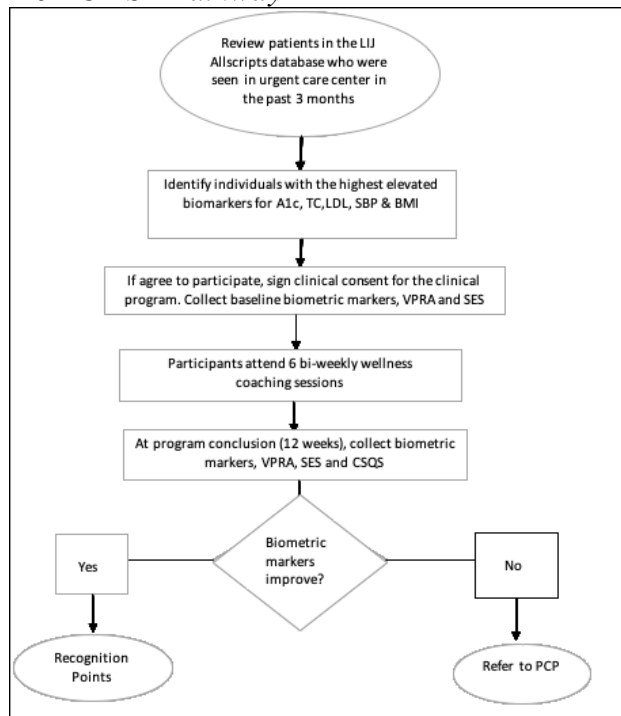
A Logic Model (Appendix F) was created and guided the project with regard to its resources, activities, output, and its outcomes.

Description of the Intervention

The project implemented a 12-week, bi-weekly health prevention program including biometric screening and wellness coaching for employees of the hospital with known cardiometabolic risk factors but who did not have established disease and were not on any cardiometabolic medications. The program was embedded in the *my Wellness Center* facility. The focus of the LIJ BSP QI project was to increase employee awareness of important clinical indicators (biometric values), identify their individual risk factors for chronic cardiometabolic diseases and link the employee with wellness resources.

As illustrated in Figure 2, participants were drawn from employees who had been seen in *my Wellness urgent care center* during the three-month period encompassing (November 1, 2021, to January 30, 2022). Three hundred individuals were identified who were seen during that time and the database was searched for individuals who had elevated biomarkers including hemoglobin A1c $\geq 5.7\%$, total cholesterol ≥ 200 mg/dl, systolic blood pressure ≥ 130 mmHg and BMI ≥ 25 , and were not on medications to control diabetes, cholesterol, hypertension, or weight. Of those employees who were noted to have elevated biomarkers, 50 individuals at highest risk (those with the most elevated biomarkers) were invited to join the biometric screening and wellness coaching program.

The project team leader called these individuals and discussed the goals of the projects and expectations of the participants.

Figure 2*LIJMC BSP Pathway*

Key. VPRA= virgin pulse risk assessment score, SES= self-efficacy score, CSQS= customer satisfaction questionnaire score, PCP=primary care provider

If the employee agreed to participate, they signed a clinical consent and were given the specifics of the 12-week bi-weekly program. At the first visit, as delineated in Table 1, participants were oriented to the program, vital signs including blood pressure, weight and height were obtained. BMI was calculated and baseline markers including fasting A1c, and lipids were ordered. In addition, the Virgin Pulse Risk Assessment tool (VPRA) and Self- efficacy tool were completed. Participants completed registration in the program, received a hiking trail map and were given instructions for how to register to use the employee gym.

The Virgin Pulse Risk Assessment as shown in Appendix J is an online health risk assessment with 79 questions covering biometric lab values, as well as health characteristics, and behaviors including sleeping habits, alcohol, mental awareness, and well-being. Participants register on Virgin Pulse website and enter their data, from which a VPRA score including a

Lifestyle Score and Heart Age is generated (Virgin pulse risk assessment, 2004). The Lifestyle Score has a possible total score of 650. Higher scores indicate higher health status. In addition, VPRA generates a *heart age*, which adjusts the respondent's chronological age (birth age) based on the respondent's health status and comorbidities. For example, the respondent could report being 65 years of age, but the tool could report their *heart age* as 70 based on unhealthy lifestyle behaviors and adverse biomarkers.

Participants in the LIJMC BSP completed the VPRA during the week 1 baseline assessment. Questions required them to reflect on and report information related to the components of daily food intake, energy activity, mental health, sleeping habits and body health and to enter the results of their baseline biomarkers including weight, blood pressure, A1c, and lipids (TC). Once all of participants information was entered into the tool, a VPRA score, and Heart Age score was generated against their real age. Participants completed this online assessment at the baseline visit (week 1) and the conclusion of the program (week 12). Comparing the results pre and post program allowed the participant to assess their progress toward their health goals.

Participants in the LIJMC BSP program also completed a self-efficacy assessment (see Appendix H). Each question on the tool assessed the respondents' belief that they can achieve their goals, despite whatever difficulties they may encounter (Chen, Gully & Eden, 2004). The tool has 8 items and uses a 5-point Likert scale with the selection of 1 indicating strongly disagree and 5 indicating strongly agree. The total score is calculated based on the aggregated mean for each question. Participants completed this tool at baseline (week 1) and at program end (12 weeks) to assess improvement in self-efficacy so that they can carry out the health goals they set for themselves in the program.

Each participant in the LIJMC BSP had a folder containing their laboratory results, signed LIJMC BSP clinical consent form, completed pre-self-efficacy scale (SES) and VPRA and a BSP tracking sheet. The BSP tracking sheet captured attendance for wellness coaching, bi-weekly weights, and vital signs for each of the six visits over the duration of the 12-week program.

At the first session participants were oriented to the schedule for the six Wellness coaching sessions as shown in Table 1. Department head managers were informed about the employee's participation and were given reminders through email of the bi-weekly schedule of Wellness coaching. Participants had their weight and blood pressure measured at each visit by the staff of *my Wellness Urgent Care* and then participants attended the scheduled wellness coaching portion of the session. Participants' weights and vital signs were entered on the LIJMC BSP tracking sheet and in the All-Script electronic health records (AEHR) that was utilized in *my Wellness Urgent Care center*. The Wellness Coaching content was facilitated by certified Wellness coaches and was conducted in the *my Wellness Center* facility. At the start of each wellness coaching session participants reviewed their BP, weight, calculated BMI and clinical lab values as a way of improving health literacy and patients understanding of their health goals. Participants were divided into two groups due to limited space in *my Wellness Center* and to accommodate COVID protocol. Each bi-weekly wellness coaching session lasted for 30 minutes starting with review of individual data and then followed with wellness content as outlined in Table 1. The wellness coaching sessions had different themes that were tailored to help the participants improve their health risk factors. On their scheduled wellness coaching days, participants received a reminder via text on WhatsApp. Attendance was checked every 2 weeks for adherence with attending the wellness coaching session. Educational handouts were

distributed at the end of every wellness coaching. Each participant was given a LIJMC BSP trend report of the biometric markers including the bi-weekly blood pressure and weight measurement.

Table 1

Program Overview

Week	Coaching Theme	Challenge	Target
1	Welcome/ Relationship Building Discuss 1 st blood tests Sign up for wellness modalities Register Virgin Pulse	Orientation to gym, hiking trail Health risk assessment	Goal Setting Goal Setting Social Persuasion/ Self Efficacy Mastery/Self Efficacy
2	Review program goals/barriers Identify healthy choices	Detective challenge Dietary talk	Planning Modeling/Self efficacy
4	Identify favorite physical activity Stress management	Update steps challenge Medication with Holistic RN	Resilience Self-Efficacy
6	Self-talk review. Restructuring negative thoughts	Wellness mentor walk	Social Support
8	Reflection on achievement	Meditation challenge What would you like to accomplish on remaining 4 weeks	Efficacy
10	Discuss dynamics of behavior change	Self-assessment	Self-Efficacy
12	Draw blood tests in 12 weeks Review goals	What's next? Healthy potluck	Self-efficacy Goal setting/ planning

At the end of the 12-week program, participants scheduled their 12-week fasting blood draw. They also completed the post Virgin Pulse Risk Assessment and Self-Efficacy assessment. At the completion of the 12-week program, there was a healthy potluck to celebrate participants' success. All participants who completed the program were given 1000 recognition points on their

LIJMC wellness credits. These recognition points could be combined with other hospital sponsored recognition points and used for online hospital purchases such as apple products and hospital brand items. In addition, each participant who completed the program was awarded a Certificate of Completion, which was individually handed to participants by the Senior Leadership of *my Wellness Center*.

Employee participants who did not achieve improvement in their biometric markers over the course of the program were referred to primary care for further evaluation and consideration for medication management as a complement to lifestyle modalities.

Evaluation of the Intervention

The overall aim of this QI project was to develop, implement and evaluate a biometric screening program embedded into the hospital *my Wellness Center*. Successful implementation was evaluated based on attainment of the specific aims enumerated in Table 2. In addition to the biometric markers, the project collected anecdotal data drawn from meeting minutes and project logs related to developing the project and hospital approval during implementing the biometric screening program. Table 2 enumerates the measures that were used to evaluate the project.

