

Improving the Clinic No-Show Rate

Tiffany C. Robinson

The University of Alabama

Capstone College of Nursing

Monika Wedgeworth EdD, RN, CNE

Dr. Fairen Walker-McCarter, MD

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Abstract

Introduction/Purpose: Appointment cancellations or "no-shows" have been shown to interfere with patient care, cause health issues, and increase hospitalization rates. A rise in the number of no-show appointments can cause issues for both patients and providers. This quality improvement project's goal was to implement an evidence-based protocol that assisted a pain management clinic in reducing the number of no-show appointments. To help reduce clinic no-show rates, the project used evidence-based strategies.

Methods: A pre-and post-implementation design was used in this quality improvement project to determine the daily no-show rate over a 6-week period. Staff utilized evidence-based approaches to promote patient compliance, which resulted in a lower no-show rate. Check-out and missed appointment scheduling policies and procedures were verbally reminded and updated for the MA staff while providers continued to have weekly educational calls.

Results: All pre-and post-intervention follow-up appointments over a 6-week period were used for comparison. Prior to the project's implementation phase, the clinic had more than 10% of appointments missed over a six-week period. The no-show rate during the six-week pre-intervention period was 12%, and the no-show rate during the six-week post-intervention period was 8%.

Discussion/Conclusion: Missed appointments can have a negative impact on both the patient and the clinic. Staff monitoring of missed appointments will be critical in the clinic setting to ensure that patients are more engaged in their treatment programs and keeping their appointments. This quality improvement project found that the use of an evidence-based approach assisted in the reduction of the daily missed appointment ratio.

Improving the Clinic No-Show Rate

An increase in the number of no-show appointments can pose problems for patients and providers. Missed appointments can also result in barriers that could decrease the overall health outcomes for the patient. An understanding of benefits and barriers to appointment keeping is essential to overcoming the barriers and promoting the benefits (Bonhker & Saving, 2019). Two of those barriers faced may include ineffective patient-staff communication and knowledge barriers. Incomplete surveys, questionnaires, and unanswered calls to patients may also facilitate incomplete data retrieval. The use of staff reinforcing in-services may be beneficial in reducing those obstacles. Missed visits, often referred to in health care settings as no-shows, negatively affect health care systems by contributing to inefficiency and increased health care costs and portend worse clinical outcomes for the patients themselves (Teo et al., 2017). The promotion of patient participation in care may lower the number of missed appointments. As a result, efforts to enhance service operations' engagement through continuous quality improvement interventions are critical. In an era in which people seem progressively less likely to answer the phone, a declining ability to directly deliver reminders to patients has real-world implications for appointment reminder implementation (Teo et al., 2017). The tracking of the delivery of appointment reminders could be beneficial information for clinic quality improvement efforts.

Background

At a local pain and wellness clinic, the practice has averaged greater than 80-100 patient follow-up appointments per day. The clinic is staffed with Physicians, Nurse Practitioners, Physician Assistants, and Medical Assistants. The patients served have chronic pain that ranges from musculoskeletal joint pain, cervical, thoracic, and lumbar pain to nerve pain. A large

percentage of patients have had a history of chronic pain for several years. The goal of the practice is to minimize the use of opioid medications with the implementation of a multimodal process that includes therapy, bracing, and injection therapy. Care is provided for a diverse population of patients from a diverse community population. Of the 80-100 scheduled patients for each day, the clinic has a daily average of 5-17 missed or no-show follow-up and procedure appointments.

The concerning issue for the clinic is missed no-show appointments. No-shows are high due to multiple factors, such as patient behavior, patients' financial situation, environmental factors, and scheduling policy (Marbough et al., 2020). Patient complaints of inadequate transportation, having limited funding for copays, and not knowing enough about their scheduled procedures are reasons given for missed appointments. They also voice issues related to losing their appointment cards and not remembering the date of their appointment as other reasons for missed appointments.

Patient follow-up visits are scheduled every 28 days for reevaluation and medication refills. Appointment reminder cards are written out during checkout at the conclusion of each clinic visit. Procedures are also scheduled, and appointment cards are provided at the checkout window. Some patients voiced concerns about being overwhelmed with the number of procedures, follow-up, radiology, and specialists' appointment reminders they have. This was not noted to be a consistent problem although it has happened often. The only physical reminder cards they receive are for their follow-up and procedure appointments. Specialists and radiology reminders are discussed during the patient visit and followed up at the checkout. Until the radiology and specialists' appointments are approved, they cannot be scheduled. Although the radiology and specialists' appointments were not scheduled by the pain clinic office staff, having

those extra dates and information was overwhelming for the patient to keep up with which was also a factor for missed appointments.

Reducing and minimizing the no-show rate of missed follow-up and procedure appointments promotes positive patient care outcomes while minimizing the use of opioid medication. The focus on improving no-show rates and on patient concerns improves patient outcomes, improves continuity of care, and addresses disparities. A clinic no-show rate benefits from the implementation of protocols that reduce no-show rates and phone calls may serve as an effective adjunct to automated reminders (Snodgrass & Schoch, 2019).

Evidence was noted in a recent audit completed at the pain clinic that showed a greater than 10% no-show rate. The audit was completed over a period of six weeks from July 6, 2021, thru August 13, 2021. See Table 1.

Table 1

July 2021 thru August daily 6-week NO-SHOW RATE Percentages
Total 6-week average no-show percentage - 12%

Date	Total Scheduled	Total Missed	Daily %Missed
July 6	104	10	10%
7	105	8	8%
8	106	9	8%
9	53	9	17%
12	96	10	10%
13	102	4	4%
14	89	7	8%
15	99	11	11%
16	66	6	9%
19	89	11	12%
20	92	11	12%
21	95	8	8%
22	95	10	11%
23	54	11	20%
26	91	8	9%
27	95	14	15%
28	94	8	9%
29	93	10	11%
30	56	6	11%
Aug 2	88	11	13%
3	85	14	16%
4	93	10	11%
5	90	11	12%
9	101	16	16%
10	100	17	17%
11	95	12	13%
12	106	14	13%
13	57	9	16%

