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Health Equity & Obesity Management:

An Improvement Project in a Federally Qualified Healthcare Center in Central Harlem

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

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Abstract

Description of the problem: Obesity is a growing healthcare problem worldwide with extraordinary costs to the individual's health and the healthcare system. Individuals most affected by obesity include socioeconomically disadvantaged individuals, often with limited resources to seek specialized care.

Available knowledge: Various weight-loss interventions exist but access and success rates vary. Weight loss is often modest and additional factors such as social determinants of health, health literacy, and patient motivation are all factors important to the success of an intervention.

Specific Aims: The purpose of this quality improvement project was to improve self-regulatory weight loss behaviors and increase weight loss among socioeconomically disadvantaged obese patients receiving care in an FQHC.

Intervention: All patients attending non-urgent primary care visits were screened for a BMI of ≥ 30 for participation. Patients received screening for depression and for social determinants of health. Providers delivered a brief counseling intervention. Texting was used to encourage accountability and completion of weekly weight monitoring. **Results:** Eighty-six percent of patients seen for nonurgent visits during the pilot were screened for participation and 70% participated. Of the patients that enrolled, 42% completed the program, and 67% of completers lost weight.

Conclusions: Brief counseling is an effective platform to deliver weight loss education in primary care. Attrition in obesity treatment programs is high, but notably, in this project, 42% of these difficult-to-reach patients completed the program. While most completers did not meet the weight loss goal of a 5% reduction in body weight, 67% lost at least some weight.

Keywords: obesity, weight loss, primary care, FQHC, social determinants of health

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Introduction

Problem Description

Obesity is a global crisis and its prevalence has increased at alarming rates in the last three decades. In the United States, it has been estimated that almost one out of every two adults (42%) are classified as obese (CDC, n.d.). The cost to the healthcare system is estimated at \$147 billion annually (CDC, n.d.). However, this number is likely an underestimate when obesity is considered a modifiable risk factor of other comorbidities, especially heart disease and diabetes. The trend is predicted to continue to rise, with estimates that 50% of the population will be obese by 2030 with 25% of American adults being severely obese, with a BMI of 35 or greater. Disproportionately affected subpopulations include women, non-Hispanic black adults, and low-income persons (Ward et al., 2019).

Lack of access to healthy foods due to high costs, food deserts, and lack of nutritional education are components of an obesogenic environment. These factors are more likely to be experienced by socioeconomically disadvantaged persons and increase their predisposition toward obesity (Bennett et al., 2012a). The American Heart Association describes efforts to mitigate these adverse health-related factors as primordial and primary prevention, and are the framework of the Healthy People initiatives to prevent and reduce heart disease and stroke (Weintraub et al., 2011). Comorbidities such as cardiovascular disease, hypertension, diabetes, and hyperlipidemia are all impacted by and contribute to obesity and metabolic syndrome. These chronic illnesses are often given more time and attention, with obesity care not sufficiently prioritized.

The field of obesity medicine, including pharmacologic and non-pharmacologic therapies, is relatively new and not accessible to everyone who could benefit. Nonpharmacological treatment modalities include intensive diet and behavioral therapies, exercise and health coaching, and referrals to weight management specialists. Pharmacotherapy, while not universally accepted by medical professionals, is becoming more prevalent but uptake across populations varies widely due to differences in insurance coverage and out-of-pocket cost (Taylor, 2020). A significant barrier to the widespread adoption of obesity management strategies is the bias that obesity is a preventable disease caused by unhealthy lifestyle habits. Patients are frequently educated to eat better and exercise without full consideration of access to these opportunities. There are many barriers including environmental, economic, and social constraints, which impact the perceived choice to follow this advice. This is particularly true in socioeconomically disadvantaged groups where all these factors limit access to care.

Primary care providers cite time constraints, prioritization of comorbid illness, and hesitancy due to lack of preparation in obesity counseling for not addressing obesity management (Bennett et al., 2012b). Considering the access barriers mentioned, primary care providers are particularly well suited to address obesity because of their established relationships, focus on prevention, and sensitivity to the community context. This is particularly true for socioeconomically disadvantaged patients who may not have alternative care options or access to specialists.

The impact of obesity on vulnerable populations should be considered in terms of Maslow's hierarchy of needs. Heart-healthy nutrition and exercise cannot be prioritized when necessities, including shelter, safety, and food security are tenuous. Generational poverty further increases the predisposition towards obesity and correlates with increased healthcare costs over a

lifetime (Levine, 2011). Crafting a successful intervention to combat obesity in vulnerable populations requires attention to the full array of determinants of health.

Local Problem

The setting for this quality improvement project is a federally qualified community healthcare center (FQCHC) in the city of New York. Community Healthcare Network, the FQHC identified for this project, serves a population of socioeconomically disadvantaged patients, with most patients being 100% below the national poverty level. The racial makeup of the clinic is more than 85%, non-Hispanic Black patients. The majority of patients who attend the clinic live in the surrounding neighborhood, consisting of King Towers, a low-income housing development managed by the New York City Housing Authority. The neighborhood is a food desert, with more than 50 fast-food restaurants and limited healthy food options (Center for Nutrition, 2021). The neighborhood is obesogenic, and patients at the health center suffer from a high burden of diseases associated with obesity. Given the many medical and psychosocial needs, providers and patients often fail to prioritize obesity treatment either independently or in the context of their comorbid illnesses.

Available Knowledge

A PRISMA-guided literature search was undertaken to examine the most effective strategies for weight loss in overweight and obese patients. The databases searched were CINAHL, OVID, and PubMed. Limits were placed to only include peer-reviewed articles, English text, and dating between 2010 and the present day. Search terms included “overweight AND obese,” “interventions”, “weight loss AND weight reduction”, and “primary care”.

Additional evidence-based guidelines and expert opinion pieces were later added to the primary research articles evaluated.

Among the studies reviewed, four intervention types were identified: brief counseling, technology-based, group counseling, and care management. The Top Ten Tips (10TT), a brief counseling tool, was identified as the most promising intervention. The evidence was synthesized and sorted by intervention as illustrated in Table 1 (Appendix A). The combined sample size was skewed toward female sex and White race. The individual study demographics as it relates to sex and race are outlined in Table 1 (Appendix A).

Several studies examined brief counseling as an intervention. Outcomes included significant weight loss as well as reductions in BMI, waist circumference, percentage of body weight lost, blood pressure, and blood glucose levels (Beeken et al., 2017; Burr et al., 2020; Kliemann et al., 2017; Semlitsch, 2019). Some of the interventions further described weight-loss behaviors.

The most favorable brief counseling intervention study reviewed was the Top Ten Tips (10TT), which includes an informational leaflet, a self-monitoring logbook, and a wallet-size food portion guide for food shopping (Beeken et al., 2012). Initial education took place during a primary care visit and the primary endpoints were weight loss defined as loss of 5% body weight at 3 months post-intervention. The randomized controlled trial design allowed for comparison to usual care and showed statistically significant weight loss of three pounds more than the control group. While the study was comprised of predominately white females, not unlike other studies of its kind, some strengths of the study are that it included socioeconomically disadvantaged patients and was delivered in primary care.

Burr et al. (2020) tested the 10TT counseling tool in a rural primary care setting. The quasi-experimental study assessed pre-post comparisons of weight, BMI, blood pressure, and weight-loss behaviors. A much smaller study than Beeken (2012), Burr's team did not reach statistically significant weight loss but noted an average of 2.5 pounds of weight loss. Importantly, weight-loss behavior scores improved from baseline. The use of a rural setting is important as rural patients are generally of lower socioeconomic status as compared to urban counterparts.

Another study included under brief counseling is by Kliemann et al. (2017), who provided a secondary analysis of Beeken's study. The same independent variable, 10TT, was used but with a different primary endpoint to look at self-regulatory skills for weight loss. The intervention group scored significantly higher in self-regulation at the 3-month endpoint as compared to the usual care group. This is important because self-regulation of behavior is key to long-term success in keeping weight off or maintaining any healthy habit.

Additional support for the effectiveness of brief counseling is the guideline synthesis by Semlitsch et al. (2019). The authors list the myriad guidelines and strategies that assist in the identification, assessment, diagnosis, and treatment of obesity and compared guidelines in terms of effectiveness. They determined that while one guideline or set of interventions was not deemed superior, the consensus was that primary care providers should assist with behavioral interventions, including screening of psychosocial stress, individual motivation, and social determinants of health.

Other interventions examined as part of this systematic review included technology use. A recent literature review by Rodriguez-Rumbo et al. (2020) identified technology as an effective tool for weight loss, as it relates to adherence and self-efficacy. Technology-based

interventions have the appeal of flexibility as the patient does not require transportation or scheduling to conduct most of these interventions. Text messaging, internet-based learning modules, and telehealth support groups were all evaluated. Technology, when accessible, can assist in a patient's weight loss efforts.

Four studies, as outlined in Appendix A, utilized group counseling, in either primary care offices or community centers, as a weight loss intervention (Marra et al., 2019; Meurer et al., 2019; Smith et al., 2019; Thabault et al., 2016). The results were similar, in that they all indicated weight loss. While this intervention provides peer support and accountability, there are additional constraints. Adherence is influenced by socioeconomic factors including leisure time, access to exercise classes, and transportation services. In the current climate of the ongoing COVID pandemic, group counseling is even more challenging.

The final intervention category reviewed is the use of case management. One robust study, Holtrop et al. (2017), was included that showed significant weight loss in the intervention group, as well as improvement of hypertension and diabetes management. While successful, the implementation of this type of program is costly and time-intensive.

In the context of this quality improvement project, brief counseling was deemed to be the best fit considering the evidence and suitability for the selected site. Case management is cost-prohibitive. Group counseling can be difficult to schedule, requires careful consideration of confidentiality, and was less feasible due to in-clinic restrictions imposed by the pandemic. Technology was appealing but not universally accessible to the target population. Therefore, the purpose of this project was to implement a brief counseling intervention that included consideration of psychosocial factors as they relate to obesity management.

Rationale

An overarching theory that informs obesity management did not emerge from the literature. The theory most aligned with the implementation of an obesity intervention in an FQHC is the Chronic Care Model (Improving Chronic Illness Care, n.d.). The relevance of this theory is that providers often do not have the tools they need to be effective, and the patients are often underprepared or underinformed to successfully manage a chronic illness. Obesity is a chronic condition that does not receive the time and attention warranted. Each intervention identified in the literature review looks to support patients in their individualized journey towards weight loss. The Chronic Care Model components relevant to this proposal are health coaching and systems to support self-management and actualize health goals.

Implementation of any change is challenging. To successfully integrate a brief counseling intervention in the primary care setting, it was important

to engage the primary team in a way that they saw the value added to the change. The primary care team and patients needed to be motivated and results-oriented.

Kotter's (Kotter, 2007) change theory was applied from the onset of the intervention. Figure 1 outlines Kotter's stages of change.