Table 2

Measures Table

Outcomes	Measurement
Utilization of LIJ BSP project as biometric screening	Identify 50 employees with elevated biomarkers. Enroll at least 25% of 50 employees to join BSP. Track employees to complete 12-week program
Utilization of wellness coaching & other modalities such as use of gym, hiking trail, dietary choices	Track number of employees engaged in wellness coaching & wellness modalities
Hemoglobin A1c: Goal to reduce 2%	Track levels of A1c at week 1 and week 12 A, compare pre/post

TC: Goal to reduce by 5%	Track TC at week 1 and week 12, compare pre/post
Systolic BP: Goal to reduce by 10 mmHg	Track systolic BP at week 1 and week 12, compare pre/post
BMI: Goal to reduce by 5%	Track BMI at week 1 and week 12, compare pre/post
Increased awareness and self-efficacy	Pre- and Post-Self Efficacy scale (Chen et al.;2004); compare pre/post
Staff satisfaction of LIJ BSP	Survey questions containing 4 standard questions
Employee satisfaction of LIJ BSP	Client Satisfaction Questionnaire Scale by Larsen et al. (1979)

Key. A1c=glycosylated hemoglobin A1c; TC=total cholesterol; HDL=high density lipoprotein; BMI=body mass index;

The first specific aim was to identify at least 50 employees who visited *my Wellness Center Urgent Center* with elevated risk factors for diabetes ($A1c \geq 5.7\%$), cholesterol ($TC \geq 200$ mg/dl), hypertension (systolic BP ≥ 130 mmHg), and overweight/obesity ($BMI \geq 25$) based on the pool of patient's data from *my Wellness Center Urgent Care*. The All-Script database was used to identify employees who had received care in *my Wellness Center Urgent Care* during a three-month period and had documented elevated biomarkers. A search of the database revealed 300 employees with elevated biometric markers. From this list, 50 individuals were identified who had the highest biomarkers.

The second specific aim was that of the 50 employees with identified elevated biometric markers, at least 25% would enroll in the biometric screening program, attend the 6 visits of the 12-week program and utilize some of the recommended wellness modalities. A tracking tool was developed which tracked the number of eligible individuals ($n=50$), the number that enrolled in the BSP program, the number that attended the six scheduled wellness coaching sessions, and the utilization of wellness modalities. Frequencies and proportions were used to report the outcomes for this aim.

The third specific aim set goals for each biometric marker. Specifically, the goal was to reduce fasting levels of serum HbA1c by 2%, TC by 5%, systolic BP by 10 mm Hg, and BMI by 5%. Pre – post program measures (baseline and 12-weeks) were compared, and a change score and percent improvement were calculated.

The fourth specific aim, to increase participants' awareness and self-efficacy, was evaluated using a self-efficacy instrument. A self-efficacy scale developed by Chen, Gully, and Eden (2004) was used because compared to Bandura (Bandura, 1977) it is a shorter scale with higher construct validity. The tool has eight items scored on a 5-point Likert scale ranging from (1=strongly disagree to 5=strongly agree). A total score based on a mean of the 8 items was calculated. Each participant completed the pre (baseline) and post (12-weeks) self-efficacy scale evaluation (see Appendix H). Mean, range, change and percent improvement were calculated.

The fifth specific aim, LIJMC employee participants and program staff will be satisfied with the LIJ BSP, was measured by surveying the employee participants and the *my Wellness Urgent Care Center* staff. To measure the satisfaction of program participants (clients) who were employees of the hospital, the project employed the Client Satisfaction Questionnaire (CSQ) (Larsen et al., 1979). The CSQ has been validated in studies assessing smoking cessation programs and validated as a useful measure of general satisfaction with a service. The tool has 8 items and utilizes a 4-point Likert scale. For questions 1, and 7, the responses “very satisfied and mostly satisfied” were combined to indicate a positive experience (“satisfied”) while the categories of “mildly satisfied and quite satisfied” were combined to reflect a less positive experience (“not satisfied”). For questions 2, 4, 6 and 8, the responses “no, definitely not, and no, not really” was coded as “not really” and the answers of “yes, generally, and yes, definitely”

coded as “definitely”. Frequencies and proportions were used to report the outcomes for this aim. The CSQ scale as shown in Appendix I was completed at the end of the 12-week program. Staff satisfaction with the LIJMC BSP was assessed using a survey method with four standard questions as shown in Appendix J. The survey consisted of open-ended questions and addressed the project format and process including things that worked well, areas for improvement, and changes that could lead to improvement. Common themes were identified and used to report the outcomes for this aim. The survey of staff satisfaction was given to the staff of *my Wellness Center* and employee participants of LIJ BSP.

Ethical Considerations

As noted in the UMass Boston Clinical Quality Improvement Checklist, Appendix G, the project followed established techniques used in quality improvement. The LIJMC BSP was a quality improvement project and did not meet the definition of human subjects’ research because it was not designed to generate generalizable findings. Rather, it was designed to provide immediate and continuous feedback for the improvement of employee health and wellness in the local setting in which the project was carried out. The University of Massachusetts Boston IRB has determined that quality improvement projects do not need to be reviewed by the IRB.

The QI project was presented to the Quality Improvement / Quality Control Department of Long Island Jewish Hospital and was approved as a quality improvement project conducted in *my Wellness Center*. Meeting ethical standards is a core value of the DNP program at the University of Massachusetts Boston and the Long Island Jewish Hospital.

Results

LIJMC BSP Participants

Demographic Characteristics

The LIJMC BSP project enrolled participants from the *my Wellness Center* who were employees seen at the *my Wellness Urgent Care Center* and who had existing risk factors (elevated biomarkers) for cardiometabolic disease. Using the Allscripts database the project lead screened three months of potential participants (n=300) and identified individuals with elevated A1c ($\geq 5.7\%$), systolic blood pressure (≥ 130 mmHg), total cholesterol (≥ 200 mg/dl), and body mass index (≥ 25). Based on a review of these 300 charts, the QI project identified 50 employees with highest biometric markers. Of the 50 employees identified, the project enrolled 13 participants (26%). Participants' mean age was 44.6 years old with a range of 28 to 57 years old. Fifty-four percent (n=7) were female, and forty-six percent (n=6) were male. Table 3 describes the demographic characteristics as well as the education level of the participants.

Table 3

Demographic Characteristics of LIJ BSP Participants

Characteristics	n	%
Age		
Mean (44.6 years old)		
Range (28-57 years old)		
Gender		
Male	6	46%
Female	7	54%
Education		

Undergrad	3	23%
Graduate	10	77%

Key: all participants (n=13), male (n=6), female (n=7)

Baseline biomarkers

Table 4 shows the baseline mean biometric marker values for all participants, stratified by age. Of note, all participants had elevated total cholesterol (TC \geq 200 mg/dl) and the majority (62%) were overweight or obese (BMI \geq 25). When stratified by gender it was noted that in this program, men were more likely than women to have elevated systolic BP (83% vs. 0% respectively with systolic BP \geq 130 mmHg) and that women were more likely than men to be overweight or obese (71% vs. 50% with BMI \geq 25).

Table 4

Baseline Participant Risk Factors Stratified by Gender

Risk Factors	All n (%)	Male n (%)	Female n (%)
A1c >5.7%	3 (23%)	2 (33%)	1 (14%)
TC > 200 mg/dl	13 (100%)	5 (83%)	7 (100%)
SBP > 130 mmHg	5 (38%)	5 (83%)	0 (0%)
BMI > 25	8 (62%)	3 (50%)	5 (71%)

Key: all participants (n=13), male (n=6), female (n=7)

Use of Wellness Coaching and other Wellness Modalities

Participants' attendance at the individual data monitoring (weight and blood pressure) and wellness coaching sessions were tracked. The data tracking tool also captured participants'

self-reported use of the program wellness modalities such as use of the hiking trail outside the hospital, use of the employee or outside gym and making healthy food choices in the cafeteria or at home. Table 5 illustrates the overall participation rate for the wellness coaching sessions and use of other wellness modalities. All participants (100%, n=13) attended the six BSP program sessions which included individual data monitoring and wellness coaching. Overall, the majority of individuals participated in the wellness modalities including the hiking trail (69%), and gym (54%) and engaged in healthy food choices (85%). More women (86%) utilized the hiking trail than men (50%), and conversely more men (67%) used the gym than women (43%). Men and women were equally likely to report engaging in healthy choices.

Table 5

Participation in Wellness Coaching Sessions & Use of Wellness Modalities

	Wellness Coaching n (%)	BP/ Weight Check n (%)	Hiking Trail n (%)	Gym Use n (%)	Healthy Choices n (%)
All	13 (100%)	13 (100%)	9 (69%)	7 (54%)	11 (85%)
Male	6 (100%)	6 (100%)	3 (50%)	4 (67%)	5 (83%)
Female	7 (100%)	7 (100%)	6 (86%)	3 (43%)	6 (86%)

Key: all participants (n=13), male (n=6), female (n=7)

Awareness and Self-Efficacy

The LIJMC BSP project assessed the willingness, readiness, and determination for change using a Self-Efficacy Scale (SES) adapted from Chen, Gully & Eden (2004) as shown in Appendix H. The SES Likert scale responses (1=strongly disagree to 5=strongly agree) was recoded to positive (≥ 4) and negative (<4) responses. Table 6 shows the pre and post SES scores.

Table 6*Self-Efficacy Scale (SES) Score*

Participants	Mean	Q1 n (%)	Q2 n (%)	Q3 n (%)	Q4 n (%)	Q5 n (%)	Q6 n (%)	Q7 n (%)	Q8 n (%)
Positive Response									
Pre	92%	12 (92%)	11(85%)	13 (100%)	11(85%)	12(92%)	13(100%)	11(85%)	13(100%)
Post	98%	13(100%)	13(100%)	13 (100%)	13(100%)	12(92%)	13(100%)	12(92%)	13(100%)

Key: Uses 5.0 Likert scale (recoded 5 & 4 as positive response and score below 3 as negative response) Q=question. Q1) I will be able to achieve most of the goals that I have set for myself; Q2) When facing difficult task, I am certain that I will accomplish them; Q3) In general, I think I can obtain outcomes that are important to me; Q4) I believe I can succeed at almost any endeavor to which I set my mind; Q5) I will be able to successfully overcome many challenges; Q6) I am confident that I can perform effectively on many different tasks; Q7) Compared to other people, I can do most tasks very well; Q8) Even when things are tough, I can perform quite well.

Comparing the mean proportion of participants who rated the self-efficacy questions positively (strongly agree, agree), pre and post program (92% vs. 98% respectively), showed an increase in participants' belief that they could make a difference about their health and well-being given the available resources of wellness program at their workplace.