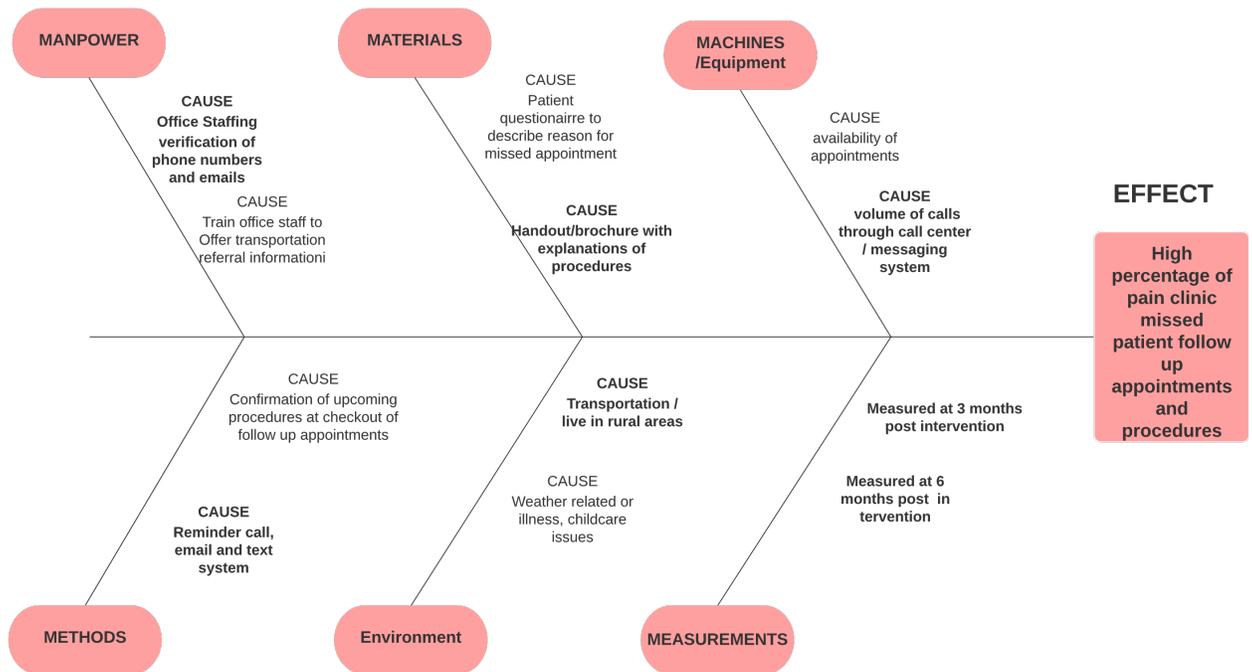
Problem Statement

Missed appointments in the clinical setting may occur for several reasons. Inadequate transportation, limited funding for copays, illness and simply forgetting about the appointments are some causes of missed appointments. Patients who missed scheduled outpatient appointments most reported forgetfulness, lack of reliable transportation, and personal health issues, as well as work and family obligations as major reasons for missing scheduled outpatient appointments (Ofei-Dodoo et al., 2020).

In the clinic where this project was completed, a patient appointment reminder system was needed to improve the no-show rates. This project plan compares the no-show rate prior to implementation of evidence-based phone call reminders to the rates after implementation of phone call reminders. Staff education and communication reminders have been given to staff responsible for daily patient check-outs.

Organizational “Gap” Analysis of Project Site

Our busy chronic pain management clinic averages a daily patient schedule of greater than 80-100 patients daily. As the clinic serves a population of patients that not only have chronic pain but also multiple comorbidities, it has a no-show rate that can benefit from the implementation of a protocol that will reduce this number. Missed appointments and procedures are an area of concern with these patients. Appointments are missed for several reasons such as financial, insurance and transportation issues. Comprehensive chronic pain services are not covered by all health care systems and insurance plans, and rural patients are more likely to be uninsured (Glynn et al., 2020). The average no-show rate for follow-up appointments for the 6-week period from July 2021 through August 2021 was 12%. See Table 1.



Review of the Literature

The electronic databases searched included CINAHL, Cochrane Library, PubMed, Google Scholar, and a review of other published DNP projects. Publication search dates were 2016 to 2021. Those dates were utilized for the results of this project to be completed with the most current evidence-based information. The search terms included were “missed appointments”, “no-show appointments”, “pain clinic”, “office visits” and, “missed appointment interventions”. The terms were also searched using a Boolean search method. The studies included were systematic reviews, randomized controlled trials, and quantitative synthesis meta-analysis. Records were also excluded that were either duplicate material or did not meet the guidelines needed to complete the review.

Why are Missed Appointments a Problem

Missed appointments can cause a ripple effect with the patient and in the clinic setting. Problems such as lost organizational costs, poor patient health outcome, increased clinic wait times and wasted staff time are factors that exist when a patient miss a scheduled appointment. Patients that do not attend a scheduled clinic appointment (Termed: No-shows) cause administrative issues to the resident's practice, negatively impact the workflow, and affect the financial status of the facility, continuity of patient care, resident education, and clinic efficiency (Alkomos et al.,2020).

When appointments are missed, a patient's health condition could be affected that may lead to suboptimal health outcomes. According to McQueenie et al. (2019), people with one or more long-term conditions who fail to attend appointments may be at risk of premature death. In the retrospective study, patients with long-term mental health conditions who missed more than two appointments per year had a greater than 8-fold increase in risk of all-cause mortality compared with those who missed no appointments (McQueenie et al. 2019). A patients health status can be adversely affected if routine clinic appointments are missed, and the patients' medical condition is left untreated.

Another problem faced by clinics related to missed appointments is reduced and lost revenue. Jain (2019), study found that no-shows cost the U.S. health care system more than \$150 billion a year and individual physicians an average of \$200 per unused time slot. In a retrospective review, Triemstra and Lowery (2018) found that revenue lost from missed appointments is significant and directly affects the ability to improve patient access and care. The study was conducted in an academic adolescent clinic and noted an estimated annual billing

and reimbursement loss from missed appointments of \$170,100 and \$51,289, respectively (Triemstra and Lowery, 2018). In a different retrospective cohort study by Kheirkhah et al., (2016), administrative databases of 11 regional hospitals were reviewed for no-show frequency and economic effects of missed appointments. The study revealed the high no-show rate of 18.8% imposed a major burden with the average cost of each no-show per patient being \$196 (Kheirkhah et al., 2016).

No-shows or missed appointments are a problem for many medical practices and sometimes result in fragmented care and reduce access for all patients (Sachin et al., 2016). Patient no-shows can cause scheduling and operational difficulties for clinics and cause reduced productivity from staff (Davies et al., 2016). The retrospective study by Ahmad et al., (2021) showed predictive modeling and overbooking is a cost-effective and reliable method to decrease the rate of underutilization. The goal of implementing the model in this study was maximize efficiency.

Reasons for Missed Appointments

As previously stated, missed appointments can result in barriers that could decrease the overall health outcome for the patient. In my present clinic setting some of the patient reasons for missed appointments were inadequate transportation, having limited funding for copays, and not knowing enough about their scheduled procedures.

In a study by Ofei-Dodoo et al., (2020) a qualitative research design was used, and it revealed patients who missed scheduled outpatient appointments most reported forgetfulness, lack of reliable transportation, and personal health issues, as well as work and family obligations as major reasons for missing scheduled outpatient appointments. The study documented interconnected themes for missed outpatient appointments, including emotional reasons, such as

fear of enduring an uncomfortable procedure or fear of the unknown, perceived disrespect of the patient's beliefs and time by the health care system, and not understanding the scheduling system (Ofei-Dodoo et al., 2020).

Crutchfield and Kistler (2017) completed a study that surveyed 251 adults nationally using an online survey panel to complete demographic and appointment habit questions. It was disclosed in the survey that 28% of patients reported transportation problems, (26%) reported forgetfulness, and (14%) reports confusion over time, date, or location (Crutchfield & Kistler, 2017).