The primary care team understood the sense of urgency required to propel change forward. The entirety of the primary care team can be considered the coalition to move the change forward. The key components that were different from usual care are structured counseling and increased follow-up intending to promote self-regulatory skills. This step created a vision of change and a new model for providing care. The

Figure 1

Kotter's Stages



counseling and enrollment of patients was the coalition's way of communicating this vision to the patients. Weekly communications were used to empower the action of patients. The brief period for the intervention, 3 months, was intended to be the short-term win that could carry the intervention forward in a sustained way. Ultimately, this improvement project looked to change behavior in both patients and staff to promote increased health self-efficacy and weight loss. A positive outcome would empower patients and staff to build on their personal and collective changes respectively and encourage both the individual and the team to make the change stick.

Specific Aims

The purpose of the quality project was to improve self-regulatory weight loss behaviors and weight loss among socioeconomically disadvantaged obese patients receiving primary care in an FQHC. The overarching aim was to develop and implement an integrated brief counseling intervention with weekly text message follow-ups to improve self-regulatory behaviors and weight loss. The following objectives were addressed in a stepwise fashion to achieve the stated purpose:

- Create an interdisciplinary coalition focused on implementing a weight-loss initiative for obese adult patients.
- Screen all patients seen for non-urgent primary care appointments for inclusion in the obesity management pathway based on a BMI of equal to or greater than 30.
- Implement the brief counseling protocol with each patient screened into the obesity management pathway.
- Track self-reported weekly weights via bidirectional SMS texting.
- Reduce patient weight from the onset of intervention to 12-week follow-up.

- Assess patient and staff satisfaction with the counseling intervention.

Methods

A PDSA framework was used to guide the development, implementation, and evaluation of the project (Langley et al., 2009). This aligned with Kotter's stages of change for introducing new practices and is instrumental to the success of a quality initiative (Kotter, 2007).

Context

The project site was a federally qualified healthcare center (FQHC), consisting of thirteen clinics spanning the boroughs of New York City. The FQHC serves approximately 85,000 patients annually and the clinics are situated in the most underprivileged neighborhoods across four boroughs. The specific clinic for the pilot is located in Central Harlem. The mission of an FQHC is to provide comprehensive services to underserved communities. The organization focuses on patient needs by incorporating not only medical but behavioral health, social work, and nutrition services at each clinic.

The literature has highlighted that primary care is optimal and sometimes the only place in a patient's interactions with healthcare to address obesity in socioeconomically disadvantaged adults. With this in mind, primary care can be delivered in various ways. To better understand the fit of the organization's ability to undertake the intervention, a microsystem assessment was done. (Appendix B). The microsystem assessment illustrated the myriad people and departments that interface with obese patients in this primary care practice. The site leadership is invested in obesity management. The full-time providers at this clinic consistently work with the same nursing and administrative staff, further increasing the continuity of the team. Training is

conducted monthly for both nursing and provider teams. This left designated time to educate staff about their individual roles and participation in this improvement project.

The quality initiative focused on patients who needed to be assessed, diagnosed, educated, and connected to wrap-around services that support weight loss and grow health behaviors. For underserved populations, referrals and specialty care can be difficult to access. Data from the project site estimates that less than 30% of referrals are actualized. For this reason, treating obesity in underserved individuals is a complex problem best suited for the primary care clinic. This increases the importance of the microsystem's ability to meet patients' needs. The Harlem center care team includes providers, nursing staff, social workers, behavioral health staff, and nutritionists. The care team also indirectly includes administrative staff, tech support staff, and the health literacy department.

To better understand the factors that influence obesity in this setting a cause-and-effect analysis was carried out. (Appendix C). Individual patient factors that affect success include health priorities and other comorbid illnesses, health literacy, and self-efficacy as it relates to weight loss and self-regulatory behaviors. While the patient has direct and indirect support from the teams within the microsystem, they are not the only influences. Equally, if not more important, is the influence of the family unit and community resources including food banks, farmer markets, grocery stores, and anywhere health activities take place. Families must consider cost and access to food. Some cultures are heavier in calorie-dense foods. Central Harlem is designated a food desert and many patients lack transportation to access healthier resources. Ultimately, social determinants impact patients' readiness and ability to participate in care. The Harlem clinic is well suited to address many unmet patients' needs as it relates to obesity management.

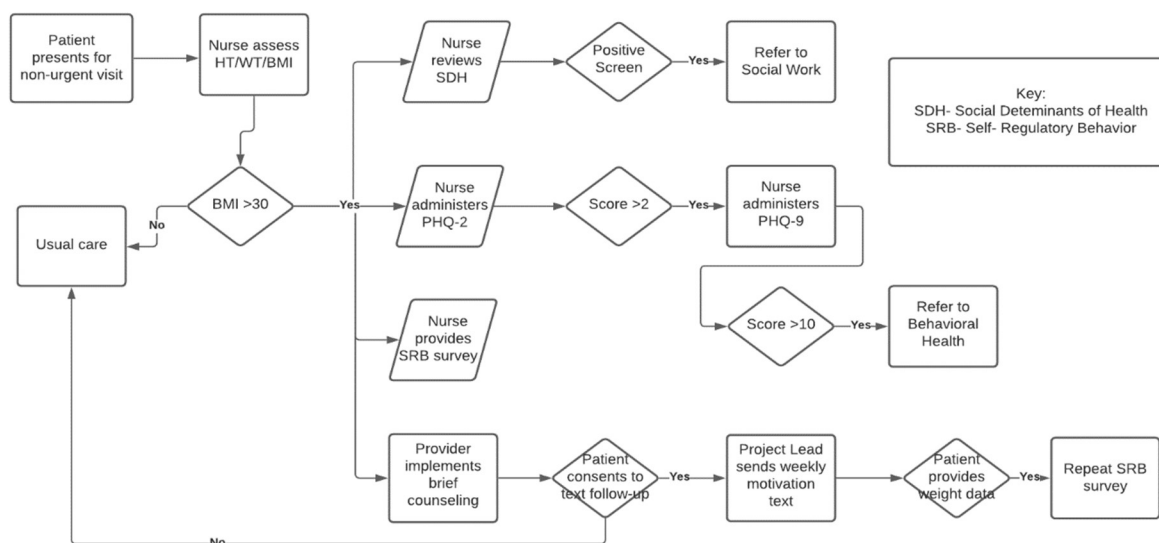
Several contextual elements related to the site had the potential to facilitate or impede the successful implementation of the project. Potential restricting forces included competing demands, prioritization of other comorbidities, and lack of available services. This reflects the larger healthcare system that has limited guidelines for obesity management, stigma in addressing weight issues, and lack of insurance coverage for treatment options. The FQHC system's interplay of multiple disciplines strengthened the team and provided patients with individualized support. Both supporting and restraining forces are outlined in the force field analysis, provided in Appendix D.

Intervention

The quality initiative consisted of three components, 1) screening for eligibility as well as social and emotional challenges, 2) a brief weight-loss counseling intervention, and 3) text-based follow-up for weight monitoring. The initial step in the process was to identify patients for inclusion. Rolling admission took place over a four-week screening period. Figure 2 provides a flow of the intervention from the screening process through the completion of the intervention.

Figure 2

Intervention Flow map



As noted in the figure, patients who presented for non-urgent visits were screened by the nursing staff who took vitals, anthropomorphic measurements and calculated BMI. If their BMI was greater than or equal to 30, or if they had a BMI \geq 30 in the past 3 months they were included in the pathway. If no anthropomorphic measures had been documented in the last 3 months, the patient was not eligible to participate.

The nursing staff then assisted the patient in completing the Social Determinants of Health Questionnaire and a PHQ-2, a validated depression screening tool. This Social Determinants of Health Questionnaire is a tool used company-wide and is intended to be completed at the patient's initial visit. A positive screen question, as indicated by a “yes” answer, indicates the need for a social work referral. This was already a clinical policy and did not include any practice change or additional education. The social worker completes an in-depth needs assessment and provides resources based on the individual need, such as housing, food pantries, or job training programs.

The PHQ-2 was then completed to screen for depression. A positive score of 3 or greater on the PHQ-2 triggers additional screening using the longer version, PHQ-9. A PHQ-9 score greater than 10 indicates the need for a behavioral health referral. Lower scores are addressed by provider-directed counseling and optional referral to the Wellness team. Scores are repeated at each non-urgent visit to assess change and to escalate interventions as needed. Data review of the screening elements was continuous and reported via weekly emails to update the team.

The nurse then distributed and assisted the patient in completing the self-regulatory behavior survey. The survey measures the patient’s current levels of activation and self-regulation as it relates to health and weight loss. These questions are a self-reported measure of one’s ability to meet a goal and have been adapted from the validated survey, Short Form Self-

Regulatory Questionnaire (Carey et al., 2004). The questions are outlined in Appendix E. The nurse asked the questions and documented the patient's response in the EHR. Each of the five questions was measured on a Likert scale from “Strongly Disagree” to “Strongly Agree” (1-5 points). Utilization of the EHR to document the patient responses allowed for the provider to see the information obtained by the nurse immediately.

Next, the provider delivered the brief counseling. This was a one-time session at the time of enrollment into the program. The counseling was based on the 10 Top Tips, a tool validated in previous studies to help improve weight loss and self-regulatory behaviors related to weight loss (Beeken et al., 2017). The Ten Top Tips were reviewed and agreed upon by the health literacy department and the project committee. The counseling elements are outlined in Figure 3. Providers educated the patients on the development of a meal routine, food swaps for reduced-fat foods, healthy snacks, and limiting liquid calories. Recommendations were made to incorporate five portions of fruits and vegetables daily. Further nutritional counseling points included mindfulness while eating, portion sizes, and reading food labels. Lifestyle counseling points included regularly getting up and moving regularly throughout the day and walking for exercise. A handout was also provided to the patient that outlined the counseling points, identified the patient's starting weight, and the patient’s goal weight of 5% weight loss. The handout also provided space to record weekly weights for personal tracking.

After the provider gave the brief counseling, they invited the patient to participate in weekly follow-ups via text messaging and to track weight loss progress over the next 12 weeks.

Figure 2

Brief Counseling Elements

<p>10 Top Tips Counseling:</p> <ol style="list-style-type: none"> 1. Develop a meal routine 2. Eat reduced fat foods 3. Walk for weight loss 4. Pack a healthy snack 5. Look at food labels 6. Be mindful of portion sizes 7. Get up on your feet 8. Remember that drinks have calories 9. Focus on food when eating 10. Eat at least 5 portions of fruits and vegetables a day

Patients' election to be outreached via text messaging was documented in the EHR. Each week a text message was pushed to the participants, asking them to weigh in and text back the numeric value. Outgoing messages included motivational reminders of the counseling points. Incoming messages were strictly for the communication of weekly weights. No additional information was communicated via text messaging as patients should still use the systems in place if they had further questions or need to communicate other information to clinical staff. This step was overseen by the Project Lead, who collaborated with the Informatics team to web-enable secure text messaging.