Reduction of Elevated Biometric Markers

Hemoglobin A1c. A fasting serum assay of glycosylated hemoglobin A1c was obtained at baseline and at the completion of the 12-week program. The goal was to achieve a 2% reduction of A1c level from pre to post program. Table 7 shows that the average A1c levels of participants was reduced by 3.74% (5.96% to 5.74%).

Table 7*Pre and Post A1c Levels of BSP Project*

Participants	Pre A1c%	Post A1c%	Change	% C
Average	5.96	5.74	-0.22	-3.74
Min	5.20	5.00		
Max	8.40	7.90		

Key. A1c =Hemoglobin A1c that measures diabetes; %C=% change

These findings suggest that the BMS program including increased awareness of risk and wellness coaching had a positive impact on the A1c value from pre- to post-program which is a consistent finding with similar projects. For example, one study revealed that having an employee sponsored wellness program resulted in a risk-reduction of chronic disease including reduction of A1c (Kaspin and Gormin et al; 2013). By the end of the project, participants had a greater awareness that increasing A1c levels is associated with developing diabetes.

Lipid Panels. The components of the lipid panel include total cholesterol (TC), low density lipoprotein (LDL) and triglycerides. The goal was to reduce total cholesterol by 5% by the end of the 12 weeks. This goal was not achieved. The total cholesterol was static pre/post program (211 mg/dl vs. 212 mg/dl). Although none of the three lipid components achieved this goal, there was a trend for lowering of LDL (% change 2.018). (See Table 8).

Table 8

Pre and Post Lipid Levels (total cholesterol, low density lipoprotein, triglycerides)

	TC				LDL				TRIG			
	Pre	Post	C	% C	Pre	Post	C	%C	Pre	Post	C	%C
Ave	211	212	1	0.62	130	127	-2.62	-2.018	157	166.7	9.23	5.86
Min	164	160			90	82			60	44		
Max	285	272		-	196	182			288	527		

Key: TC=total cholesterol, LDL=low density lipoprotein, TRIG=triglycerides, C=change; % C= % change

The high prevalence of elevated total cholesterol in the program participants reflects national trends. According to the Center for Disease Control and Prevention fact sheet for high cholesterol, nearly 94 million US adults aged 20 years old and older have average total cholesterol level above 200 mg/dl and 28 million adults have average total cholesterol above 240 mg/dl (Tsao et al., 2022). In addition, clinical evidence suggests that it can take between three and six months before a reduction in LDL is realized, thus a positive trend in the LDL after only 12 weeks could represent a clinically significant trend (Goldberg, 2021).

Blood Pressure. Systolic blood pressure is an important biometric marker associated with increased risk for cardiometabolic disease including hypertension, cardiovascular disease, and stroke (Misher, et al.,2019). The goal of the LIJMC BSP project was to reduce systolic BP by 10 mm Hg. Table 9 reveals a change (reduction) in systolic BP of 11 mmHg and meets this aim.

The role of patient engagement on health care outcomes, health behaviors, and health care cost has been a subject of great interest for a number of years (Sieck, et al., 2023). The LIJMC BSP program integrated individualized feedback about the participant’s blood pressure each week, as well as health coaching focused on patient engagement in their care.

Table 9

Pre and Post BP Readings (Systolic and Diastolic Blood Pressure)

	Systolic				Diastolic			
	Pre	Post	C	% C	Pre	Post	C	% C
Ave	134.92	123.92	-11.00	-8.15	92.31	80.77	-11.54	-12.5
Min	111	102			79	57		
Max	164	152			120	97		

Key: C=change; % C= % change

Body Mass Index. Obesity and being overweight, defined as a BMI ≥ 25 , presents a major health issue among the general population as it is associated with a number of high-risk conditions leading to chronic disease. The LIJ BSP project utilized body mass index (BMI >25) as a reflection of weight category (overweight/BMI). As shown in Table 10, the average weight among participants was reduced by 1.30% (\downarrow 2.58 lbs.) and the average BMI was reduced by 1.59%. Thus, the target goal of 5% reduction in BMI was not achieved (see Table 10). While the target to reduce BMI by 5% was not met, it was encouraging to see that the trend was in the right direction and is consistent with similar 12-week programs.

Table 10*Pre and Post BMI Readings*

	Weight (Lbs.)				BMI			
	Pre	Post	Change	% C	Pre	Post	Change	% C
Ave	198.46	195.88	-2.58	-1.30	33.17	32.64	-0.53	-1.59
Min	129	129.4			24.89	24.92		
Max	236	225.6			42.97	41.33		

Key: % C=% change; BMI means body mass index

A recent scoping review of the literature supports that a multifactorial combination of diet and monitored physical activity can be important drivers for weight loss (Bezzina and Ashton et al.,2021). The program duration of 12 weeks was most likely not long enough to show a significant decrease in weight. Some studies of weight loss without medication intake required at least 6 months to a year to show significant weight loss (Semlitsch et al.,2019).

Virgin Pulse Risk Assessment. Results from the on-line VPRA tool revealed an improvement in health status. Participants access the VPRA site online and provide a self-reported assessment of their health behaviors including exercise, eating and sleep patterns, as well as smoking, and mental health. Participants also input the value for their biometric markers. (See Appendix H). A VPRA Score is generated from this data including a Lifestyle Score (Table 11) and a Heart Age (Table 12).

The VPRA Lifestyle Score reflects the participants overall health; higher scores reflect a higher level of health. Participants in the LIJMC BSP demonstrated an improvement in their VPRA score pre to post program (381 vs. 420 respectively; change of 39 points). This represents a 10.22% improvement.

Table 11*Pre and Post Program Virgin Pulse Risk Assessment Lifestyle Score*

Participants	Pre VPRA	Post VPRA	Change	% Improved
Ave	381	420	39	10.22
Min	269	263		
Max	555	659		

Key: VPRA = Virgin Pulse Risk Assessment

The VPRA Heart Age is computed based on the participants chronological age adjusted for their biometric markers and self-reported health characteristics and health patterns. Table 12 shows that the mean chronological (actual) age of participants was 44.6 years. After adjusting for the individual's biomarkers and health characteristics, the average heart age of participants at baseline was 55.23 years and 51.31 years post program. This represents a change of 3.92 years which is a 7 % improvement. These data show that overall, the employees heart age was older than their chronological age, and that by the program end participants achieved reductions in heart age that brought them closer to their chronological age.

Table 12*Pre and Post Heart Age on VPRA*

Participants	Actual Age	Pre Heart-Age	Post Heart Age	Change	% Improved
Ave	44.6	55.23	51.31	3.92	7%
Min	28	44	38	6	
Max	57	69	57	12	

Key: Heart Age is calculated as part of the VPRA score

Staff Satisfaction

A survey to assess staff satisfaction was distributed to the staff involved in the *my Wellness Center* and employee participants of LIJMC BSP. Of the 16 surveys sent out, 13 surveys were returned which represents an 81% response rate. Each answer was coded and tagged to a category for qualitative representation.

Table 13*In your own opinion, what worked well during the project?*

Category	Examples	Count	Percentage
Coaching	Different speakers	4	31%
Accountability	Follow up/ check-in	4	31%
Awareness	Clear personal goals	3	23%
Education	Knowledge of healthy lifestyle	2	15%

Table 13 illustrates that LIJMC BSP participants and staff were most likely to choose wellness coaching (31%) and the individualized check-ins as being the most impactful components of the program.

Table 14*What areas of the project could be improved on?*

Category	Example	Count	Percentage
Coaching	Available sessions at night, more sessions	6	46%
Seminar	Nutrition/ Fitness	4	31%
Incentive	Greater incentive	3	23%

Table 14 describes participants and staff feedback of *my Wellness Center* and indicates they would prefer to have more wellness coaching and sessions to increase engagement of staff towards improvement of their health outcomes. They also wanted to have more dietary education and more physical activity. Lastly, staff indicated they would likely join the program if there were more and greater incentives.

Table 15

What needs to be done to make the LIJMC BSP a sustainable program?

Category	Example	Count	Percentage
Awareness	Awareness of program to all staff	6	46%
Availability	Program available to all staff	3	23%
Coaching	Additional check-in/ weekly meeting	3	23%
Method	Create a program app	1	8%

Table 15 shows that staff would like to have an information drive and awareness sessions about the program so that everyone could join the project. They also wanted more availability of hours to the staff since *my Wellness Center* is already accessible within hospital premises. Aside from more coaching sessions, staff would like to improve ease of access.

Table 16

What changes can we make in the program that will result in an improvement?

Category	Example	Count	Percentage
Seminar	Food Health Education/ lecture	5	38%
Coaching	More weekly meetings	3	23%
Equipment	Calorie tracker, pedometer	3	23%
No change	No comment	2	15%

Table 16 describes LIJ BSP participants and staff desire to have more lectures and information about nutrition and dietary teaching so that staff would learn more about alternative options regarding their diet. In addition to wellness coaching, staff would like some method of tracking their progress such as pedometers. Other staff indicated they thought no change to the existing LIJ BSP project was needed.

Customer Satisfaction

Participants completed the Client Satisfaction Questionnaire Scale, a validated questionnaire commonly used to assess customer satisfaction (Larsen, 1979). Participant scores from the Likert scale were categorized to indicate a positive response (very satisfied and mostly satisfied). Participants reported a high degree of satisfaction with the quality of the LIJ BSP project (69%), the amount of help they received (77%) and the services they received (69%). (See Table 17)

Table 17
Client Satisfaction Scale Survey I

Legends	Q1 n (%)	Q5 n (%)	Q7 n (%)
Positive Response	9(69%)	10(77%)	9(69%)

Key. Q= question; Q1) How would you rate the quality of LIJ BSP program you received; Q5) How satisfied are you with the amount of help you received; Q7) How satisfied are you with the services you received?

Participants all reported a high degree of satisfaction (100%) as shown in Table 18 with the kind of service they wanted, were willing to recommend the program to a friend, the effectiveness of services they received during the project and were willing to come back again to join the program.