Common Interventions to Increase Appointment Attendance

Research shows that there are multiple approaches to reducing the no-show rate in clinics. Among strategies, reminders that are personalized to voice or text messages based on preferences, improving the ability to get to and pay for appointments, and appealing to a person's spirituality may improve clinic attendance (Cronin et al., 2018).

Phone Call Reminders. Evidence shows that phone call reminders could reduce missed appointments and no-show rates. Both manual and automated phone calls were noted to be effective. Telephone reminders have been used in various settings and for several reasons in health care. Studies in primary care and specialty clinics have demonstrated that staff phone calls are an effective intervention for reducing no-shows (Shah et al., 2016). Patients on hemodialysis may experience financial and chronic health-related barriers that limit self-care. In a study related to patients on dialysis, the feasibility of implementing EpxDialysis (a reminder messaging system) within the chronic hemodialysis population suggests that the intervention has the potential to improve adherence with medically prescribed dialysis treatment (Som et al.

2017). According to Shah (2016), a phone call 7 days prior to an appointment led to a significant reduction in no-shows and increased reimbursement among patients at high risk of no-shows.

SMS, Text Message Reminders. With the advancement of technology and the use of cell phone devices, one would think that an optimal way to communicate with patients will be by text. Text messaging, or short message service (SMS), is one reminder method that has been extensively researched (Schwebel & Larimer, 2018). SMS reminders of appointments were an effective intervention to improve clinic attendance among persons treated for first-episode psychosis at the Federal Neuro-Psychiatric Hospital in Benin City, Nigeria (Thomas et al., 2017). SMS text studies have been completed in various settings. According to Schwebel & Larimer (2018), Appointment attendance reminders were found to either increase the rate of appointment attendance, increase the rate of appointments canceled ahead of time, or decrease the rate of missed appointments.

Letter Reminders. No research information was found that supported the use of reminders letters alone significantly impacted the no-show, missed appointment rate in the clinical setting.

Patient Initiated Appointment System. One systematic review noted the patient-initiated strategy as a possibility for meeting the need to reduce missed appointments. In this review the World Health Organization (WHO) published a report highlighting the need for a model of care that more readily meets the needs of people with chronic conditions (Whear et al, 2020). The results suggest that adverse events such as relapses in some conditions (inflammatory bowel disease and cancer) may have little or no reduction in the patient-initiated appointment group in comparison with the consultant-led appointment group (Whear et al., 2020). There were other articles that studied the patient-initiated appointment system.

As compared to other interventions, more research has been completed on the benefits of phone call reminders and SMS text message reminders to reduce no-show rates in the clinic setting. No research information was found to support the use of letter reminders to reduce the clinic no-show rate. Phone call reminders are proving to be beneficial in our pain clinic setting. The utilization of daily phone call reminders to patients with missed appointments has recently been successful. Patients have an immediate opportunity to reschedule their missed appointments. The phone call reminder system will be more useful in our peasant clinic setting.

Evidence-based Practice: Verification of Chosen Option

Studies in primary care and specialty clinics have demonstrated that staff phone calls are an effective intervention for reducing no-shows (Tak & Tak, 2016). Patient notes one reason for missed appointments as they forgot their appointment date and time, or they lost their reminder card. Personalized reminder calls can be an effective way to improve kept appointment rates in specialty care practice (Penzias et al., 2019). Adding an intervention of phone call reminders and follow-up calls after missed appointments were shown to be effective in reducing the no-show rate at the clinic. According to Penzias et al. (2019), data show that targeted interventions such as personalized reminder calls can be effective in reducing patient missed appointment rates.

The PICOT question guiding this project is: Would implementing follow-up reminder calls decrease the no-show rate within a 6-week time frame as compared to the 6-week pre-implementation?

Theoretical Framework of Evidenced-based Practice Model

The difficulties associated with missed appointments can be divided into two categories. For example, missed appointments can represent organizational process challenges, such as the provision of appointment reminder calls to supplement appointment reminder cards distributed

during the scheduling process. Missed appointments, on the other hand, indicate a problem with adherence on the part of the patient. Both challenges must be addressed at the same time to appropriately frame for their use in this project. To complete this task, two theoretical frameworks will be used to address the developed PICOT question and identify the best evidence-based practice model. The theory of constraints (TOC) model and the Health Belief Model are two examples.

Model Description and Concepts

The theory of constraints (TOC) model has been used in a wide range of settings, including retail, manufacturing, education, government, and medical (Cox, 2021). The model, according to Cox and Boyd (2020), focuses on three major components and concepts, including the change question sequence (CQS), buffer management, and five focusing steps (5FS). These steps are also known as three processes of ongoing improvement (POOGI). Reminder protocols have been identified as a barrier to appointment adherence within the confines of appointment scheduling, making the theory of constraints (TOC) applicable to the scheduling and appointment reminder process (Cox, 2021; Cox & Boyd, 2020).

The Health Belief Model (HBM) offers the second component to solving the clinic problems and challenges associated with decreasing appointment no-shows. The HBM suggests that a person's belief in a personal threat of an illness or disease together with a person's belief in the effectiveness of the recommended health behavior or action will predict the likelihood the person will adopt the behavior (LaMorte, 2019). According to LaMorte (2019), an individual's course of action often depends on the person's perceptions of the benefits and barriers related to health behavior. Key elements of the Health Belief Model focus on individual beliefs about health conditions, which predict individual health-related behaviors (Rural Health Information

Hub, 2018). The key elements of the HBM are perceived susceptibility, perceived severity, perceived benefits, cues to action, and self-efficacy. Under the HBM, perceived susceptibility refers to a person's subjective perception of the risk of acquiring an illness or disease whereas perceived severity refers to the person feelings on the seriousness of contracting an illness or disease; the perceived benefits refer to the person's perception of the effectiveness of the treatment and perceived barriers refers to the person feelings on obstacles to performing the recommended health action, cues to action is the stimulus needed to trigger the decision making process to accept a recommended health action and finally, self-efficacy refers to the level of a person's confidence in his or her ability to successfully perform a behavior (LaMorte, 2019).

Use of Theory related to Literature Findings

When exploring previous literature, the implementation of staff phone calls has demonstrated success as an effective intervention for reducing no-shows next (Tak & Tak, 2016). In the medical environment, the TOC has been implemented to enhance emergency room services, community and mental health centers, and outpatient medical centers (Cox, 2021). This theory would relate to the implementation process by identifying potential barriers present in initiating and maintaining reminder calls into the system (Cox, 2021). In conjunction with the TOC, the HBM contributes to the study by modifying actions to elicit positive patient behaviors to adhere to their appointment schedule. According to Cronin (2018), findings demonstrate that modifying components of the Health Belief Model, including age, financial security, health literacy, spirituality, and lacking cues to action like reminders, are important in missed appointments, and addressing these factors could improve appointment-keeping. The findings of the literature support the application of both theories to the study.