At the end of the 12 weeks, the patients were asked to repeat the patient motivation survey and to re-evaluate progress and weight loss goals. Preferably this follow-up would have been in the clinic, but the follow-up survey and data collection were attempted via telephone outreach by the Project Lead if in-clinic follow-up was not feasible.

Implementation of the Intervention

The preplanning stages for this quality project included creating an interdisciplinary coalition including local leadership. Curriculum development, survey development, and collaboration with IT were necessary to move forward in the planning stages. Curriculum and survey development were done by the Project Lead. IT was instrumental in operationalizing the text message functionality. The resources, planning activities, and intended outcomes are outlined in the logic model, Appendix F.

Planning included training of participating staff and delineating a timeline for the intervention phase, as agreed on by the project team. Nursing staff required brief training to establish the new elements, which included screening by BMI, explaining the self-regulatory survey, and documenting in the EHR tracking template. Providers received education on the

counseling points and referrals based on the nurses screening for depression and social determinants of health. The health literacy department was consulted to review the educational materials against their standards for patient education before going live. The Project Lead worked with the Informatics department to prepare for delivering the text messages weekly and maintaining the data in the EHR. These steps in the implementation correlated to Kotter's stages of "introducing new practices" and, "enabling action" (Kotter, 2007).

Once implementation began, patients were tracked to assure that the pathway was being followed. Chart reviews were completed to identify missed screening opportunities. The Project Lead maintained a project log including chart audit data for evaluation and team feedback, Appendix H. This practice is consistent with Kotter's principles of communication and enabling action when challenges arise. The Project Lead also checked in with providers weekly via email to assess perceived successes and challenges with the pathway that could be addressed in real-time.

Final data collection took place 12 weeks after the initial counseling. To promote adherence and optimal outcomes, patients were encouraged to book their 12-week follow-up at the time of the initial visit. At the 12-week follow-up weight and BMI data were remeasured and the self-regulatory survey was repeated. For those patients who did not come into the clinic, the text messaging platform was used to collect a final self-reported weight. Telephone outreach by the Project Lead was utilized to collect a follow-up self-regulatory survey and review individual results with the patients who completed the program. Feedback was given as to how self-regulatory behaviors changed as well as suggestions for how to continue utilizing the counseling materials for weight management.

Evaluation of the Intervention

The evaluation of the intervention was completed using a PDSA-guided framework. This allowed for real-time evaluation and rapid cycles to implement changes as needed. The next section will discuss the measures implemented, and the approach taken to operationalize and analyze the measures. Detailed strategies are outlined in Appendix G.

Measures & Analysis

The measurement and analytic strategy are organized by objectives. The first objective was *to create an interdisciplinary team to implement the intervention*. Creating the interdisciplinary team was measured using both qualitative feedback and the proportion of providers who agreed to participate in the intervention. The threshold set for participation was that 90% of providers (physicians and advanced practice providers) in the clinic would agree to participate in the brief counseling. After initial education was delivered, providers were encouraged to respond via email with their confirmation of participation. Any provider that was unable to participate was asked to communicate this to the Project Lead via weekly email check-ins. Qualitative analysis was done by analyzing email feedback from open-ended questions that sought insight as to what worked, any challenges that arose, and patient responsiveness to the intervention.

The second objective was *to screen all patients attending non-urgent primary care for BMI and identify those with a BMI equal to or greater than 30*. The aim was operationalized by assessing the number of patients who meet the BMI criteria (≥ 30) as compared to the number of patients who had non-urgent visits. The Project Lead abstracted this data through a manual review of the charts. Provider schedules are not organized by visit type, so a manual review of providers' schedules was required to identify potentially missed screening opportunities. Each non-urgent visit for every participating provider was counted in the denominator. The numerator

represents patients with a screened BMI. Frequencies and proportions of missed screening were calculated. Of those who were screened, the frequency and proportion of patients with a BMI equal to or greater than 30 was calculated.

The third objective included *the implementation of counseling by the provider as well as screening for depression and social determinants of health* by nursing. Implementation of counseling was operationalized by EHR review for documentation of the counseling intervention in the treatment plan. Frequencies and proportions of patients screened into the intervention and for depression and social determinants of health were calculated.

The fourth outcome measure was that *referrals are appropriately made to behavioral health and social work for any patient with positive screening tools, PHQ-9 score of 10 or more, and Social Determinants of Health with any positive response*, respectively. This measure was operationalized by assessing the generation of referrals as compared to the patients who screened positive. It was not inclusive of patient follow-through to making or keeping the referral appointments. Quantitative descriptive statistics were used to identify the frequency at which patients who screened positive received the appropriate referral.

The fifth objective was *to engage patients in self-reported weights via SMS texting*. The goal was set that 50% of patients who received the initial counseling session will provide follow-up weight data. Engagement in measuring weekly weights was measured in two ways. First, the frequency and proportion number of patients who reported a weight via SMS text at the completion of the program was calculated, with a goal of 50% adherence. Second, the frequency and proportion of patients who submitted weekly weights via SMS text were calculated.

The sixth objective was *to increase self-regulatory weight loss behaviors from onset to the end of the intervention*. This information was collected via a survey delivered at the start and end of the clinical program. The survey consisted of five questions adapted from the Short Form Self-Regulatory Questionnaire. The survey was used to guide the patient in setting goals at program entry and conclusion. The questions broadly assessed patients' impulse control and confidence in meeting their goals, as outlined in Appendix F. Each question was formatted on a Likert scale from "Strongly Disagree" to "Strongly Agree". Given the subjectivity of the questions, the score itself is a baseline and the meaningfulness is determined by whether the score increases post-intervention. Frequency, proportion, and change were used to assess if the patient made progress during the program. The goal was a 10% increase in the frequency of positive scores from baseline data. Descriptive statistics were used to describe the mean change score for each individual question. Patients must have submitted baseline and end-of-intervention survey data to be accounted for in this analysis.

The seventh objective was *to reduce patient weight from onset to 12-week follow-up*. The outcome measure was set at 5% of the individual's body weight. Pre-post change in weight was calculated to determine if the patient lost weight and if the weight loss achieved was $\geq 5\%$ of the baseline weight. Individuals who had a weight recorded at baseline and 12 weeks were included in this analysis. Frequency, proportion, and change scores were calculated.

Table 1

Measurement Framework

<i>Aim or objective</i>	<i>How to operationalize</i>
To create an interdisciplinary coalition focused on implementing a weight loss initiative for obese adult patients.	90% of providers agree to participate
To screen all patients seen for non-urgent appointments primary care appointments from start date to 4 weeks post start date for inclusion the counseling intervention based on BMI of equal or greater than 30.	Numerator: Patients enrolled Denominator: Patients who had nonurgent visits
To implement the brief counseling protocol with each patient enrolled patient.	Numerator: Patients received counseling as evidence by documentation in treatment plan Denominator: Patients enrolled
To complete referrals to Social Work and Behavioral Health as determined by screening tools.	Numerator: Referrals generated Denominator: Patients with positive screening on PHQ or SDH
To collect data from patients regarding self-reported weekly weights via bidirectional SMS texting.	Numerator: Number of patients who responded to texts with weekly weights Denominator: Patients who received initial counseling
To increase patient's <u>self regulatory</u> weight loss behaviors.	Patients self-regulatory weight loss behaviors will increase by 10% from baseline. Likert scale (1-5) survey
To reduce patient weight from onset of intervention to the 12-week follow up	(Weight at baseline – Weight at 12 weeks) / weight at baseline X 100
To assess provider satisfaction with counseling intervention protocol	Likert scale will evaluate each dimension of the survey.
To assess patient satisfaction with the counseling intervention protocol	

The final objective was *to assess patient and provider satisfaction with the intervention*. A survey was constructed to measure provider satisfaction. The survey had five questions based on a Likert scale. (Appendix I) Providers were asked to rate user-friendliness, added value, sensitivity to time constraints, and intention to continue using the intervention. Kotter's change theory includes the phase, "make it stick", and intention to continue using the intervention provided data regarding perceived sustainability.

A survey was constructed to measure patient satisfaction. The survey had four questions using a Likert scale as well as an open-ended question to elicit any additional feedback. (Appendix J) Patients were asked to rate user-friendliness, motivational impact, and alignment with weight loss goals. The Project Lead developed both the patient and provider surveys. Peer review was utilized for validation of the survey questions. The provider survey was delivered via email over Google Forms. The patient survey was delivered by phone. Satisfaction data for both patients and providers were analyzed. Descriptive statistics including frequency, proportion and mean scores were calculated to describe provider and patient satisfaction with the obesity pathway.

Ethical Considerations

A potential ethical issue was the exclusion of patients who do not have SMS-capable phones; this method of follow-up was selected based on general accessibility. Texting is an effective way to reach many patients, but there is the potential that some patients did not have cell phones or data allowances for this service.

The project was accepted as quality improvement at the project site and The University of Massachusetts Boston IRB has determined that quality improvement projects do not need to be reviewed by the IRB. The Clinical Quality Improvement Checklist, Appendix K, was completed

and demonstrates that the project clearly falls into the domain of clinical quality improvement. The project, Health Equity & Health Equity & Obesity Management: An Improvement Project in Primary Care, is quality improvement and does not meet the definition of human subjects' research because it is not designed to generate generalizable findings but rather to provide immediate and continuous improvement feedback in the local setting in which the project was carried out.

Results

Seventy-nine patients participated in the project (Table 2). The mean age was 41 with more than 50% of the participants being young adults ages 18 to 40 years old. Less than 5% of the patient population was over 65 years of age. Roughly 75% of participants were female which is a well-documented phenomenon in weight loss literature. The enrollment criterion included a BMI of ≥ 30 with no upper limit. The mean BMI was 39.2, which corresponds with the upper limit obesity class II for diagnostic purposes. Participant BMI ranged from 30 to 69 with a mode of 36, which also corresponds with class II obesity.

The majority of participants were recruited by primary care providers (67%; n=53) as compared to women's health/OBGYN (24%; n=19) and infectious disease (8%; n=7), respectively. Appendix L describes the patient population by which type of visit type they were seen for during enrollment.

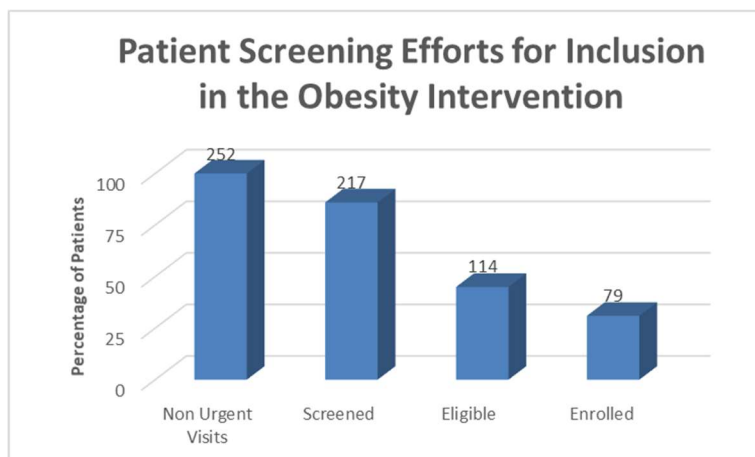
Table 2

Patient Demographics

Age	n (%)
18-40	43 (54)
40-65	30 (38)
>65	6 (8)
Gender	
Male	19 (24)
Female	60 (76)
BMI	
30-39.9	49 (62)
>39.9	30 (38)

Four providers agreed to participate in the pilot and remained engaged throughout the intervention, yielding 100% retention. This met and exceeded our goal of recruiting 90% of the clinic providers to participate.