Table 18

Client Satisfaction Scale Survey II

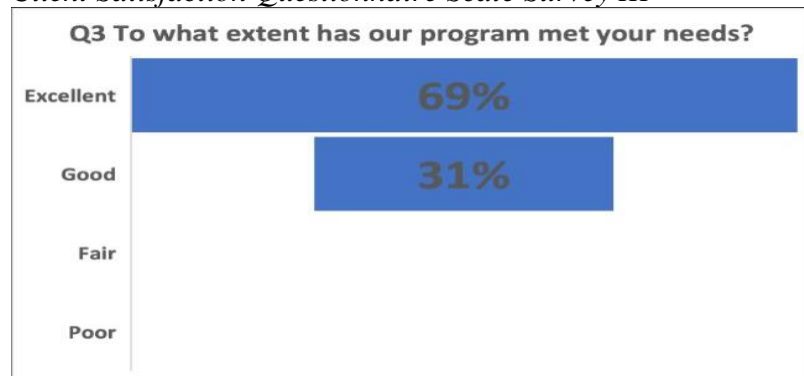
Legends	Q2 n (%)	Q4 n (%)	Q6 n (%)	Q8 n (%)
Positive Response	13(100%)	13(100%)	13(100%)	13(100%)

Key .Q =questions; Q2)Did you get the kind of service you wanted; Q4)If a friend needs similar help, would you recommend our program to him or her; Q6)Have the services you received help you deal more effectively

with your problems; Q8) If you were able to seek help again, would you come back to our program?

Figure 2

Client Satisfaction Questionnaire Scale Survey III



Overall, 69% of the participants responded that the LIJMC BSP project met their needs at the highest level (excellent) while the remaining participants (31%) also rated the program positively. (See Figure 2). Given temporal trends during the time this project was implemented, including delays in implementing the program and the covid-19 pandemic, most of the participants appreciated the value of having the biometric screening program and wellness coaching program *in my Wellness center*.

Discussion

The LIJMC BSP project focused on preparing and empowering engaged, activated employee participants with strong health related self-management skills. The program utilized the existing myriad resources within the hospital wellness center (*my Wellness Center*) as well as existing health system support to facilitate the success of the project. Employees who participated in the 12-week program received individualized counseling on their biometric markers as well as health coaching aimed at empowering them to be active participants in achieving their health goals. On average participants reported increased awareness of and self-

confidence in implementing these health practices and utilizing the health modalities linked to the program. In addition, on average some biomarkers (A1c and systolic blood pressure) were reduced while others (LDL and BMI) showed a trend in the desired direction. The project was implemented from the second week of February 2022 to the second week of May 2022. Of note there were several holidays that occurred during the period of the project namely Valentine's Day, St. Patrick's Day, Easter Sunday, Birthdays and Cinco de Mayo, which taken together affected the participant's focus and goal to reduce weight.

The outcomes observed in this project are consistent with and slightly better than results reported in the literature for similar types of programs. In one study of employees who worked in large US warehouse companies, the authors reported that workplace wellness programs resulted in significantly greater rates of some positive self-reported health behaviors, but there were no significant differences in clinical measures of health and employment outcomes after 18 months (Song & Baicker; 2019). In the LIJMC BSP project, which was carried out over 12 weeks, similar improvements in self-reported health behaviors were observed, in addition to clinically significant improvements in the biomarkers and increased awareness of the importance of their biometric markers. Additional time beyond the 12 weeks of the program might have resulted in participants being able to make additional progress toward goals.

Finalizing the project design and implementing the LIJMC BSP project was one of the most challenging tasks of the quality improvement project. It took more than three months for the project team to get approval of the final design and implementation plan. As part of the pre-project planning, several presentations were made to Employee Health Service Corporate Wellness, 1199 Union Head Delegate of the hospital and senior leadership, Quality Team Leadership of the hospital, Wellness champions, and Executive Leadership of the hospital. Some

of the issues and barriers to finalizing a plan included costs for insurance, agreement with union members, wellness corporate concerns of duplicate projects, staffing issues, cost of equipment and cost of screening. As initially conceptualized, the major issue that hindered implementation was the employee costs associated with the program, totaling \$3,500. Based on this cost estimate senior management decided that participation in the program needed to be covered by the employees' health insurance.

The change from an employer supported wellness program (no cost to the employee) to one where the wellness service was charged to the employee's health insurance required a change in the recruitment process. Rather than the original plan for an open pre-screening event for hospital employees, potential participants were selected from the pool of the patients who had been seen at *my Wellness Urgent Care Center* and who had elevated biometric markers for cardiometabolic disease, and who had health insurance. The data for 3,000 employees who had been seen in the *my Wellness Center Urgent Care* was reviewed and 300 individuals were identified who had elevated biomarkers. Out of the 300 reviewed charts over the 3-month period, the project selected 50 employees with the highest biometric markers. Of the 50 employees with high biometric markers, 13 participants indicated they wanted to participate, enrolled in the program, signed the clinical consent, and agreed to have the initial and end of program visit (including lab tests) charged to their insurance. One hundred percent of the participants who enrolled in the program (n=13) completed six visits over the 12-week program. At the end of the program, consistent with clinical practice guidelines, participants who had not improved their biometric values were given a referral to see their primary care doctor for further evaluation. At the program's conclusion staff held a celebration to acknowledge the commitment of the participants and to the success of the project. The event was attended by the participants, staff of

my Wellness Center and the leadership of *my Wellness Center*. All participants were given individual certificates of completion and recognition credits for completion of the BSP project for the entire 12 weeks. The credits could be applied to online gift items like apple products and hospital brand items.

A unique strength of the LIJMC BSP program was the way that the program was integrated with the existing wellness resources available to health center employees. During the initial wellness coaching session, participants were stunned to learn about the existing wellness resources available in the hospital and within the health system. Despite being advertised on the hospital website, most employees were unfamiliar with these wellness offerings. Participating in the program increased their awareness and knowledge of wellness and available wellness programs in the hospital. Of particular interest was the free online Virgin Pulse Risk Assessment which was available to all employees and the different online wellness programs available on the VPRA website. wellness corporate projects, free BP machines and glucometer machines for union members, and free wellness coaching from corporate wellness coaches.

A benefit of doing biometric screening in workplace wellness programs is the potential to prevent or at least mitigate the epidemic of common chronic conditions including diabetes, hypertension, hyperlipidemia, and obesity. Health screening at workplace wellness programs enables employees to know their lab values (biometric markers) and this in turn allows them to make healthy choices. You can't address what you don't know! Informed, engaged, activated employees are more likely to engage in healthy lifestyle habits.

It has been shown that wellness programs can deliver self-behavior modifications that lead to decreased level of A1C, blood pressure, lipid, and BMI (Song & Baicker, 2019). However, getting the desired result and outcome may vary based on length of the program and

designs of the wellness programs. Baid and Hayes et al. (2021) conclude that the highest quality of workplace wellness programs takes longer than two years to show positive return on investment.

Although the scope of the LIJMC BSP project did not include a cost analysis, based on the literature it can be inferred that the improvements in clinical biomarkers, health behaviors and self-confidence observed in this project might result in some cost benefit. Wellness programs have been associated with an impact on wellness well-being, absenteeism, presentism, work productivity and mental well-being. A meta-analysis published by Baicker and Cutler et al. (2010) highlighted that medical costs fall by about \$3.27 for every dollar spent on wellness programs and absenteeism cost falls by \$2.73 for every dollar spent. A similar finding from Song and Baicker (2019) reaffirms that behavior change from existing workplace wellness programs is easier to achieve than in other venues. Based on their findings, improvement was noted in clinical outcomes as well as employee outcomes of absenteeism, work performance and job tenure. In addition, the cost of health care is rising given the current epidemic of chronic diseases including diabetes, hypertension, hyperlipidemia, and obesity. Estimates of the health care cost of noncommunicable diseases and other chronic diseases like COPD, diabetes, hypertension, and heart disease are up to \$2,177 million dollars (Kristina & Endarti et al, 2018). These studies provide an excellent framework for leadership to evaluate the cost-benefit of continuing to offer the LIJMC BSP program.

Limitations

There are clearly limitations in the findings of this quality improvement project. First, the project only targeted specific biometric markers and did not include employee mental health, smoking and exercise habits. However, these health components were asked on the VPRA health risk assessment. Second, the plan for the open screening did not materialize due to budget, equipment, and staff concerns. Although we had identified volunteers for the LIJMC BSP screening, the cost of materials, testing and equipment amounting to \$3,500 was not budgeted. The open screening from different departments of the hospital would have shown a clearer picture of potential risk of employees who have existing undiagnosed chronic conditions. Third, the presence of union and nonunion members as employees of the hospital caused chaos during pre-implementation stage based on concerns about how the screening would be charged to the insurance. This was considered the major cause of the delay to the project. Fourth, the project has not fully employed the use of technology of tracking the calories or steps generated for the 12 weeks. There were participants who tracked their own calories and steps on their app but not all participants used the same app given with the different models of cellphones used.

Lastly, the LIJMC BSP project was implemented as a pilot program as part of an offering for employees working in the hospital. However, the *my Wellness Center* was closed in December 2022 due to administrative issues related to finances, staffing, availability of providers, and census. *My Wellness center* was the first Wellness center of Northwell health system and was considered to be the pilot test of wellness exploration, but it did not materialize and maximize the purpose and benefits of using the *my Wellness center*. Due to proximity of the space to the ER and influx of patient surge due to post COVID infections and pediatric cases of RSV, the senior management repurposed the space of *my Wellness center* to ER management.

Within the past two years of opening the *my Wellness Center*, it has served and helped more than 3,000 employees due to sick visits and preventive care. It also achieved more than a 96% score from Press Ganey survey of employee satisfaction and more than a 93% score of likely recommended clinics to use by most employees of the hospital.