How do the theories frame the project and answer the question?

The use of the two theories is concurrently supported in the project's framing. The TOC aided in identifying potential implementation barriers, ensuring that the intervention is successful when implemented. This model will serve as a guiding framework for developing study parameters and a clear process for the intervention. The following steps listed by Kumar (2018), of the TOC, were followed:

- *Identify the Constraint* – figure out which process is limiting; The identified constraint in this project was medical assistant check-out staff.
- *Exploit the Constraint* – try to optimize with existing capacity; Check-out procedures were reinforced to the MA staff through meetings with policy and procedure update reminders.
- *Subordinate everything to the Constraint* – reduce processes to match the capacity of the constraint. To ensure the effectiveness of the MA staff, they were only responsible for specific duties daily. They had the responsibility of check-out or missed appointment follow-up calls. MA staff was also cross-trained, which allowed for coverage on days of vacation and absences of other MA staff members that were involved with the check-out and follow-up call procedures.
- *Elevate the Constraint* – add capacity to the constraint process; on days of large clinic schedules, MA staff will share the duties of check-out and missed appointment follow-up calls.
- *Prevent inertia from becoming the Constraint* – be vigilant and check if there's a new constraint. Periodic monitoring of the missed appointment averages and for any updates to the policy and procedures.

Alternative to the Theory of Constraints (TOC), the Health Belief Model (HBM) assisted in framing the intervention with a focus on the HBMs components of perceived barriers and cues to action. The perceived barrier, in this case, was no transportation, forgetting about the appointment, and some patients voiced an unawareness of the appointment until they received a reminder call. The cues to action were the reminder phone calls and reminder cards given to the patient at the end of the follow-up appointment. The stimulus to activate the positive behavior was the cues to action of the HBM. Finally, the patient was motivated to keep their follow-up appointments, which was theoretically aided by the appointment and follow-up reminder calls. The use of both frameworks helped in determining whether the implementation of follow-up reminder calls reduced no-show rates within a 6-week time frame when compared to the 6-week pre-implementation time frame.

Goals, Objectives, and Expected Outcomes

Program Goal:

- Reduction in the number of missed follow up and procedure appointments to under 10%

Program Objectives: At the end of the review period:

- Clinic management was able to generate a complete list of the number of missed appointments and procedures at the end of each clinical day.
- Management was able to analyze and apply study information to implement new clinic procedures as needed to improve patient appointment outcomes.
- Following the intervention period, the missed appointment rate was reduced from 12% to below the goal threshold of 10%.

Methods (Plan)

The MA staff receives verbal reminders and updates of check-out and missed appointment scheduling policies and procedures. They also meet with the office manager for any changes. As a part of clinic standard procedures, providers continued to have weekly educational calls that discussed general reminders of visit policies and procedures. In my approach to finding a solution to the problem, I monitored the number of missed follow-up appointments over a 6-week period post-intervention.

Project Design

The design of this project will be a quantitative quality improvement project comparing the use of missed appointment data information from a retrospective review of the patient schedules located in the Prognosis System EMR of the facility. For this project, an evidenced based practice approach will be used to monitor, implement, and evaluate data associated with reducing the no-show rates. The Health Belief Model and the Theory of Constraints will be utilized in the development of the project information. The quality improvement project will be implemented to reduce the number of no-show/cancellation appointments in a local pain and wellness clinic. The need for the program is to reinforce current policy and procedures on missed appointments with the clinic medical assistant staff. This goal is for the medical assistant staff to be empowered with knowledge regarding the importance of keeping scheduled appointments and effectively monitoring the no-show appointments. There will also continue to be weekly provider meetings. The Plan Do Check Act framework for implementation, planning, and evaluation will be utilized.

Project Site and Population

The setting of this project took place in a local pain and wellness clinic. Services offered in the clinic include management of acute and chronic with interventional procedures, therapy, and bracing. The pain and wellness clinic provides follow-up pain management and procedure appointments for greater than 100 patients daily. The patient population age ranged from 18 years to over 90. Many of the patients had chronic pain diagnoses whereas others were patients for pain management due to recent surgeries. Some of their diagnoses included a post-surgical diagnosis of the hip, knee, and shoulder replacements. As previously noted, patients' levels of pain also ranged from musculoskeletal joint pain, cervical, thoracic, and lumbar pain to nerve pain. Although the clinic serviced patients specifically for pain management, missed appointments for management of their pain have also increased the possibility of having other adverse health-related problems. Research has shown that lowering missed appointment rates can improve clinical efficiency and utilization, reduce waste, improve provider satisfaction and lead to better health outcomes for patients (Mohammadi et al., 2018).

The staff make-up of the pain and wellness clinic is composed of interventional pain physicians, nurse practitioners, physician assistants, and medical assistants. Stakeholders and participants of the project consisted of the office manager, nurse practitioners (NP), and medical assistants (MA). The team will be led by the PL with assistance from the office manager. This quality improvement project utilized 1 nurse practitioner and 4 medical assistants for collecting and monitoring missed appointment data. Medical assistants were instrumental in collecting the missed appointment data at the end of each clinic day. Their duty also included making follow-up phone calls at the end of the day to patients that have missed appointments. The clinic medical assistants were dedicated to the clinic and quality patient care and had genuine concerns

about the long-term wellbeing of the clinic patients. Unfortunately, high no-show rates can make their job and responsibilities harder which is why it was appropriate for them to be included in this project.

Inclusion criteria in the study were the daily clinic schedules for comparison of the total number of patients with the total number of missed follow-up and procedure appointments. Information excluded will be specific patient identifiers. Also excluded will be new patient scheduled for appointments.

Interaction with clinic personnel included biweekly meetings. It also included daily interprofessional collaboration with the office manager. Resources used included patient daily appointment schedules. Potential barriers are computer-related glitches or staff absences, vacation off time and holiday closures. To overcome these barriers, we kept daily logs of patient no shows (Appendix C) and had backup personnel prepared to retrieve information and data if another key team member is unavailable or out of the clinic on vacation.

Measurement Instruments

To measure the outcomes of this project, missed appointment data was monitored and tracked with an excel spreadsheet. After missed appointment data was collected for this project for the total number of patients scheduled daily, along with the total number of missed follow-up and procedure appointments, a graph was used. This data was compared pre-and post-intervention with the use of a graph method. A missed appointment call questionnaire was also utilized when calls were made to reschedule appointments. Traditional PBR projects have depended on paper forms for data collection, especially of health outcomes in the form of patient questionnaires or doctors' assessments (Owens et al., 2021). See Figure 1 and Figure 2.

Data Collection Procedures

This project utilized the Plan Do Check Act framework for implementation, planning, and evaluation. With IRB approval for implementation of the project there a meeting was held with clinic providers, management, and medical assistant check-in and check-out staff for an overview of the project. We discussed current clinic missed appointment policies and procedures, project data collection procedures, and specific key team members' duties and responsibilities. Missed appointment data was collected at the end of the clinic day from phone calls that were made daily to follow up with patients that had missed appointments. This data was transferred to a daily missed appointment questionnaire (Appendix D). Data was then uploaded to an excel worksheet on a weekly basis.