Screening of patients for inclusion and enrollment in the pilot was conducted over the four weeks of enrollment. A total of 252 nonurgent visits took place over the project period and the screening efforts are reflected in Figure 4. Eighty-six percent of the patients who presented



for non-urgent visits were screened for inclusion in the project. Of those patients screened, 37% (n=114) were eligible for enrollment, and of those, 69% (n=79) were enrolled in the program.

A review was conducted of enrolled patients' charts for evidence of the brief weight-loss counseling materials in the treatment plan. The providers completed the counseling for 100% of the patients enrolled. Providers also noted if a patient declined to participate (n=14, 17%). Additional information was documented by some providers when noting a declination. Reasons given by patients ranged, from not wanting to lose weight, other health priorities to address, and not wanting to receive text messages.

A chart audit was conducted to determine the degree to which the components of the obesity pathway were implemented. The survey for depression, the PHQ scale, was completed by 93% of the patients who participated in the program. Of those who screened positive (n=3), 100% were referred to the behavioral health team for further evaluation. The screening for Social Determinants of Health was completed by 75% of the patients who participated in the program.

The one patient who screened positive was referred to the social worker for counseling. The Self-regulatory behavior survey was completed by 70% of participants, as noted in Table 3.

Table 3

Screening & Follow-up of Psychosocial-Behavioral Surveys

	#Enrolled	Screened	% Screened	Screen +	Referred	% Referred
PHQ	81	75	93%	3	3	100%
SDoH	81	61	75%	1	1	100%
Beh. Survey	81	57	70%	NA	NA	NA

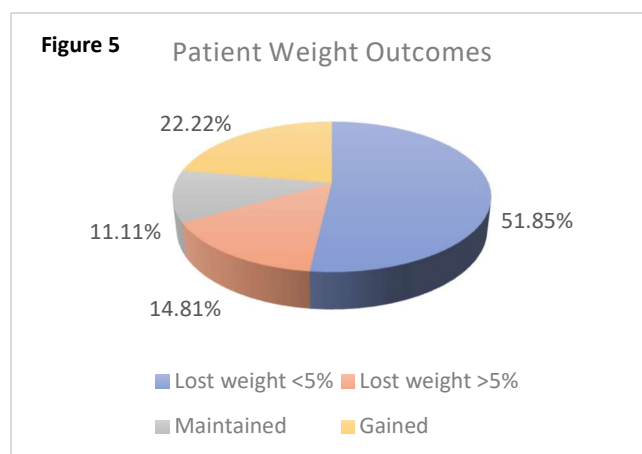
PHQ	Depression screening tool
SDoH	Social Determinants of Health screening tool
Beh. Survey	Self-regulatory Survey of Weight Loss Behaviors

For those participants who agreed to participate in the text-messaging component of the program (n=65) engagement in weekly weigh-ins via text messaging was tracked, including the number of participants who replied to the text message prompts over the 12-week intervention. Forty-two percent (n=27) of the enrolled patients did not respond to or submit any text messages. A few patients, (n=7; 10%) reported a final weight at week 12 but did so at an in-clinic visit rather than by a text message. The graph in Appendix M shows the frequency of aggregate patient replies out of the possible 11 total responses per patient. The most frequent number of text responses for those who engaged in text follow-up was 1 or 2 responses, 24%, and 16% respectively. The mean response rate was 4 of 11 possible communications.

Self-regulatory behaviors related to weight loss were assessed pre and post-intervention in order to inform goal setting. An aim of the project was to increase patient's self-regulatory behaviors surrounding weight loss by 10% from baseline to program completion (12 weeks). Most patients (n=53; 70%) completed the initial survey however only 12% (n=7) completed the post-survey data. This limited the number of patients for whom pre/post program improvement could be calculated. Each question was analyzed, and the change score was calculated. A trend

for improved scores for each of the five self-regulatory behavior questions was noted but only question #2 and question #3 met the benchmark of a 10% increase in score. The nature of the questions as well as a graphical representation of mean patient scores are demonstrated in Appendix N.

Weight loss, a primary endpoint for this improvement project, was measured by comparing weight at enrollment to weight at 12 weeks. Weights were recorded either during an in-clinic visit or by self-report via text message. An individual weight loss goal to lose 5% of their body weight was established with each patient at the enrollment visit. Of the sixty-five participants enrolled, 42% (n=27) provided a weight at baseline and 12 weeks. An impressive 67% (n=18) of completers lost weight. Specifically, 51.85% lost some weight while 14.8% lost $\geq 5\%$ of their body weight.



Patients were surveyed with four questions on a Likert scale and an open-ended question to elicit any additional feedback (Appendix O). Patients who responded found the counseling education and the texting helpful. They rated the counseling handouts as neutral as well as their likelihood to participate again. The themes that emerged from the open-ended feedback included preferences for more in-clinic visits and a longer duration of program. Patients' comments included that reporting weights made them excited to share their progress, that the text messaging platform was confusing, and that the counseling points were too basic.

Provider satisfaction with the program was measured at the completion of the project. The provider survey consisted of five questions, rated on a Likert scale (Appendix O). Providers indicated that the counseling tool was easy to use, that the counseling added value to the visit and

that they intended to continue to use the tool. They rated the sensitivity to time constraints of a visit and EHR user-friendliness as neutral.

The intervention was carried out in accordance with the intervention map as seen in Figure 2. No modifications were made to the intervention during the enrollment phase as it relates to the content of the intervention. Minor changes were made to the documentation in the EHR in response to the findings of the chart audits. Nursing was consistently documenting the depression and social determinants of health questionnaires but less consistently documenting the behavioral survey. The Project Lead discussed this challenge with the nurse manager who provided coaching to the nursing staff and recommended changing the location of the EHR template for easier access. The Project Lead worked with the informatics nurse to have the EHR template moved within the EHR for ease of use by nursing.

Another change from the proposed intervention was the modality for follow-up at 12 weeks. While some patients were evaluated in the clinic as originally intended, many patients did not have follow-up appointments coinciding with the end of the intervention. The Project Lead used the texting platform to attempt collection of final weights and telephone outreach to complete post-intervention behavior surveys and satisfaction surveys.

Discussion

Summary/ Interpretation

It was encouraging to note that of those who completed the program, defined as having participated in the intervention and submitted a weight at baseline and 12 weeks, the majority (67%) lost at least some weight. However, as noted in Figure 5, a substantial proportion of patients who lost weight did not meet the goal of 5% weight loss. This observation should be

considered in future goal setting with individual patients. While weight loss was modest, (<5% of body weight) it is important to note that for every one pound of weight loss there is a 5% reduction in overall cardiovascular-metabolic risk. (Semlitsch et al., 2019b)

The major aim of the project was to assist patients in weight loss. A goal was set with each patient at the initial visit for 5% weight loss over the 12-week program. While approximately 14% of patients who completed the program met this initial goal, 67% of patients who completed the program lost weight. More than 75% of participants who completed the pilot maintained or lost weight. The Top Ten Tips have been used successfully in both randomized controlled trials and quasi-experimental designs to reduce weight from baseline and improve self-regulatory weight loss behaviors (Beeken et al., 2017; Burr et al., 2020). The results of this improvement project reflect positive weight loss outcomes in accord with the literature.

The screening rate was 86% which is high for a new initiative. This reflected the diligence of the nursing staff to initiate the screening process at most visits. Notably, several of the missed screening opportunities took place in virtual visits. The reasons for this were likely because nursing does not assist with virtual visits, meaning the additional burden was placed on the provider to merge the EHR template and complete the screening portion that would have been completed by the nurse if the visit were conducted in the clinic. Furthermore, anthropomorphic measures are usually documented with vital signs by the nursing staff. The provider would have to seek out this information from a previous visit to reference in a virtual visit rather than already having it documented in the EHR at an in-clinic visit. This speaks to the importance of having nursing be part of this interdisciplinary initiative.

Reflection on the enrollment data indicated that most patients enrolled in the pilot were seen for a primary care visit during the screening period. This information is depicted in

Appendix L. At the pilot site, two of the four providers were primary care providers with one provider specializing in women's health and the other in infectious disease. It stands to reason that if more primary care providers were included, the number of eligible patients could have been even higher. The Project Lead was one of the providers included in the pilot and provided ongoing huddles in the clinic as well as via email throughout the entirety of the intervention. This context may have impacted the high level of commitment by the project team. The RN manager served as the point of contact with the nursing staff as they conduct their own huddles and was able to reinforce the mission of the project and illicit feedback on any perceived hurdles.

Part of the intervention included screening for depression, social determinants of health, and self-regulatory behaviors related to weight loss. Obesity is a multifaceted problem and each of these tools was intended to deepen understanding of the contextual factors of weight loss. The screening rate was highest for depression, which is normally completed at each visit, and lowest for the new behavioral survey. It is conceivable that the depression screening was completed more often as compared to the other screening tools because that screening is an expectation at each visit. The behavioral survey being completed least frequently was a reflection of this being a new tool, unique to the pilot. Estimates of referral rates in relation to the number of individuals eligible for the service were measured weekly and reported back to staff to motivate them. The uptake of any new process takes time to be fully adapted and the pilot did not extend beyond four weeks for enrollment. Future iterations would hopefully have improved screening or lend the opportunity to learn why screenings were not being completed.

A small number of patients completed the self-regulatory behavior assessment both pre- and post-intervention. Post-intervention data was collected to allow the provider and patient to review if their score had changed throughout the intervention. A low response rate (12%) for

post-program assessment of self-regulatory behaviors was noted. A possible explanation for the low response was that the survey was completed by phone instead of text messaging. The mean scores increased for each question, although only question 2, “I am able to accomplish goals I set for myself.” And question 3, “I am able to resist temptation”, increased by more than 10% from baseline. It is meaningful that patients who completed the program reported a significant increase in their confidence surrounding goal setting and impulse control. Inferences included that if a particular question was consistently scoring low, it may indicate a need to adapt the counseling materials. If an individual’s score were consistently low, further assessment could be made by the provider to assess barriers to motivation and improvement.