Conclusion

Implementation of a 12-week biometric screening and wellness coaching program has demonstrated improved health outcomes among the participants who were employees of Long Island Jewish Hospital. Specifically, participants demonstrated improvements in systolic blood pressure and A1c although there were also positive trends in lipids and body mass index. Importantly, participants' reported engagement in health promoting behaviors like using the hiking trails and increased awareness of their risk factors and confidence in their ability to make healthy choices. The project has also shown satisfaction among the LIJ BSP among the participants during the duration of the program. These positive outcomes highlight the importance of health risk assessment, wellness coaching, and biometric screening tests targeting the common epidemic of chronic diseases namely diabetes, hypertension, cholesterol, and obesity.

Workplace wellness programs are an important initiative highlighted in the Affordable Care Act (ACA) in 2013. The ACA encourages small businesses and large organizations to consider implementing wellness programs for their employees. The success of the 12-week LIJ BSP project provides an opportunity for senior leadership at LIJMC to consider as they formulate their strategic plan for the future of workplace wellness programs for their employees.

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Appendix A

Synthesis Evidence Table

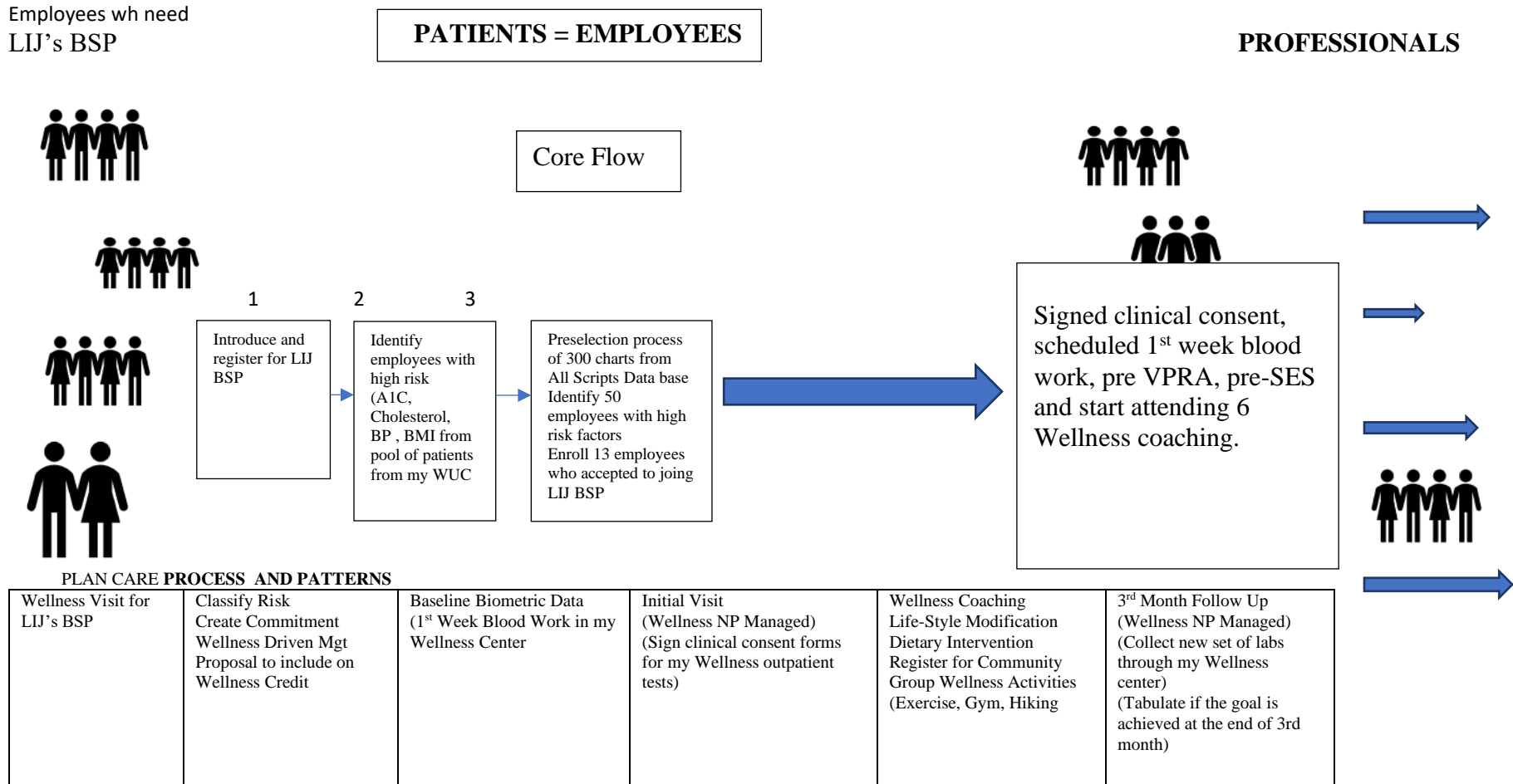
Number of Studies	Study Intervention	Quality of Study	Findings
Health Engagement and Biometric Screening Program			
Long,A. D., Reed, R.W., Duncan,I. & Phil,B. (2016)	Health Engagement: Promotions and Incentives for Health & Wellness, Participation in Interventions; 1 st step: Biometric Screening,2 nd step: online Personal Health Assessment (PHA ,3 rd step: Health Action Planning	Cohort study by Degree of Health Engagement III, B, 154,417 employees participated the program	Coached participants with higher HE (Health Engagement) showed best overall outcomes
Lin Fu, P., Bradley,K.L., Viswanathan,S., Chan,J.M., Stampfer,M. (2016)	Voluntary outcome based biometric screening program, incentivized with health insurance premium discounts	Observational retrospective cohort study in Safeway Health measures program between 2009- 2013, III, B, 1840 participants	On average, participants who did not meet the incentive threshold at baseline decreased BMI (1%), glucose (8%), blood pressure (systolic 9%, diastolic 8%), and total cholesterol (8%) by year 2 with improvements generally sustained or continued during each additional year of participation By year 5, initial systolic BP lowered ave.11% (p=<.001); initial high diastolic lowered 11% (p=<.0001)
Misher,A., Brown,J., Maguire,C. & Schnibben, A.P. (2019)	Dyslipidemia program and hypertension program	Retrospective Study, III, B 138 participants on this program	The use of pharmacy department-managed, employer sponsored wellness programs managed by pharmacist and APN could lead to significant reductions of BP and lipid levels of employees and for their spouses who are enrolled in the program
Neville,B.H., Merrill,R.M.,& Kumpfer,K.L. (2011)	Health Lifestyle Incentive program (HLIP) for 8 years	Longitudinal Time Series, III, B 1671 employees (711 (43%) Men & 969 (57%	increased percentage eating of five or more servings of fruits and vegetables per day, eating food high in fiber and exercising three or more times per week. Long term participation in this worksite wellness programs improved BMI, BP and cholesterol. HLIP participants experienced lower increases in BMI than general population.
Team and Individual Wellness Management			
Touger-Decker, R.T.,O'Sullivan-Maillet, Byham-Gray,L., & Stoler,F. (2008)	12 week life style management intervention focusing on health and weight management through diet and physical exercise	Prospective Cohort , III, B 147 participants	Significant change in weight for the population as whole and for the majority of the participants. Significant improved diets and physical activity by majority of participants On site access of program and availability as employment benefit at no cost for full time employees were incentive identified by employees that increased interest
Hendriksen,I.J.M., Snoijer,M., P.H. de Kok, B., Van Vilsteren & Hofstetter, H. (2016)	5- month intervention includes: Activities at management Team, & individual level targeting self mgt. to perform behaviors: Kick-off session, vitality training sessions, workshops, individual coaching & intervention	Linear Generalized mixed models, III, B 502 participants	Vitality, work performance, sickness, absence, and self-management significantly improved. Good organizational support and involved supervisors were significantly associated with lower sickness and absences

Number of Studies	Study Interventions	Quality of Study	Findings
Lowensteyn,I., Berberian,V., Berger,C., Da Costa,D., Joseph, L., & Grover,S.A. (2019)	Comprehensive wellness program: (1) results from on-going health assessment & biometric screening, (2) educational modules, and (3) behavior change programs using gamification techniques such as goal setting, leaderboards, badges, challenges and social influence Biometric health screenings were offered at baseline then annually	Prospective Cohort Study 775 employees who participated the program	After 2 years, significant clinical improvement in systolic BP(-1.3 mmHg), total cholesterol (-0.14%), glycated hemoglobin -0.1%), weekly physical activity (+264 MET's), perceived stress score (-17%), insomnia severity index (-16%),general fatigue (-10%), and reduction of cardiovascular age gap (-0.3%). Increase of physical activity of 425 MET's (95% CI: 195-654), which is equivalent to an add'l 100 minutes of moderate exercise or 50 minutes of vigorous exercise. BP dropped from 144/94 to 133/87 among those HTN at baseline & total chole ratio improved by 0.69% (95% CI: 0.24-1.14) representing an improvement of 13% in employees with elevated lipid
Wellness Behavioral Approach			
LeCheminant, J., Merrill, R.M.,& Masterson, T.D. (2017)	Wellness programs included multiple components such as administrative planning, culture evaluation, analysis, baseline health behavior, biometric evaluation, strategies to improve communication and behavior change campaigns	Longitudinal cohort study, III, B 1873 participants	There was an increase in days and minutes/ week exercised, fruit/ vegetable consumption, days per week of restful sleep and decreased alcohol consumption (ps=.037) over 2 years. Among those who reported smoking, the number of days smoked increased after 1 year but then dropped below baseline level at year 2 (p=.0001). Several mental health related outcomes improved (ps= <.033); job performance slightly lower 2% and other job-related outcomes were unchanged
Song,Z. & Baicker,K. (2019)	Wellness Programs consist of 8 modules: nutrition, physical activity, stress reduction, related topics implemented by registered dietitians at the treatment worksites	Randomized control trial III,B, 4037 individuals at treatment worksites 4106 at 20 primary control sites 24831 at 120 secondary control sites	Workplace wellness programs resulted in significant greater rates of some positive self-reported behavior among those exposed on interventions
Zivin,K., Sen, A., Plegue,M.A.,Maciejewski,M.L., Segar,M.L.,Auyong,M., Miller,E.M., Janney,C.A., Zulman, D.M. & Richardson, C.R. (2016)	Internet mediated pedometer based (WS) and (WW) weight loss programs and multi-component automated lifestyle -based change intervention	Retrospective Cohort study from 2009-2011 III, B, 13,358 obese individuals	If employers are seeking to reduce medical costs, then individual choice between a pedometer-based walking program and commercial diet and weight loss-focused program may satisfy the diverse needs of heterogenous, insured adult population.