Plan – Problem identified of the need to reduce missed follow-up and procedure appointments.

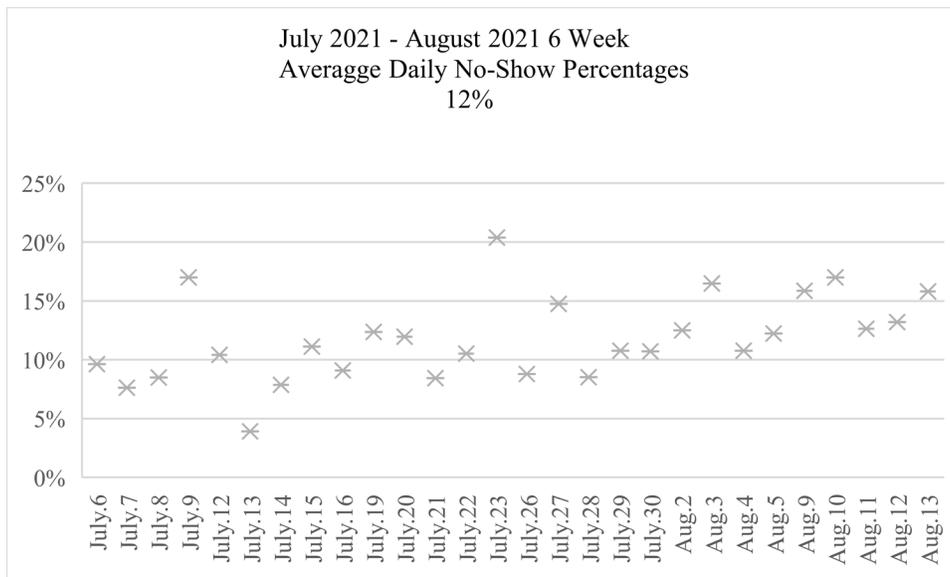
Do –Medical assistants made calls daily to patients with missed follow-up appointments. Medical assistants also verified follow-up and procedure appointments at check-out and provided patients with appointment cards. During the follow-up visit, the Nurse Practitioner or Physician Assistant reminded patients of their upcoming procedures and explained the benefits of the importance of keeping procedure and follow-up appointments.

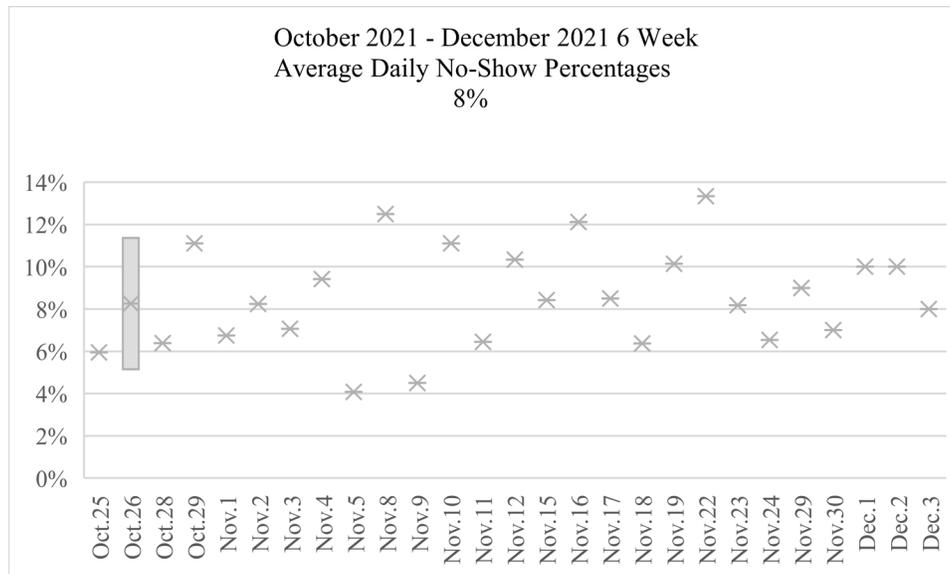
Check – Missed appointment data was monitored weekly by the PL and this information was reviewed biweekly in the project team meeting.

Act – As improvements were noted from daily phone calls reminders and appointment cards reminders, the process continued until the study goal was met.

Data Analysis

Throughout this quantitative quality improvement project, charts and graphs will be used. At the end of each clinic day, the data retrieved from the EHR will be examined. Prognosis is the EHR system used by the clinic. The clinic's daily follow-up schedules are stored in the Prognosis program. Clinic schedules were monitored daily for missed appointments. Missed appointment data was added daily to the daily follow-up appointment no-show log. A boxplot is an example of a chart/graph that will be used to measure outcomes. When you have continuous variables that are divided into groups you can use a boxplot to display the central tendency and spread of each group (Frost, 2020).





Cost-Benefit Analysis/Budget

No-show appointments can cause clinics to lose the revenue needed to cover expenses for clinic operations and staff salaries. One study found that no-shows cost the U.S. health care system more than \$150 billion a year and individual physicians an average of \$200 per unused time slot (Jain, 2019). Pain represents a major public health burden, costing the United States an estimated \$560–\$635 billion annually in health care costs and economic productivity (Odonkor et al., 2017). Reducing the no-show appointment rate in the clinic can be beneficial by having an increase in revenue that can be used for staff and clinic resources. Reducing no-show rates can diminish costs and improve quality healthcare delivery (Kheirkhah et al., 2016). No additional cost will be needed for funding this project. Clinic facility resources and staff will be used for data retrieval. Resources of computers, key staff members, and reports extracted from the computer do not require added costs.

Timeline

The scholarly project was implemented over a 6-week period. Prior to the implementation, the proposal development took an estimated 2 months and the IRB approval about 4 weeks. After the implementation of the project, the analysis has taken an estimated 2 weeks and the dissemination 4-8 weeks. The expected timeline can be found in the appendix of the proposal.

Ethical Considerations/Protection of Human Subjects

The University of Alabama (UA) Institutional Review Board (IRB) approval was obtained prior to initiating the project. Patients were not used as participants in this study. The clinic employees were the participants in this project. The goal of this project was to reduce the number of daily appointments that had been missed. The project's numerical data will be collected from the provider's daily follow-up and procedure schedule. Patient Identifiers will not be used to reduce the risk of jeopardizing patient privacy. All patient data was protected under HIPAA, and questionnaires were deidentified. Any project-related medical information will be shredded in the clinic shred box at the end of the project.