The completion rate for the pilot was 42% of patients. Weight loss interventions notoriously have high attrition rates. Attrition in weight loss programs is exceptionally high, ranging from 10-to 80% with higher scores being impacted by younger age, higher BMI, lower education levels, and lack of health insurance (Goode et al., 2016). The demographic makeup of the population enrolled in this pilot was reflective of those who are considered less likely to complete a program of this nature. For that reason, a completion rate of 42% is a meaningful outcome.

The text message component of the intervention was intended to hold patients accountable to weigh in weekly and to provide ongoing support to participants by reiterating the counseling points from the first session. Of note, 42% of enrolled patients did not engage in this text messaging. While attrition can account for some of these patients, there was a small percentage of patients who completed the program but only participated in in-clinic visits. The considerable lack of engagement with the texting component of the program could have been due to a multitude of factors. From a technology perspective, a secure platform was required for

compliance with privacy protection. Instead of a text message loading as is the norm when sending unencrypted messages, a login process was required to view the content of the message. This additional step to access the message and to reply may have proved to be a barrier.

Patients lacking sufficient cellphone data or compatible browsers may have been excluded from text follow-up due to the requirements of the HIPPA-compliant platform. The platform currently used by the organization is HIPPA-compliant but requires patients to enter their last name and birthday to confirm their identity. This extra step versus receiving a nonencrypted message potentially deterred patients from entering the platform and participating in the virtual component. Satisfaction surveys indicated that patients found the text messaging platform to be cumbersome.

Creating a coalition that was prepared to focus on the monumental problem of obesity was the first process measure. It was encouraging that all the providers at the pilot site, regardless of specialty, partook in the intervention. The COVID pandemic has highlighted the dangers of obesity, as it is an independent risk factor for worse clinical outcomes. Anecdotally, patients report reducing health behaviors and increasing weight gain as it relates to the confinement and stressors of living through a pandemic. This acute change layered on the already-existing obesity crisis was the basis for urgency. The level of participation conveys the significance of the problem of obesity in the treatment population. As well as the dedication of the staff to meeting the needs of this vulnerable, underserved patient population.

Human resources are precious and limited. Turnover amongst the nursing staff was a barrier that created a considerable strain on the system. While the coalition of providers and the nurse manager were consistent throughout the project, rotation of nursing staff and inconsistencies in provider-nurse teams created a challenge in ensuring that nursing staff was

aware of their role in screening and enrolling patients. Utilization of a registered nurse to perform the counseling would have reduced the burden on providers and could even be billed as a separate teaching visit and might be a consideration in the future. Unfortunately, at the time of the pilot, the registered nurse position in the clinic was vacant.

Utilizing support staff, including registered nurses, health educators, or nutritionists, could mitigate the problem of limited time with the provider. The tradeoff is that patients are not always willing to meet with another staff member and it may be more difficult to obtain patient buy-in if the provider with whom the patient has established rapport is not the staff providing the counseling. In a future PDSA cycle, asking the provider to rate the timeliness of the counseling and the documentation separately would more clearly identify where changes in the process could be made.

The intervention required some data collection and technology. Fortunately, systems for texting patients and generating reports based on defined patient populations were already in place. Working with the informatics nurse, many of the quality initiative needs were addressed through existing technology. The time and labor dedicated to data collection were managed by the Project Lead. The technology for outreaching patients is not routinely used by non-clinical staff or clinical support staff. Given the relative newness of the text-based platform to the organization, only providers had received sufficient training. While the technology was available, the training of each discipline in the uses and abilities varied and the human resources and time needed to sufficient train support staff were not accessible for the parameters of this pilot project.

Despite obesity being recognized as a significant health concern, evaluating what to address in a visit is an ongoing challenge in the busy primary care environment. The lowest

scoring question on the provider satisfaction survey was how the counseling and documentation fit into the time of their patient visit. The counseling was intended to be brief, and the documentation was prepopulated using a template to reduce redundancy in charting. Even so, primary care visits often have multiple priorities to address and little time to do so.

The obesity epidemic significantly impacts socioeconomically disadvantaged patients disproportionately. The FQHC setting is a safety net for many patients. The forces at Harlem that drove the project forward were the unmet patient needs, national health goals, and the potential to improve patient comorbidities as well as the constraining forces were surmountable.

Limitations

With any quality improvement initiative, competing priorities must be considered and this program was introduced during the COVID-19 pandemic. Not only did COVID create pressing health issues for many patients, but it changed the landscape of how care was delivered. Lack of available in-clinic appointments may have impacted the ability to collect end-of-program data and was cited as a barrier on the patient satisfaction survey. Patients who did not have access to a home scale were not able to come in for a weight check as they were previously able to before the pandemic halted this practice. The beauty of community health is the open access to a center located within the community, but the pandemic dampened this resource.

Conclusions

This quality improvement project demonstrated that it is possible to integrate a brief weight loss screening intervention into primary care at an FQHC in an underserved setting and that patients who completed the program can succeed in losing weight. The overarching aim of this quality improvement project was to assist patients in losing weight. The results indicated that

67% of patients who completed the program lost weight, even if they did not meet their individual weight loss goal. This project supports the findings in the literature regarding brief counseling for weight loss, specifically using the Ten Top Tips counseling points. Brief counseling is an effective way to address weight loss in primary care.

Obesity is a complex health problem and encompasses learned behaviors, confidence, and self-esteem as well as having social and cultural context. The results demonstrated that patients who completed the intervention indicated an increased ability to meet their weight loss goals after participating in the pilot. From this finding, the recommendation can be made to explore self-regulatory behaviors when setting weight-loss goals.

The text-messaging component of the program had mixed results. Barriers to the uptake of technology in underserved populations, including text messaging are well documented in the literature. Some of the barriers include lower socioeconomic status, health literacy, and advanced age. (Showell, 2017) The barriers at the site included limited utilization of the text-messaging platform and lacking trained team members. We did not collect information on why so many people declined to participate or agreed to participate but then did not engage, but this is something that would need to be carefully explored and responded to if text messaging is retained as a component of the program. Recommendations on the implementation of text messaging from this pilot are limited and this is partially attributable to the use of encrypted messages versus more user-friendly basic text messaging functions. Technology is a powerful tool to increase access to care and can potentially be utilized to increase patient accountability to their weight loss goals.

The provider surveys indicated that they would continue to use this counseling material in their visits. The pilot was successful in screening and identifying patients with obesity,

screening for depression and social determinants of health, identifying self-regulatory behaviors related to weight loss, and providing counseling to eligible patients. These positive outcomes indicate the usefulness of the pilot in this setting and that steps should be taken to implement these recommendations more fully into practice.

This quality improvement project offered a treatment algorithm for obesity management in an FQHC setting. The weight loss demonstrated by completers of the program, though modest, was encouraging. Brief counseling is an appropriate tool due to the ease of use, low cost, and potential for value-added to patient visits. Nursing was integral to accomplishing screening and could potentially provide the weight loss counseling in the next PDSA cycle. Technology is a powerful tool for reaching patients, but further investigation is necessary to understand if text messaging is the right fit for this program and how it could better serve this patient population.

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Appendix A

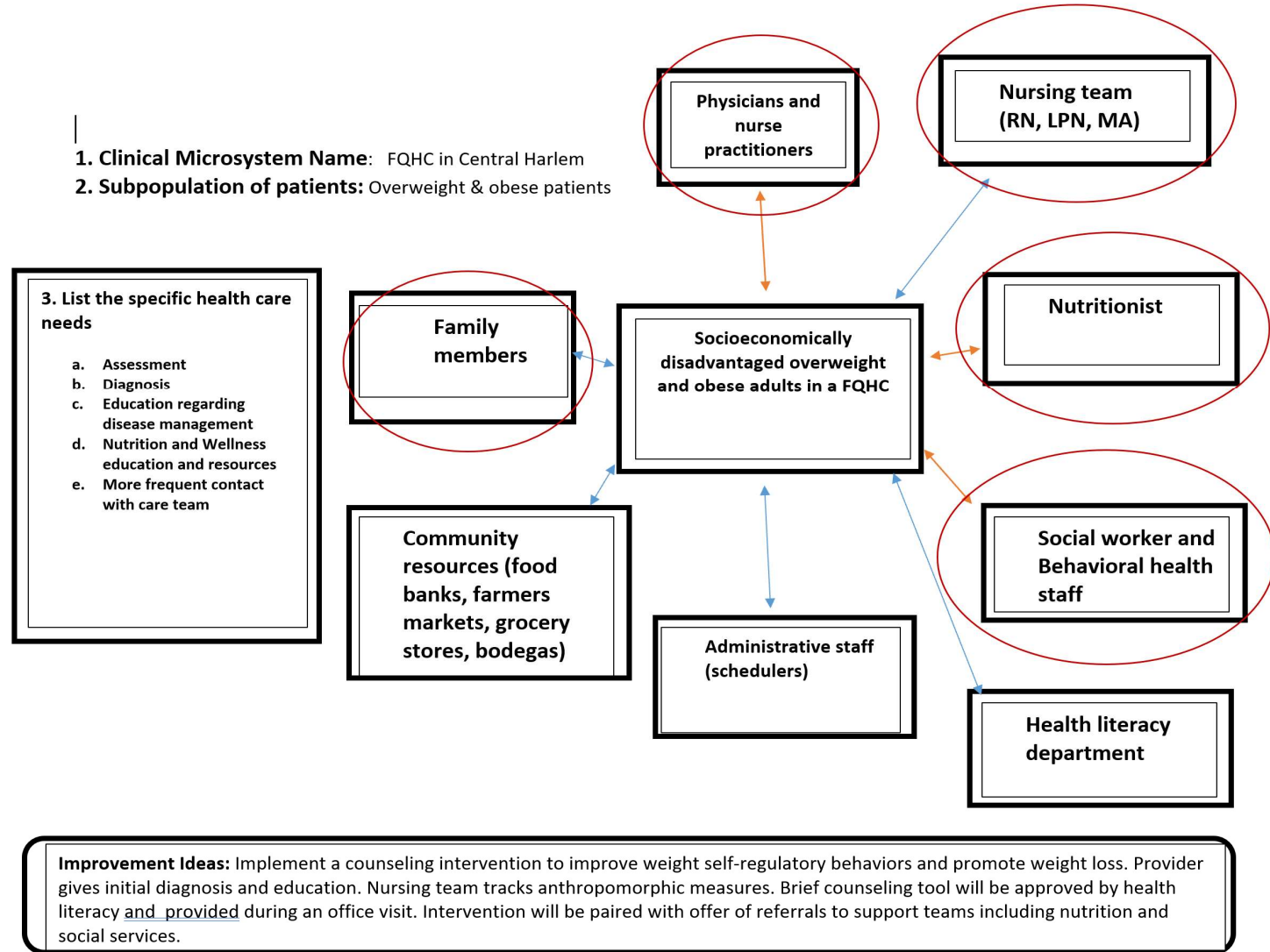
Synthesis of Evidence Examining Weight Loss Strategies in Primary Care