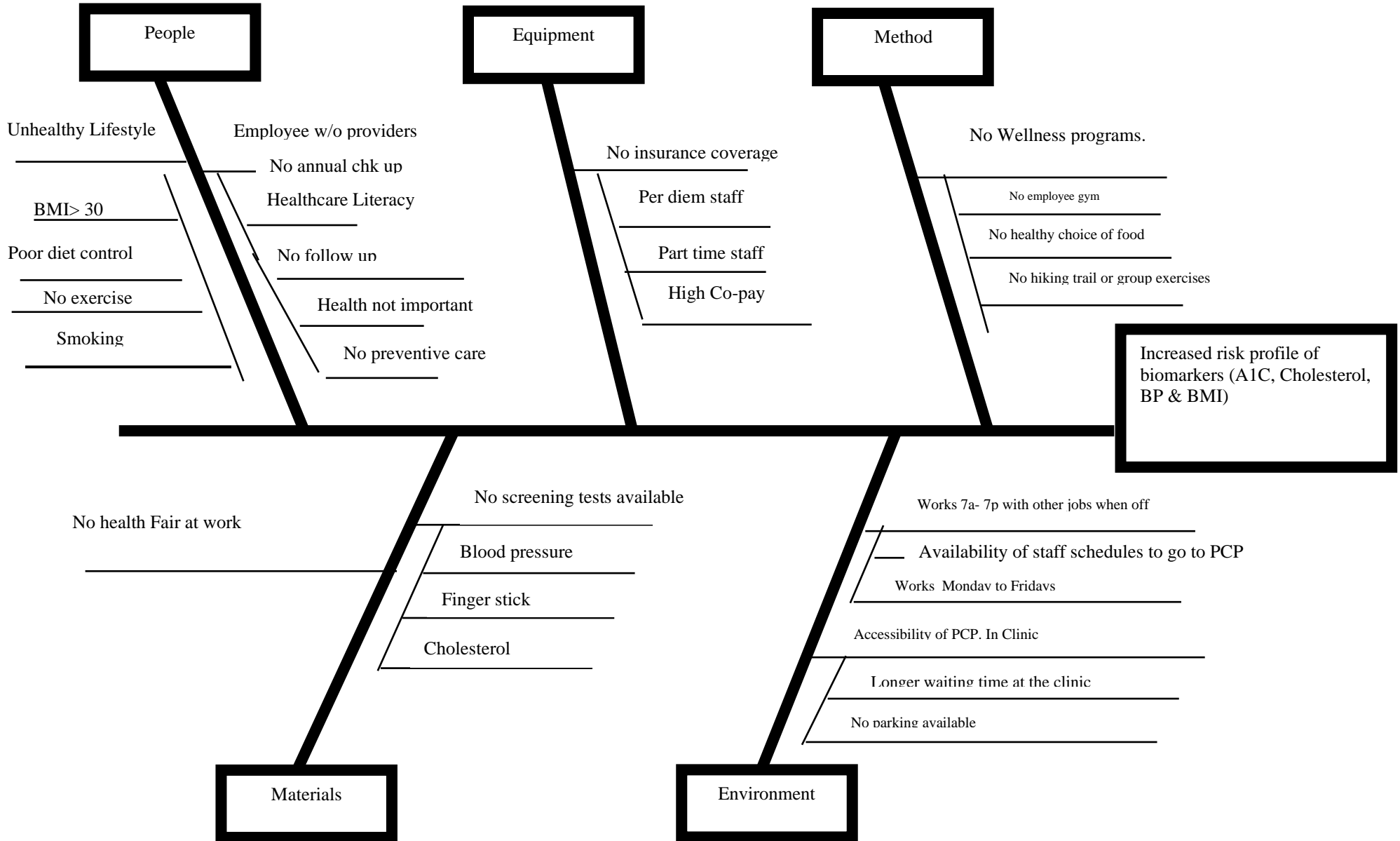
Appendix B

Anatomy of the Clinical Microsystem (*my Wellness center*) of LIJ BSP, A Quality Improvement Project at LIJ MC

PURPOSE: To implement biometric screening (A1C, Lipid, BP and BMI/ Obesity (4 targeted clinical indicators) & wellness coaching program

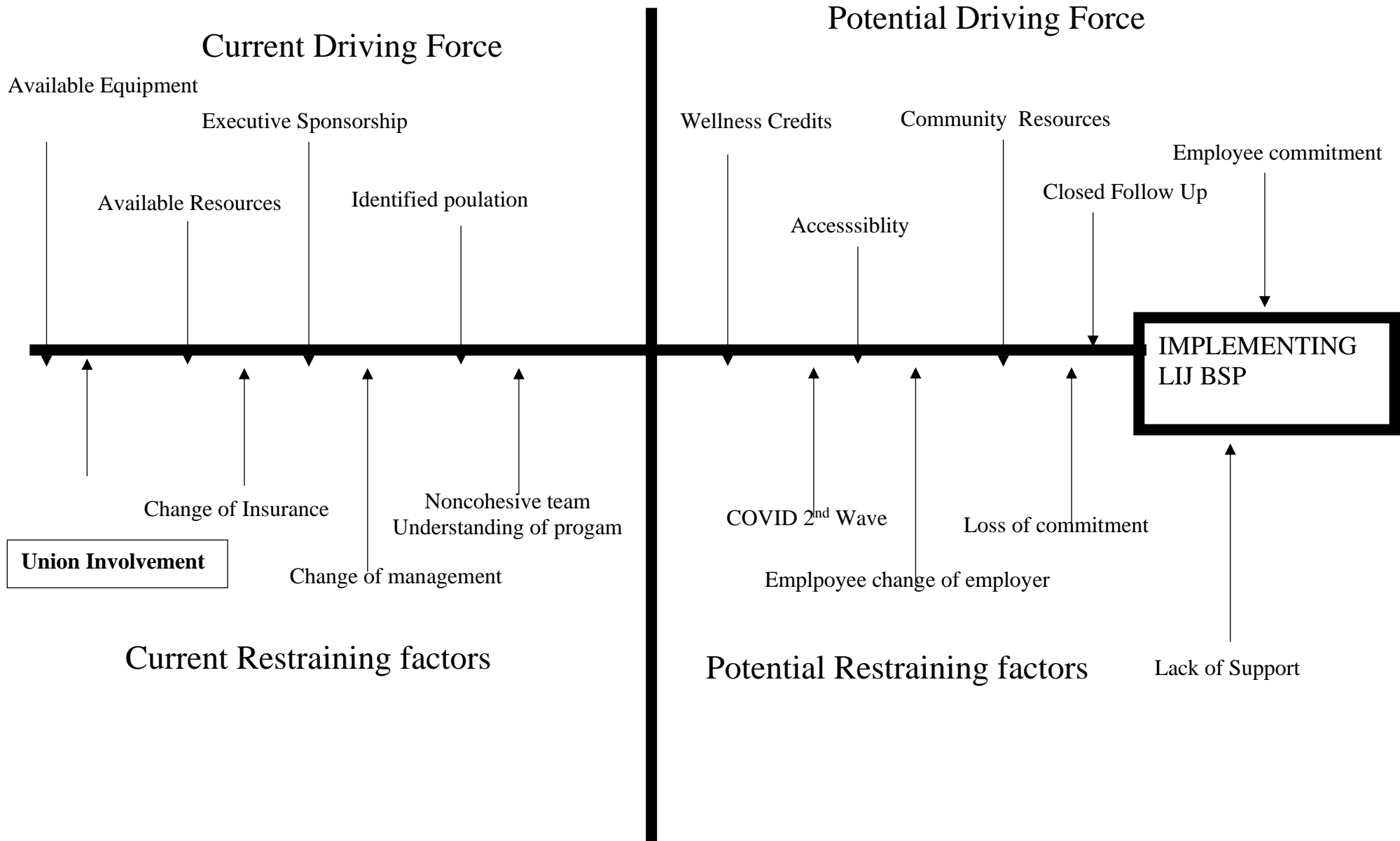


Appendix C. Fishbone Cause & Effect Diagram of LIJ BSP, A Quality Improvement Project