Results

Prior to the project's implementation phase, the clinic had an average of more than 10% missed appointments over a six-week period. Staff meetings with education were done prior to implementation to cover check-out appointment scheduling and no-show follow-up protocol. During the project's 6-week pre-implementation period, the clinic experienced 18 days with a daily average of more than 10% missed appointments. Seven of the 18 days had a daily missed appointment average of more than 15%. There was a spike in no-show appointments on several days due to missed reminders or patient-reported illness. After noticing an increase in daily

missed appointments, another staff meeting, and education session was held. The 6-week post-intervention phase begins after the second session of staff meetings and education. For the six-week post-intervention phase, the overall missed appointment no-show percentage was 8%. This was a 4 percent decrease from the pre-implementation phase of 12 percent. During the implementation, there were ten days with a daily no-show rate of 10% or higher. Four days had a 10% daily no-show rate, three days had an 11% daily no-show rate, one day had a 12% rate, and two days had a 13% daily no-show rate. The daily no-show rate was calculated by dividing the total number of patients scheduled for that clinic day by the total number of missed appointments.

Interpretation / Discussion

Appointment data for a 6-week period were retrieved from the clinic's scheduling database. The electronic database and health records of the clinic are password protected. This data was tallied on a weekly basis for a six-week pre-implementation period and was documented in the daily no-show follow-up log (See Appendix D). The purpose of monitoring the daily no-show appointments was to have data that would support the monthly no-show rate percentages. The no-show rate percentages were determined by dividing the total number of patients by the number of missed appointments per day.

An audit from July of 2021 through August of 2021 showed a 6-week combined daily no-show rate of 12%. The percentages during that six-week period varied with daily percentages as low as 4% and one day as high as 20%. IRB approval was granted in October of 2021 and afterward, the nurse-led interventions in the clinic began. During this time frame, additional research was completed related to the monitoring of the daily no-show rate.

The post-implementation period was from October through December for a total of six weeks. During this time the clinic schedules and the password-protected electronic health records were utilized to retrieve daily missed appointment data. The data was documented daily and

transferred to the daily follow-up no-show log (See Appendix D). This data was also documented into the daily no-show rate percentages table in excel (See Table 2). A decline in the no-show percentage was noted within the six-week implementation period. The no-show rate was reduced from 12% pre-implementation to 8%. This was a reduction of 4% between October 2021 and December 2021.

The post-implementation period had a reduction in the percentage of daily missed appointments. It was also revealed during this time that follow-up reminder appointment calls were necessary for assisting with the reduction of the daily missed appointments rates. The PICOT question guiding this project was: Would implementing follow-up reminder calls decrease the no-show rate within a 6-week time frame as compared to the 6-week pre-implementation? Yes, this question was answered during the implementation phase of the project.

During the implementation phase of this project, the country was dealing with the COVID-19 pandemic, and one limitation that could have negatively impacted the project was daily staffing. Our staff was not initially trained at the beginning of the project which only allowed for a limited number of staff to be involved with the data collection and other implementation aspects of the project itself. This barrier was overcome after the possible limitation was brought up in one of the meetings. The MA staff was trained to handle the duties of other MA staff members that may be out on vacation or out sick.

The no-show missed appointment questionnaire was utilized when calls were made to patients at the end of the clinic day. Three of the top reasons people reported they did not make it to their scheduled appointment were, they forgot, did not have transportation, or did not have money for co-pay. Patients who missed scheduled outpatient appointments most reported forgetfulness, lack of reliable transportation, and personal health issues, as well as work and family obligations as major reasons for missing scheduled outpatient appointments (Ofei-Dodoo et al., 2020).

The outcomes of the project were useful in showing the importance of following through with clinic policies and procedures. It also revealed the clinical importance of staff education and reminders along with patient appointment reminder procedures. Telephone and message reminders proved the missed appointment percentage could be reduced if implemented. The findings of the study agree with the research of Som et al., (2017) and Shah (2016). Both randomized control trials proved messaging or phone call reminders led to a significant reduction in the clinic no-show rates.

Another positive outcome of the project was the finding during the project intervention of the need for better communication with patients regarding their radiology scheduling. As follow-up missed appointment calls were made, one question on the questionnaire asked the patient if their previously scheduled radiology tests were completed. It was at this time the patient made the office aware that they did not know their radiology tests were approved. Providers now can provide patients with a patient imaging location reminders sheet during the follow-up visits (see Appendix F). These forms are kept in the exam room and can be completed during the follow-up visit.

The project was guided theoretically by the Theory of Constraints and the Health Belief Model. The five steps of the theory of constraints and two important components of the health belief model; perceived barriers and cues to action, guided clinic practices, and patient behaviors during the study. These actions proved to be successful for clinic practices with a reduction of missed appointments.

Conclusion

Reducing missed appointments can lead to successfully improved outcomes for the patient and the clinic. Quality assurance will play an essential role in the clinic setting to assure increased patient engagement in their treatment plans. Staff continuing to monitor the no-show rate will also be vital in adhering to the plan. Social determinants of health of the health belief

model are associated with missed appointment behavior. As healthcare administrators in pain management, we must adopt best practices to create, and implement policies and procedures that increase the quality of care and healthcare experience for our patients. Creating positive healthcare interactions that encourage patients to show up for appointments is critical for patients and the nation's health, and it leads to good patient care (Robinson, T. 2021).

The goal of this quality improvement project was to see if implementing evidence-based phone call reminder interventions would decrease the number of missed appointments at a busy pain clinic. The current no-show rate is less than 10%. The medical assistant check-out staff made phone calls daily and used the Missed No-Show Appointment Questionnaire during each phone call reminder made. The clinic daily schedules were utilized, and daily no-show data was extracted and copied to a daily follow-up no-show log. The data was later transferred to an Excel data graph. The project's implementation began after IRB approval was obtained.

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Table 1 Pre-Intervention**July 2021 thru August daily 6-week NO-SHOW RATE Percentages****Total 6-week average no-show percentage - 12%**

Date	Total Scheduled	Total Missed	Daily %Missed
July 6	104	10	10%
7	105	8	8%
8	106	9	8%
9	53	9	17%
12	96	10	10%
13	102	4	4%
14	89	7	8%
15	99	11	11%
16	66	6	9%
19	89	11	12%
20	92	11	12%
21	95	8	8%
22	95	10	11%
23	54	11	20%
26	91	8	9%
27	95	14	15%
28	94	8	9%
29	93	10	11%
30	56	6	11%
Aug 2	88	11	13%
3	85	14	16%
4	93	10	11%
5	90	11	12%
9	101	16	16%
10	100	17	17%
11	95	12	13%
12	106	14	13%
13	57	9	16%

Table 2 Post-Intervention

October 25, 2021, thru December 3, 2021, daily 6-week NO-SHOW RATE Percentages
Total 6-week average no-show percentage – 8%

Date	Total Scheduled	Total Missed	Daily %Missed
Oct 25	101	6	6%
26	97	5	5%
27	88	10	11%
28	94	6	6%
29	54	6	11%
Nov 1	89	6	7%
2	85	7	8%
3	85	6	7%
4	85	8	9%
5	49	2	4%
8	88	11	13%
9	89	4	4%
10	90	10	11%
11	93	6	6%
12	58	6	10%
15	95	8	8%
16	99	12	12%
17	106	9	8%
18	110	7	6%
19	69	7	10%
22	75	10	13%
23	110	9	8%
24	107	7	7%
29	110	10	9%
30	99	7	7%
Dec 1	84	8	10%
2	91	9	10%
3	61	5	8%