Intervention	Number of Studies	Significant Finding	Overall Level, Quality & Population
Brief Counseling	A. Beeken et al. (2017) (10 Top Tips, primary care)	Weight loss (A, C, D) Lost 5% of body weight (A, C, D)	A. I, A (N=537, 95% White, 65% female) B. II, B (N= 43, 69% White, 67% female)
	B. Burr et al. (2020) (10 Top Tips, rural setting)	Improved weight-loss behaviors (A, B, C, D)	C. II, B (N= 537, 95% White, 65% female)
	C. Kliemann et al. (2017) (10 Top Tips, behavior focus)		D. IV, A
	D. Semlitsch (2019) (counseling without format)		
Technology-based	E. Barnason et al. (2019) (telehealth, internet modules)	Weight loss (E, F, G, H, I) Increased self-efficacy (G)	E. I, B (N=50, 40% female) F. I, A (N=365, 71% Black, 68% female)
	F. Bennett et al. (2012) (web-based goal setting, monthly coaching calls)	Use of weight management behaviors (E, I) Lost 5% of body weight (H)	G. II, B (N=109, 54% Black, 100%, female)
	G. Griffin et al. (2020) (weekly motivational texts)		H. I, B (N=59, >93% White)
	H. Marra et al. (2019) (telehealth counseling)		I. V, B
	I. Rumbo-Rodriguez (2020) (technology generally)		

Group counseling	<p>J. Manning et al. (2019) (facility-based group counseling sessions)</p> <p>K. Meurer et al. (2019) (group exercise class and nutrition counseling)</p> <p>L. Smith et al. (2019) (community based group counseling)</p> <p>M. Thabault et al. (2016) (NP led intensive behavioral therapy)</p>	<p>Weight loss (J, K, L, M)</p> <p>Decreased BMI (K, M)</p> <p>Lost 5% of body weight (J, L)</p>	<p>J. II, B (N=193, 77% female)</p> <p>K. I, B (N=291, 91% female)</p> <p>L. I, A (N=314, 26% ethnic minority, 56% female)</p> <p>M. II, B (N=36, 61% female)</p>
Care management	<p>N. Holtrop et al. (2017) (Enrollment with care manager for one year)</p> <p>O. Forgione (2018) (Support systems in primary care)</p>	<p>Weight loss (L, O)</p>	<p>N. I, B (N= 253, 61% female)</p> <p>O. V, A</p>