Appendix D

Force Field Analysis of LIJ BSP, A Quality Improvement Project

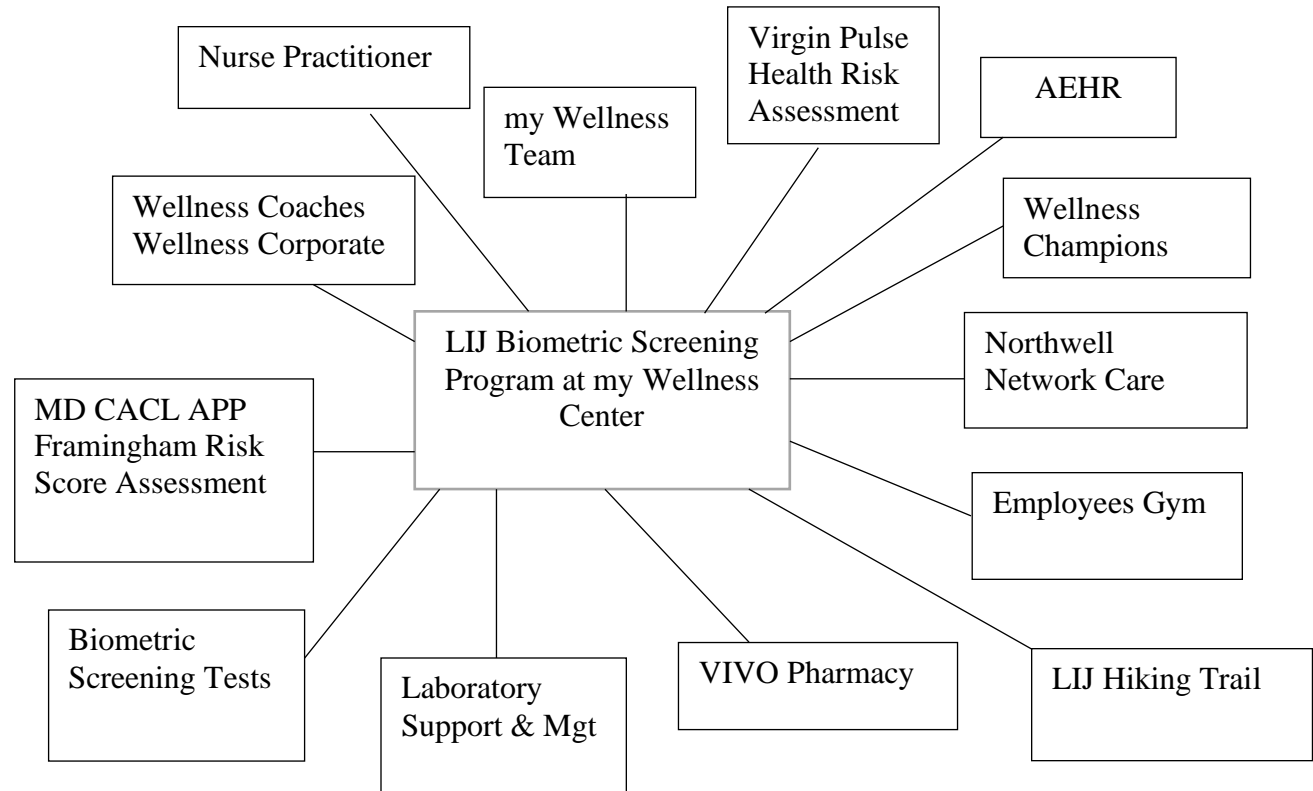


Appendix E
EXTERNAL MAPPING

1. Clinical Microsystem (*my Wellness Center at LIJ*)

2. Subpopulation of patients: Employees of the hospital

3. Employee's specific health care needs:
 a. Baseline biometric markers of A1C, cholesterol, blood pressure, BMI
 b. Wellness Coaching
 c. Wellness resources and initiatives
 d. Referral to Primary Care



Improvement Ideas:
 Increase awareness of their biometric health care makers. Implement LIJ Biometric screening program to gather baseline of employee's biometric markers, promote Wellness resources, engage Wellness coaching and assist referrals to Northwell Network care

Appendix F
Logic Model of Change for LIJ BSP

PROBLEM: In 2019, there were 1690 cases of employees who went to the ED for sick visits with underlying condition hypertensive urgency, uncontrolled diabetes & high cholesterol, which could have prevented the exacerbation if such chronic diseases are properly screened and managed

AIM: To identify 50 employees who have elevated biometrical markers from 300 charts of my WUC. Of those 50 individuals, enroll 25% in the 12-week program of Long Island Jewish Biometric Screening Program (LIJBSP) and attend 6 scheduled visits of 12- week program and utilize some of the wellness modalities. In addition, it is the goal of the project to assess satisfaction of staff and participants and increase awareness and self-efficacy. Of the enrolled participants, it will also try to achieve secondary goals: to reduce A1C by 2%, lipid by 5%, BP by 10 mm Hg, and BMI by 5%. It is also the goal to evaluate LIJ BSP as sustainable program in my Wellness center.

RESOURCES:
 my Wellness Center
 Nurse Practitioner
 my Wellness staff
 Wellness Champions
 Wellness Coaching
 Wellness Corporate
 Equipment
 Existing 24-hour Gym
 AEHR Software
 Dietary Resources
 Pharmacy
 Administration
 Insurance based
 Project Director
 Human Resources
 Consult
 QI Management

ACTIVITIES:

Create a team to spearhead LIJ BSP
 Educate staff about the process of LIJ BSP
 Gather necessary equipment to measure targeted clinical data (approved by Lab)
 Advertise LIJ BSP for all employees as part of their healthy goal
 Consult with QI for flow of LIJ BSP

OUTPUT:

Enroll employees to biometric screening program called LIJ BSP
 Increase awareness about LIJ BSP
 Increase customer satisfaction of LIJ BSP
 Reduction of biometric markers

LONG TERM OUTCOME

Reduction of abnormal values of A1C, Lipid, BP and weight for BMI
 Staff satisfaction of LIJ BSP
 Employee satisfaction of LIJ BSP

INTERMEDIATE OUTCOME

Increase number of employees participating LIJ BSP
 Utilization of some of wellness modalities such as employee gym & hiking trail
 Increased awareness, self-confidence, engagement & self-management

SHORT TERM OUTCOME:

- Utilization of LIJ BSP as biometric screening program for targeted participants of the project

RATIONALE & ASSUMPTIONS Employee sponsored programs such as Biometric screening have helped individuals to identify previously unappreciated biometric values as basis for health improvement and provide a convenient basis to dialogue with their providers.

Appendix G

CLINICAL QUALITY IMPROVEMENT CHECKLIST		
Project Leader: CARL S GASTANES		
Project Title: Implementation of a Biometric Screening Program in a Hospital Employee Wellness Program		
Institution where the project will be conducted: Long Island Jewish Medical Center		
Instructions: Answer YES or NO to each of the following statements about QI projects.	YES	NO
The specific aim is to improve the process or deliver of care with established/accepted practice standards, or to implement change according to mandates of the health facilities' Quality Improvement programs. There is no intention of using the data for research purposes.	X	
The project is NOT designed to answer a research question or test a hypothesis and is NOT intended to develop or contribute to generalizable knowledge.	X	
The project does NOT follow a research design (e.g. hypothesis testing or group comparison [randomization, control groups, prospective comparison groups, cross-sectional, case control]). The project does NOT follow a protocol that over-rides clinical decision-making.	X	
The project involves implementation of established and tested practice standards (evidence based practice) and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does NOT develop paradigms or untested methods or new untested standards.	X	
The project involves implementation or care practices and interventions that are consensus-based or evidence-based. The project does NOT seek to test an intervention that is beyond current science and experience.	X	
The project has been discussed with the QA/QI department where the project will be conducted and involves staff who are working at, or patients/clients/individuals who are seen at the facility where the project will be carried out.	X	
The project has NO funding from federal agencies or research-focused organizations, and is not receiving funding for implementation research.	X	
The clinical practice unit (hospital, clinic, division, or care group) agrees that this is a QI project that will be implemented to improve the process or delivery of care.	X	

Appendix H

SELF-EFFICACY SCALE**Purpose:**

The purpose of this self-efficacy scale is to help us serve the needs of the project to be more effective and sustainable in the future. By understanding where we are exceeding your expectations, or need to improve, we can allocate necessary resources to provide better services, knowledge, staff, and executive management. Our goal is to be proactive in monitoring satisfaction, so please provide meaningful and constructive feedback that we can incorporate into our strategy.

Thank you for taking your customer satisfaction survey. The survey should take less than five minutes of your time to complete

Please circle the response that best represents your view. Please circle N/A for any questions that you don't have enough experience to comment on.

1. I will be able to achieve most of the goals that I have set for myself
1. Strongly disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly agree
2. When facing difficult tasks, I am certain that I will accomplish them
1. Strongly disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly agree
3. In general, I think that I can obtain outcomes that are important to me
1. Strongly disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly agree
4. I believe I can succeed at almost any endeavor to which I set my mind
1. Strongly disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly agree
- 5. I will be able to successfully overcome many challenges**
1. Strongly disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly agree
6. I am confident that I can perform effectively on many different tasks
1. Strongly disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly agree
7. Compared to other people, I can do most tasks very well
1. Strongly disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly agree
8. Even when things are tough, I can perform quite well
1. Strongly disagree 2. Disagree 3. Neither agree nor disagree 4. Agree 5. Strongly agree

Appendix I

CLIENT SATISFACTION SCALE QUESTIONNAIRE (CSQ)**Purpose:**

The purpose of this CSQ scale is to help us serve the needs of the project to be more effective and sustainable in the future. By understanding where we are exceeding your expectations, or need to improve, we can allocate necessary resources to provide better services, knowledge, staff, and executive management. Our goal is to be proactive in monitoring satisfaction, so please provide meaningful and constructive feedback that we can incorporate into our strategy.

 Thank you for taking your customer satisfaction survey. The survey should take less than five minutes of your time to complete

Please rate your satisfaction level with each of the following statements by encircling the number of each question:

1. How would you rate the quality of LIJ BSP program you received?
 4. *Very satisfied* 3. *Mostly satisfied* 2. *Mildly satisfied* 1. *Quite satisfied*
2. Did you get the kind of service you wanted?
 4. *No definitely not* 3. *No not really* 2. *Yes, generally* 1. *Yes, definitely*
3. To what extent has our program met your needs?
 4. *Excellent* 3. *Good* 2. *Fair* 1. *Poor*
4. If a friend needed a similar help, would you recommend our program to him or her?
 4. *No, definitely not* 3. *No not really* 2. *Yes, generally* 1. *Yes, definitely*
5. How satisfied are you with the amount of help you received?
 4. *Very satisfied* 3. *Mostly satisfied* 2. *Mildly satisfied* 1. *Quite satisfied*
6. Have the services you received helped you to deal more effectively with your problems?
 4. *No, definitely not* 3. *No not really* 2. *Yes, generally* 1. *Yes, definitely*
7. In overall, general sense, how satisfied are you with the services you received?
 4. *Very satisfied* 3. *Mostly satisfied* 2. *Mildly satisfied* 1. *Quite satisfied*
8. **If you were able to seek help again, would you come back to our program?**
 4. *No, definitely not* 3. *No not really* 2. *Yes, generally* 1. *Yes, definitely.*

Appendix J

STAFF SATISFACTION SURVEY

Purpose:

The purpose of this survey is to help us serve the needs of the project to be more effective and sustainable in the future. By understanding where we are exceeding your expectations, or need to improve, we can allocate necessary resources to provide better services, knowledge, staff, and executive management. Our goal is to be proactive in monitoring satisfaction, so please provide meaningful and constructive feedback that we can incorporate into our strategy.