Figure 1

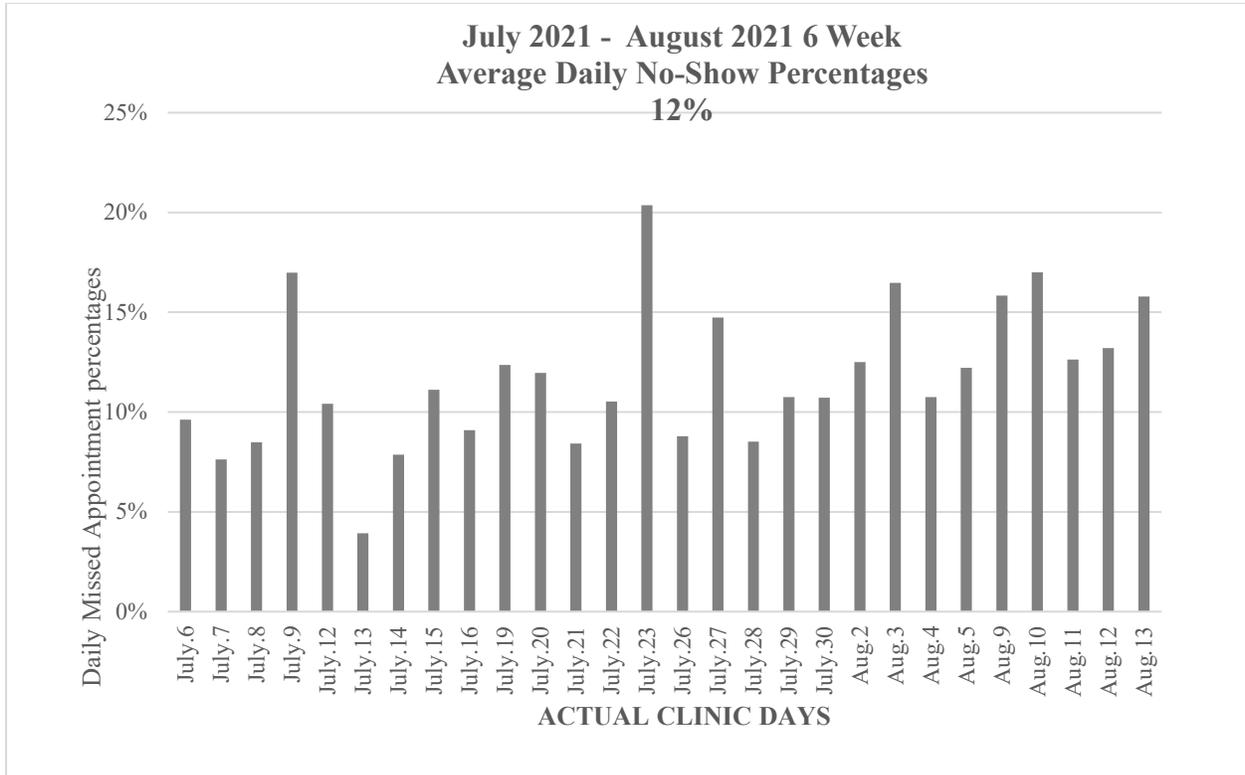
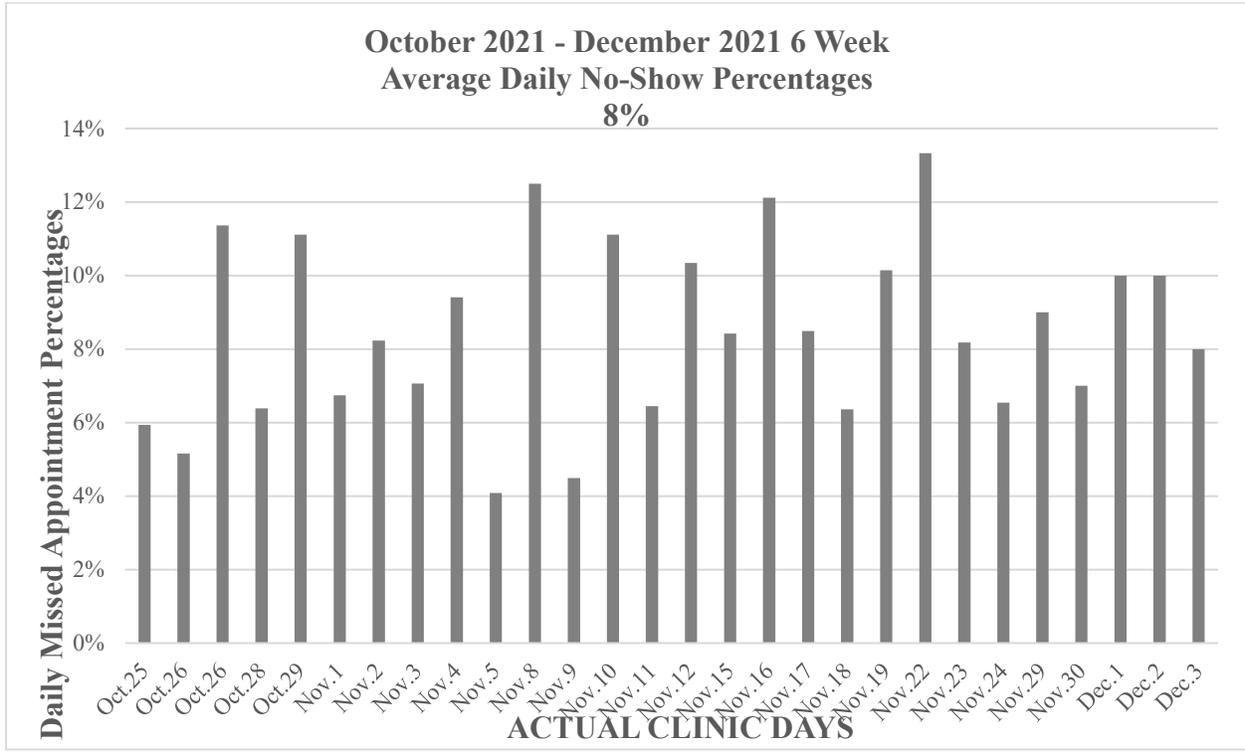
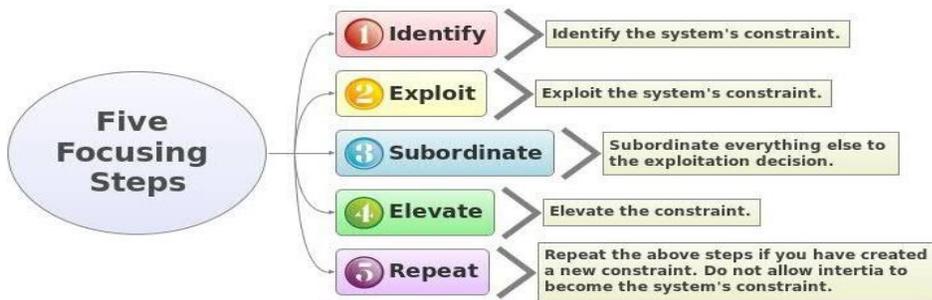