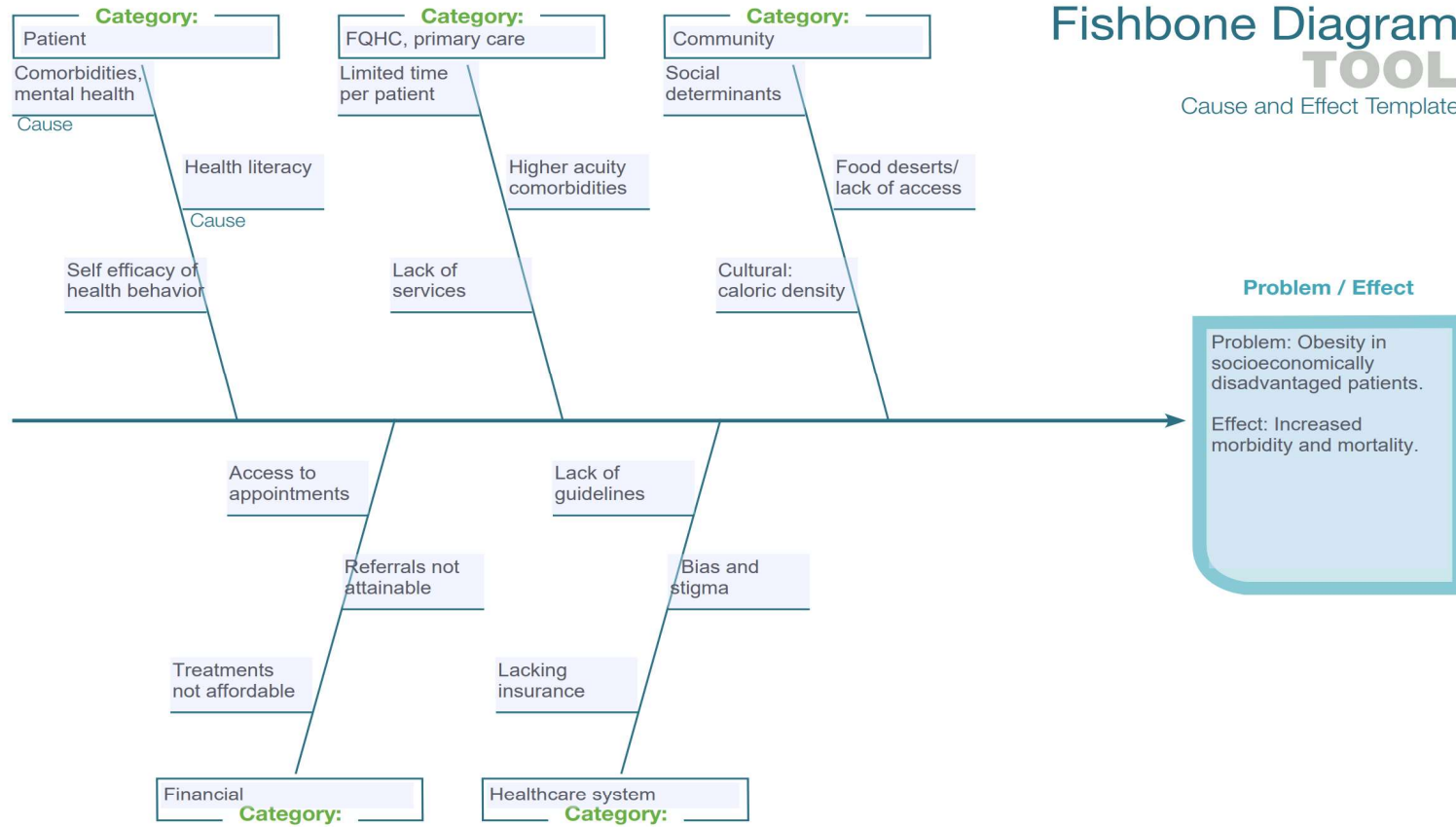
Appendix B

Microsystem Assessment



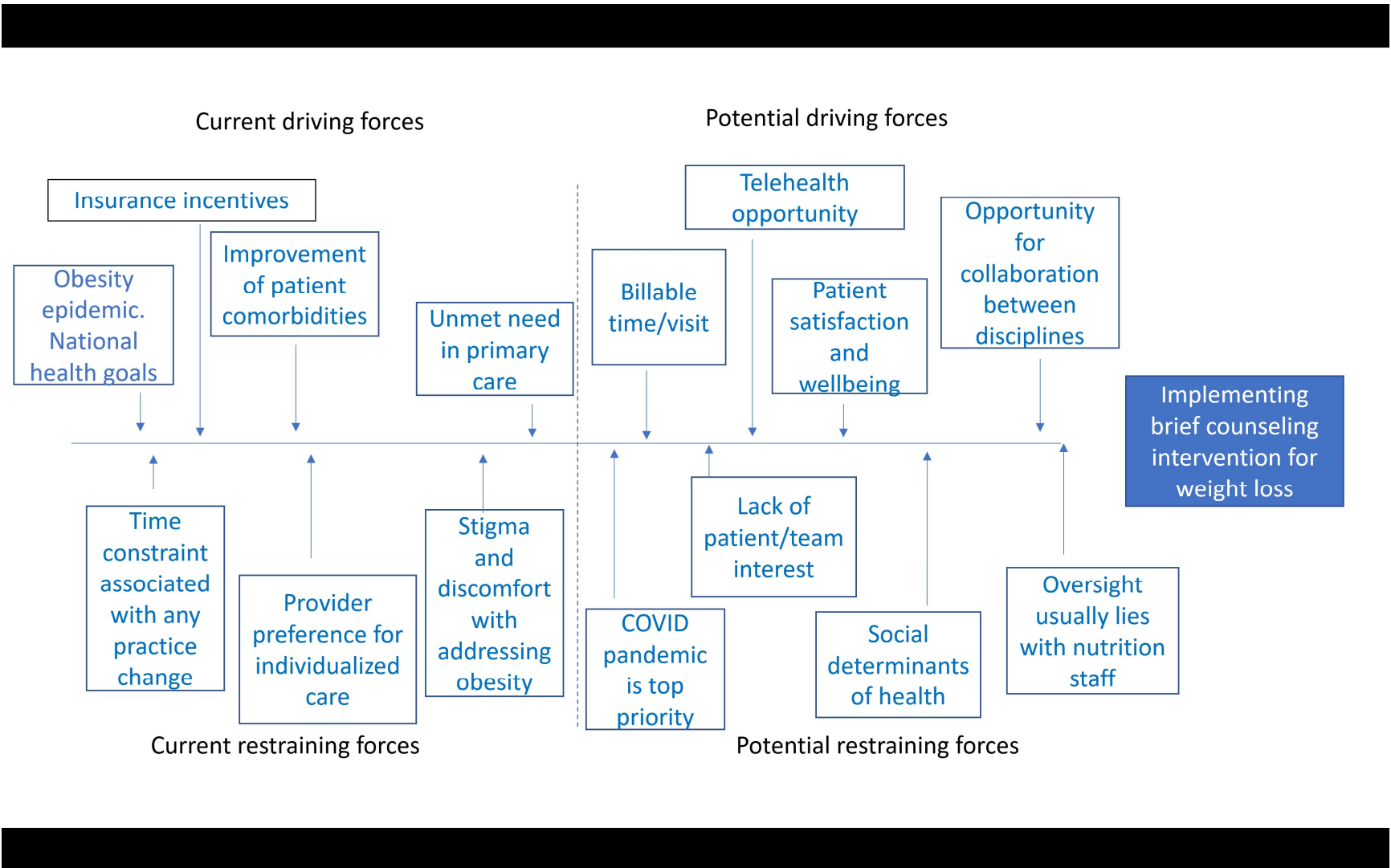
Appendix C

Cause and Effect Diagram



Appendix D

Force Field Analysis



Appendix E

Weight Loss Self-Regulatory Behavior Survey

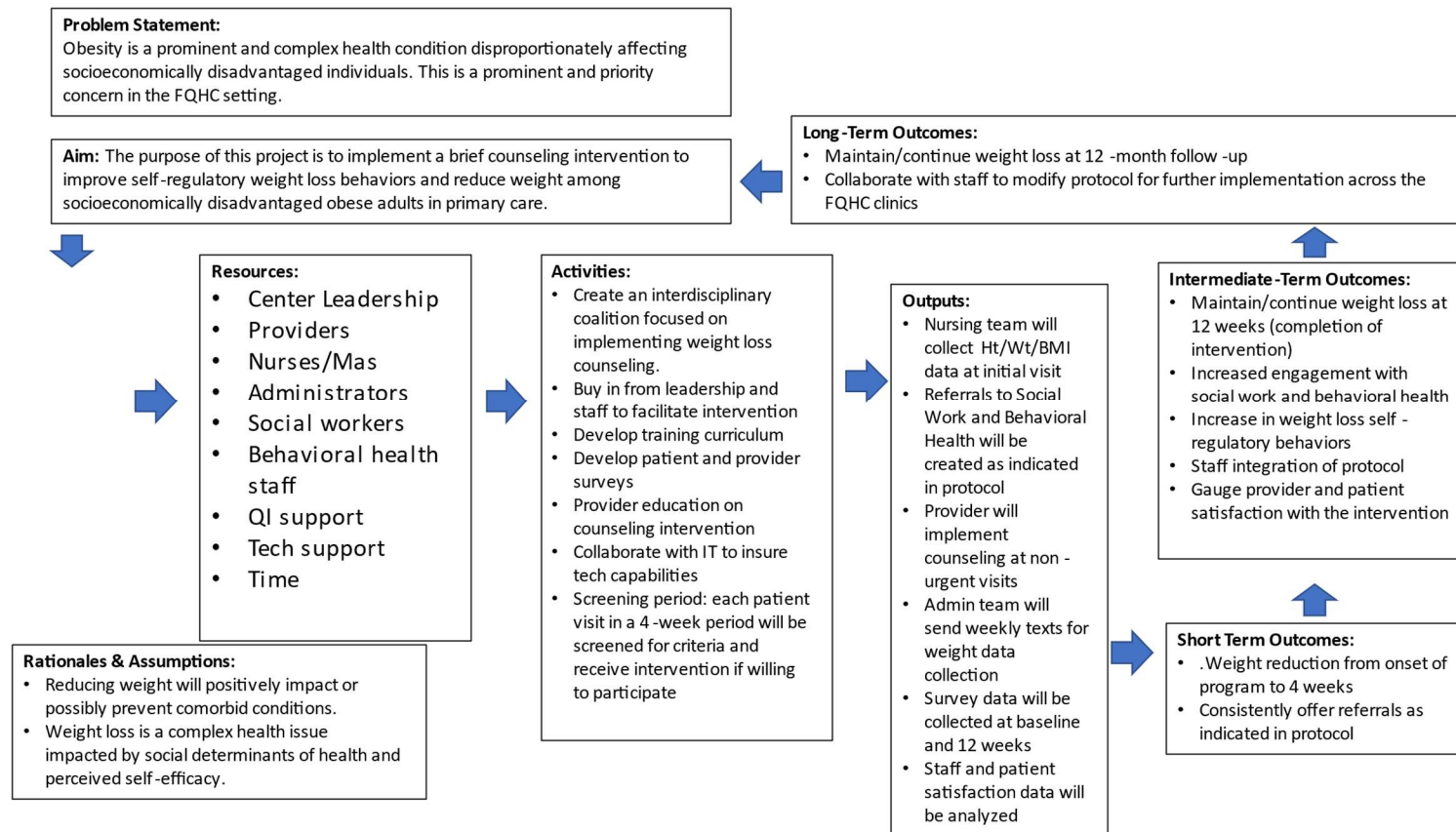
Think about times in your life when you have tried to lose weight. Then respond to the following statements by marking an “X” in the box that best matches your answer:

		Strong Disagree	Disagree	Neutral	Agree	Strongly Agree
	When trying to lose weight...	1	2	3	4	5
1	I usually keep track of progress towards my goals.					
2	I am able to accomplish goals I set for myself.					
3	I am able to resist temptation.					
4	I usually think before I act.					
5	I learn from my mistakes.					

Questions were sourced from the short version of the Self-Regulatory Behavior Survey.

Appendix F

Logic Model



Appendix G

Project Specific Measures Table & Analytic Strategy

Measures					Analysis
Objectives	Outcomes/ outputs	How to operationalize or measure	Where will you get the information	Will you have a comparison	Analysis
To create an interdisciplinary coalition focused on implementing a weight loss initiative for obese adult patients.	Providers agree to implement counseling in specified intervention timeframe	90% of providers agree to participate	Providers	No	Percentage
To screen all patients seen for non-urgent appointments primary care appointments from start date to 4 weeks post start date for inclusion the counseling intervention based on BMI of equal or greater than 30.	Identify eligible participants. HT/WT/BMI collected at baseline.	Numerator: Patients enrolled Denominator: Patients who had nonurgent visits	EHR	No	Percentage
To implement the brief counseling protocol with each patient enrolled patient. To complete referrals to Social Work and Behavioral Health as determined by screening tools.	Provider completes brief counseling in initial visit Complete PHQ and SDH screening and referrals are generated based on positive screening scores.	Numerator: Patients received counseling as evidence by documentation in treatment plan Denominator: Patients enrolled Numerator: Referrals generated Denominator: Patients with positive screening on PHQ or SDH	EHR and Relevant	No	Percentage Percentage (compare intervention to company wide)
To collect data from patients regarding self-reported weekly weights via bidirectional SMS texting.	50% of patients who receive initial counseling will provide follow-up weight data. Patients are counted if as long as they send 12 week data.	Numerator: Number of patients who responded to texts with weekly weights Denominator: Patients who received initial counseling	Text message	No	Percentage and frequency
To increase patient's self regulatory weight loss behaviors.	Patients self-regulatory weight loss behaviors will increase by 10% from baseline	Likert scale (1-5) 5 questions (outlined below table)	Validated Survey (Short Form Self-Regulatory Questionnaire)	Yes- pre and post	Change score

To reduce patient weight from onset of intervention to the 12-week follow up	Patients will decrease weight by 5% of their body weight.	$(\text{Weight at baseline} - \text{Weight at 12 weeks}) / \text{weight at baseline} \times 100$	Baseline EHR 12 week EHR or weight tracking sheet	Yes- patient pre and post-intervention	Percentage of patients who lost 5% of body weight and mean weight loss from onset to week 12
To assess provider satisfaction with counseling intervention protocol To assess patient satisfaction with the counseling intervention protocol	Providers will find the protocol user friendly, adding value and sensitive to time constraints. Patients will find the protocol user friendly, motivational, and assisting in meeting goals.	The Project Lead will obtain survey data from providers and patients. Text-based survey for patients. Likert scale will evaluate each dimension of the survey as outlined in outputs. (Likert scale)	Project specific survey. Delivered over survey monkey for providers. Delivered over text for patients.	No	Frequency proportion

Appendix H

Project Log for Chart Review & Feedback

Component:	Measure:	Materials for Review:
Screening Data	BMI documented/Non-urgent visits	<ul style="list-style-type: none"> • Review each provider schedule • Rotate 2 days/week
PHQ screen	PHQ-9 score >10 / # patients BMI >30	<ul style="list-style-type: none"> • HPI included PHQ2 or PHQ9 • Behavioral Health referral generated
SDH screen	SDH score is positive/ # patients BMI >30	<ul style="list-style-type: none"> • SDH documented in social history • Social Work referral generated
SRB survey	SRB completed/ # patients BMI >30	<ul style="list-style-type: none"> • Completed at initial visit • Completed at 12 week follow-up
Brief Counseling	Counseling received/ # patients BMI >30	<ul style="list-style-type: none"> • BMI documented in as ICD-10 code • Treatment macro with counseling
Weekly weights	Text received weekly/ Patients received counseling	<ul style="list-style-type: none"> • Texts sent (patients grouped by weekday) • Weight recorded

Appendix I

Provider Survey Form

Obesity Counseling Pilot

Thank you for participating in the weight loss counseling pilot! I have compiled 5 questions to help understand your experience. Please provide feedback on the pilot as well as any suggestions for future iterations.

1.The Top Ten Tips counseling tool was easy to use.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly agree

2.The Top Ten Tips counseling tool added value to the visit.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

3.The intervention (counseling and documentation) fits in your visit time frame.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

4.The EHR template for enrolling patients in the obesity pilot was user-friendly.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

5.How likely are you to continue using the Top Ten Tips in future visits?

- Very unlikely
- Somewhat unlikely
- Neither likely nor unlikely

- Somewhat likely
- Very likely

Appendix J

Patient Survey Questions & Rating Scale

The weight loss education I received was helpful.	Strongly Disagree- Disagree- Neutral- Agree- Strongly Agree
The text messaging helped me stay on track to meet my goals.	Strongly Disagree- Disagree- Neutral- Agree- Strongly Agree
The hands and tracking sheet helped me stay on track to meet my goals.	Strongly Disagree- Disagree- Neutral- Agree- Strongly Agree
I would participate in a similar program in the future.	Strongly Disagree- Disagree- Neutral- Agree- Strongly Agree
Do you have any additional feedback?	Open-ended

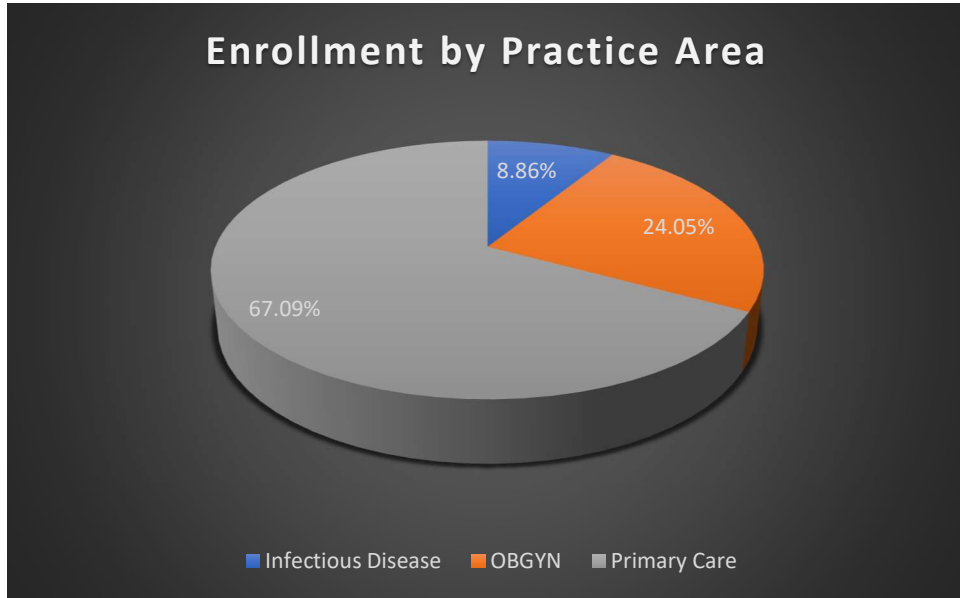
Appendix K

Clinical Quality Improvement Checklist

CLINICAL QUALITY IMPROVEMENT CHECKLIST		
Date: 03/28/21	Project Leader: Brianna Bouchez	
Project Title: Obesity Management in Primary Care		
Institution where the project will be conducted: Community Healthcare Network, NY, NY		
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	
The project leader/DNP student has discussed and reviewed the checklist with the project Course Faculty. The project leader/DNP student will NOT refer to the project as research in any written or oral presentations or publications.	X	
ANSWER KEY: If the answer to ALL of these questions is YES , the activity can be considered a Clinical Quality Improvement activity that does not meet the definition of human research. UMB IRB review is not required. Keep a dated copy of the checklist in your files. If the answer to ANY of these questions is NO , the project must be submitted to the IRB for review.		