Instructions:

1. Staff were asked to fill out survey based on 4 standard questions.
2. Refer to goals and aims of the project.
3. Use open-ended questions during group interview.
4. Address for improvement and sustainability

Below are the following questions on the survey.

1. In your own opinion, what worked well during the project?
2. What areas of the project could be improved on?
3. What needs to be done to make it a sustainable program?
4. What changes can we make that will result to improvement?

Appendix J
Virgin Pulse Health Risk Assessment

Every day YOU

1. What is your assigned sex at birth?
 - a. Female
 - b. male ___
 - c. intersex
 - d. I prefer not to answer.
2. What is your gender?
 - a. Woman
 - b. Male man or male
 - c. Transgender
 - d. Cisgender
 - e. Genderqueer or non-binary
 - f. Different gender from above
 - g. I prefer not to answer.
3. I identify as
 ___Black___ Central Asian_ Hispanic___ Middle Eastern___ Pacific Islander___ Southeast Asian, ___White___ I
 prefer not to answer:
4. I usually eat
 food with less nutritious fats or food with nutritious fats (scale 1- 7)
5. I usually eat:
 Processed foods or minimally processed foods (scale 1-7)
6. I usually choose drinks that are:
 ___Sweetened with sugar; ___ sweetened artificially; ___ unsweetened;___ mix of sweetened and
 ___unsweetened
7. I usually eat protein at:
 - a. All my meals
 - b. most of my meals
 - c. half of my meals
 - d. some of my meals
 - e. none of my meals
8. I eat these many servings of veggies each day.
 Scale (0-6)
9. I eat these many servings of fruit each day.
 Scale (0-6)
10. I'm able to access affordable and quality food.
 Strongly disagree (0-5) Strongly agree.
11. I have a drink containing alcohol this many days per week.
 Scale (0-7)

Energy & YOU

11. I spent most of the day:
 Sitting or inactive, standing, moving.
12. On a usual day, I take 5+ minute break to stretch or move these many times.
 Scale (0-6+)
13. I exercise vigorously these many days per week:
 Scale (0-7)

14. On the days I exercise vigorously, I do it for this long
 _____ 15 minutes; _____ 30 minutes; _____ 45 minutes; _____ 1 hour or more
15. I exercise moderately these many days per week.
 Scale 0-7
16. On the days I exercise moderately, I do it for this long.
 _____ 15 minutes; _____ 30 minute; _____ 45 minutes; _____ 1 hour or more
17. I do strength exercises these many days per week.
 scale (0-7)
18. Have you ever regularly smoked or ever used tobacco?
 Yes _____ or no _____
19. How often are you exposed to other people's smoke?
 Always (scale 0-5) Never
20. I get these many hours of sleep on a normal day.
 Scale (4-11+ hours)
21. Over the last 7 days, I would rate my sleep quality as
 Very bad (scale 0-5) very good)
22. In your daily life, do you struggle with any of the following?
- Paying for daily living expenses
 - Managing or paying off debt
 - Feeling stress work
 - Managing health problems affecting me or my family
 - Taking care of my family
 - Finding affordable and quality housing
 - Building or maintaining relationship
 - Getting clear health information from my provider or other resources
23. My stress level last month has been:
 Very high (0-5) Ver low
24. In the last month, I coped with my stress.
 Not well (scale 0-5) Very well
25. I'd rate my daily energy as
 Very low (scale 0-5) very high
26. Over the last 2 weeks, how often have you felt little interest or pleasure in doing things.
- Nearly every day
 - More than half of the days
 - Several Days
 - Not at all
27. Over the last 3 weeks, how often have you felt down, depressed, or hopeless.
- Nearly every day
 - More than half of the days
 - Several Days
 - Not at all
28. How connected do you feel to family, friends, and colleagues.
 Not connected (scale 0-5) Very connected
29. How lonely do you feel?
 Very lonely (scale 0-5) Not lonely
30. I normally work.
 Days, nights, both days and nights, things do not apply to me.
31. In the last month, I was sick and missed work these many days:

Scale (0-6+)

32. How productive have you been at work in the past month.
Not all (scale 0-5) Very much
33. How health-friendly is your organization?
Not at all (scale 0-5) Ver much

Your Body and You

34. My height: Feet: _____ and inches _____
35. I weigh in lbs.: _____
36. Do you know your waist measurement, or can you measure it now?
Yes _____ or no _____
37. My waist measurement is: _____
38. My total cholesterol: _____
39. My HDL cholesterol: _____
40. My LDL cholesterol: _____
41. My Triglycerides: _____
42. My blood glucose: _____
43. My A1c: _____
44. My systolic blood pressure: _____
45. My diastolic blood pressure: _____ -
46. To stay safe. Choose all that apply:
- I wear a seatbelt.
 - I wear a helmet on a bike or motorcycle.
 - I don't ride a bike or motorcycle.
 - I prefer not to answer.
47. To stay safe. Chose all that apply:
- I don't' text, talk or use devices while driving.
 - I don't drive after having 1 drink with alcohol.
 - I don't drive.
 - I prefer not to answer.
48. To stay safe. Choose all that apply:
- I don't use recreational drugs.
 - I wear sunscreen if I'm outside 30+ minutes.
 - I avoid tanning beds.
 - I prefer not to answer.
49. Have you had a flu shot in the past year?
Yes _____ or no _____
50. Have you had the COVID Vaccine or booster in the past year?
Yes _____ or no _____
51. Have you had a tetanus shot in the past 10 years?
Yes _____ or no _____
52. Have you ever had a pneumonia vaccine?
Yes _____ or no _____ or does not apply: _____ -
53. Have you had a Pap test (in the past 3 years)
Yes _____ or No _____ or Does not apply _____
54. Have you had a mammogram in the past 2 years?
Yes _____ or no _____ or does not apply _____
55. Have you gone to the dentist in the past 6 months?
Yes _____ or no _____ or not sure: _____

56. Have you lost your balance and fallen in the past 6 months?
Yes_____ or no_____ or not sure: _____
57. I have these conditions. Choose that apply:
- Coronary Heart Disease
 - Atrial Fibrillation
 - Heart Failure
 - None of these
 - I prefer not to answer.
58. I have experienced these events:
- Heart attack
 - Stroke
 - None of these
 - I prefer not to answer.
59. I have these conditions. Choose all that apply:
- High Blood pressure
 - High Cholesterol
 - None of these
 - I prefer not to answer.
60. I have these conditions. Choose all that apply:
- Anxiety
 - Depression
 - None of these
 - I prefer not to answer.
61. I have these conditions. Choose all that apply:
- Asthma
 - COPD
 - None of these
 - I prefer not to answer.
62. I have these conditions. Choose all that apply.
- Type 1 Diabetes
 - Type 2 Diabetes
 - Not sure which type
 - None of these
 - I prefer not to answer.
63. I have these conditions. Choose all that apply.
- Rheumatoid Arthritis
 - Osteoarthritis
 - Not sure which type
 - None of these
 - I prefer not to answer.
64. I have these conditions. Choose all that apply:
- Back or spine condition
 - Physical disability that limits my ability to exercise
 - Hearing impairment that requires an assistive device
 - Visual impairment that requires special reading materials
 - None of these
 - I prefer not to answer.
65. I have these conditions. Choose all that apply:

- a. Chronic headache or migraine
 - b. Other conditions not listed.
 - c. None of these
 - d. I prefer not to answer.
66. Have you ever had cancer (excluding basal or squamous cell skin cancer)?
- a. Yes, I am living with cancer.
 - b. I've had cancer and currently cancer free
 - c. No, I've never had cancer.
 - d. No, I've never had cancer.
 - e. I prefer not to answer.
67. I do what my healthcare provider recommends preventing problems caused by my health conditions:
None of the time (scale 0-5) All the time
68. To manage my health, I take. Choose all that apply.
- a. Prescription medicine as directed.
 - b. Over the counter medicine
 - c. Vitamins or supplements
 - d. None of these
69. I take my prescribed medicine as I'm supposed to:
None of the time (scale 0-5) All the time
70. I have chronic pain in my:
- a. Neck
 - b. Shoulder
 - c. Back
 - d. Hip
 - e. Head
 - f. Wrist/ Hand
 - g. Knee
 - h. Foot
 - i. I haven't had any pain.
 - j. I prefer not to answer.
71. My pain (based on answer 70) is:
Very painful (dial clock to answer) Not too painful.
72. For the past month, I have been coping with pain.
Not well (scale 0-5) Very well
73. Compared to other people my age, I'm:
Very unhealthy (scale 0-5) Very Healthy
74. I am confident I can eat nutritious food:
Strongly agree (scale 0-5) Strongly disagree.
75. I'm confident I can be active:
Strongly agree (scale 0-5) Strongly disagree.
76. I'm confident I can reach or maintain a healthy weight range:
Strongly disagree (scale 0-5) Strongly agree.
77. I'm confident I can manage stress.
Strongly disagree (scale 0-5) Strongly agree.
78. I'm confident I can get enough sleep.
Strongly disagree (scale 0-5) Strongly agree.
79. I'm confident I can keep my back, muscles, and joints healthy:
Strongly disagree (scale 0-5) Strongly agree.