Figure 2



Appendix A

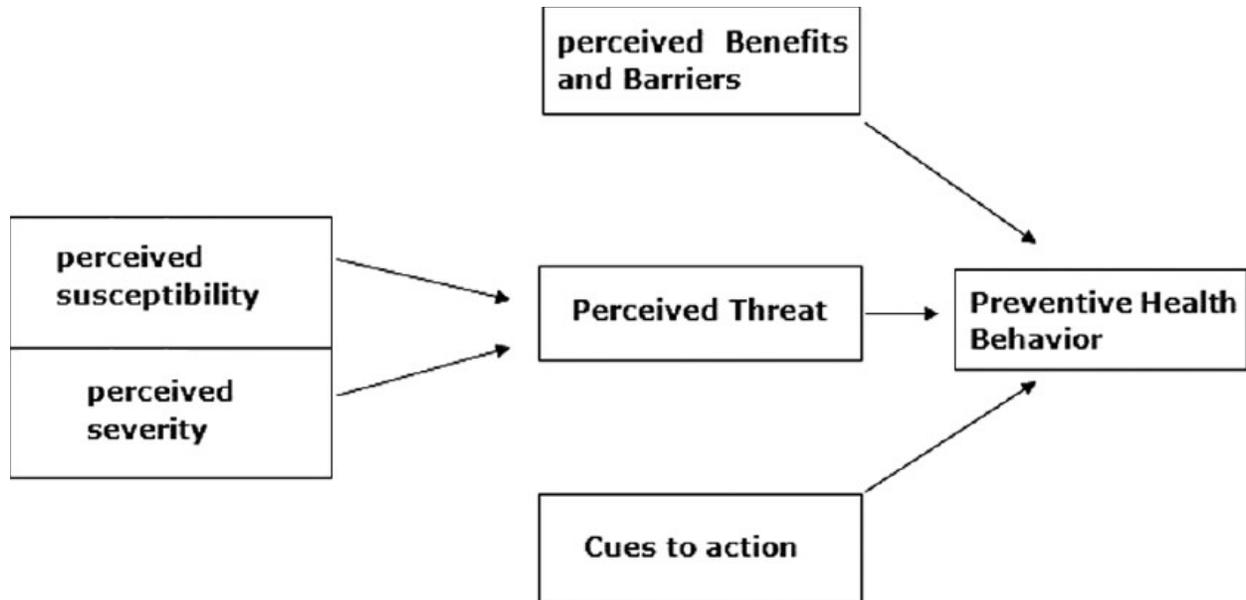
Theory of Constraints (TOC) Model



Appendix B

Health Belief Model

Journal of Education and Health Promotion



Appendix C

Project Timeline

- 1 month - Research begins on the topic of interest proposal development.
- 1 month – Review of literature and synthesis
- 2 months - Writing of proposal for projects topic of interest
- 4 weeks - Submit for Institutional Review Board (IRB) approval and consideration
- 6 weeks - Implementation of Scholarly Project (6-week program implementation of interventions and data collection).
- 2 – weeks project analysis
- 4-8 weeks project dissemination activities that include preparation for and completion of the project and poster presentation to faculty.

Appendix D

Daily Follow-Up No-Show Log**Week 1** 10/25/21 thru 10/29/21

DATE	TOTAL F/U ON SCHEDULE	TOTAL NO SHOW APPTS.	TOTAL % OF MISSED APPTS
10/25	101	6	6%
10/26	97	5	5%
10/27	88	10	11%
10/28	94	6	6%
10/29	54	6	11%

Week 2 11/1/21 thru 11/5/21

DATE	TOTAL F/U ON SCHEDULE	TOTAL NO SHOW APPTS.	TOTAL % OF MISSED APPTS
11/1	89	6	7%
11/2	85	7	8%
11/3	85	6	7%
11/4	85	8	9%
11/5	49	2	4%

Week 3 11/8/21 thru 11/12/21

DATE	TOTAL F/U ON SCHEDULE	TOTAL NO SHOW APPTS.	TOTAL % OF MISSED APPTS
11/8	88	11	13%
11/9	89	4	4%
11/10	90	10	11%
11/11	93	6	6%
11/12	58	6	10%

Appendix D continued

Daily Follow-Up No-Show Log**Week 4** 11/15/21 thru 11/19/21

DATE	TOTAL F/U ON SCHEDULE	TOTAL NO SHOW APPTS.	TOTAL % OF MISSED APPTS
11/15	95	8	8%
11/16	99	12	12%
11/17	106	9	8%
11/18	110	7	6%
11/19	69	7	10%

Week 5 11/22/21 thru 11/26/21

DATE	TOTAL F/U ON SCHEDULE	TOTAL NO SHOW APPTS.	TOTAL % OF MISSED APPTS
11/22	117	10	9%
11/23	110	9	8%
11/24	107	7	7%
HOLIDAY	CLOSED	X	X
HOLIDAY	CLOSED	X	X

Week 6 11/29/21 thru 12/3/21

DATE	TOTAL F/U ON SCHEDULE	TOTAL NO SHOW APPTS.	TOTAL % OF MISSED APPTS
11/29	110	10	9%
11/30	99	7	7%
12/1	84	8	10%
12/2	91	9	10%
12/3	61	5	8%

Appendix E

Missed No-Show Appointment Questionnaire

1. Reason for No-Show
- No Transportation
 - Home Sick / Hospital Stay
 - Forgot about appointment
 - Something else came up
 - Insurance / copay / income issues
 - Other _____
2. Did you receive a reminder call or message?
- Yes
 - No
3. Was the Follow-up appointment rescheduled?
- Yes
 - No
4. Do you know the number to dial to cancel your appointment with our office?
- Yes
 - No
5. Have you completed your scheduled MRI CT scan, or scheduled X-ray
- Yes
 - No
 - N/A
 - Did not know it was approved

Appendix F

Patient Imaging Location Reminder

This is a reminder your orders for imaging have been submitted to _____ radiology department. Please contact them to schedule your appointment.

Imaging Scheduling Phone Numbers

LOCATION	PHONE #
Mobile Infirmary Infirmary 65 Infirmary Imaging Center Infirmary Hillcrest	251-435-2453 Or 251-435-2400
USA Health Radiology	251-415-1660 251-471-7000
Providence Hospital	251-266-2704
Springhill Medical Center	251-460-5362 251-344-9630
Thomas Hospital Thomas Medical Center	251-279-1042
North Baldwin Infirmary	251-580-1747
Atmore Community Hospital	251-368-6399 251-368-2500
South Baldwin Medical Center	251-949-3787 251-949-3510 251-949-3400