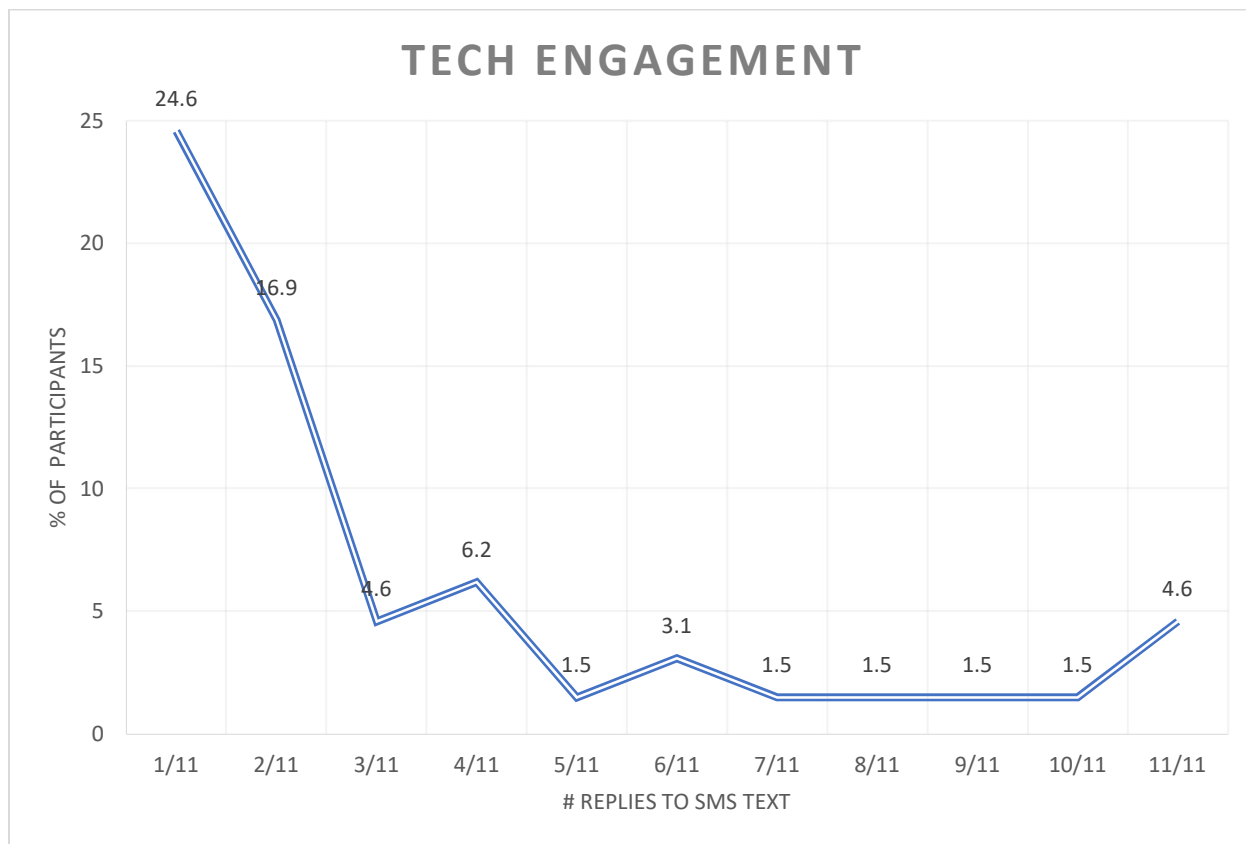
Appendix L

Obesity Pilot Enrollment Data by Participating Provider's Practice Area



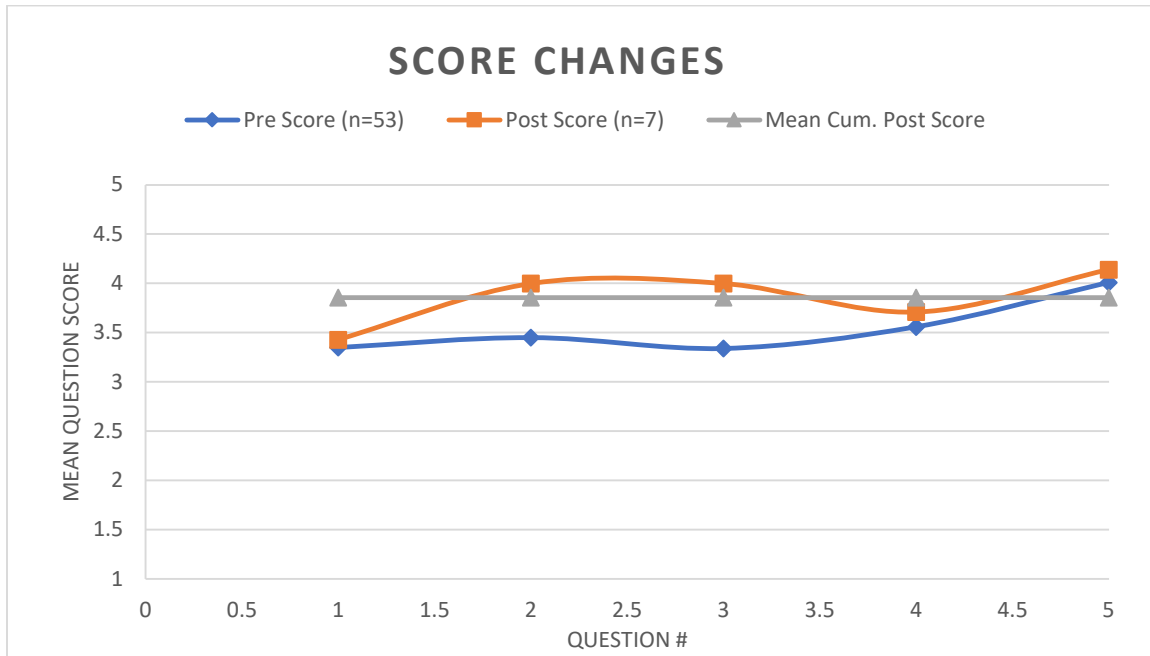
Appendix M

Patient Participation in Weight Reporting by Text Messaging



Appendix N

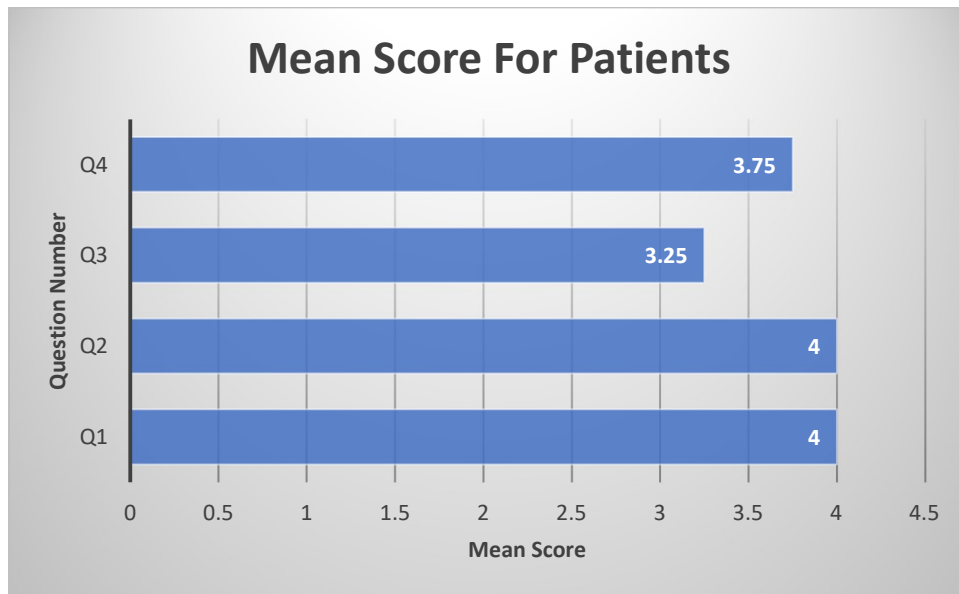
Self-Regulatory Behavioral Survey Data



Question Description Key
Q1- Tracking goals
Q2- Accomplishing goals
Q3- Resisting temptation
Q4- Thought before action
Q5- Learning from mistakes

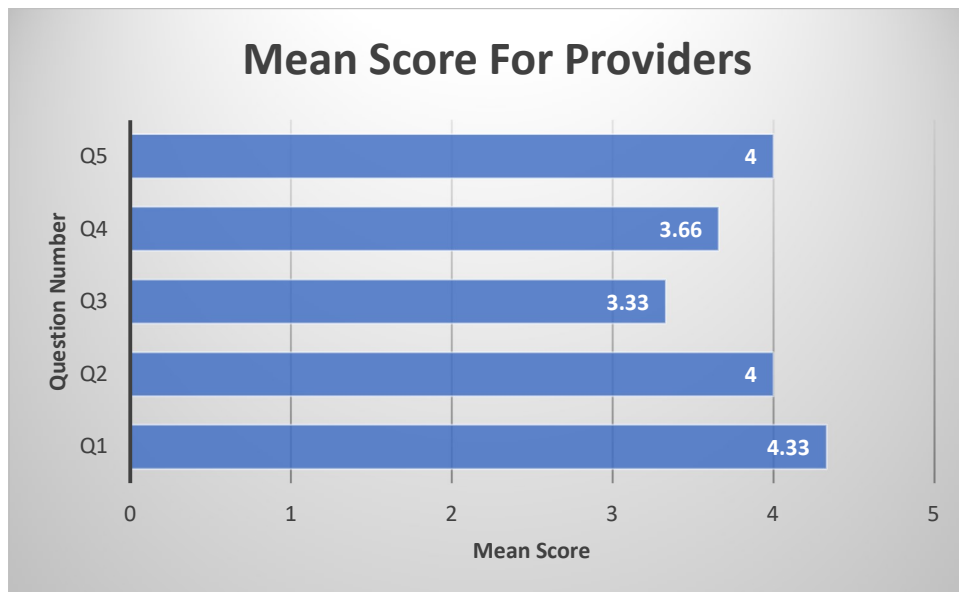
Appendix O

Patient Satisfaction Survey Results



Question Description Key
Q1 Helpfulness of education
Q2 Utilization of texting
Q3 Utilization of handouts
Q4 Likelihood to participate again

Provider Satisfaction Survey Results



Question Description Key
Q1 Ease of use
Q2 Added value
Q3 Sensitivity to time constraints
Q4 EHR user-friendly
Q5 Plan for continued use