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Sustainability of a DNP QI project on BMI screening and weight management documentation in
Primary Care

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

Practice at the University of Kentucky

By

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Lexington, Kentucky

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Abstract

Background: Nurses with a Doctor of Nursing (DNP) degree are prepared at the highest level of expertise to provide safe and efficient health care to patients and help bridge the gap between research and evidence-based health care. Although DNP students invest significant effort, time and resources to implement quality improvement (QI) projects, the sustainability of the outcomes of these is not well studied and empirical evidence on sustainability of quality improvement interventions is very limited.

Objective: To assess the sustainability of the QI project titled: “Using Rapid Cycle Improvement to Improve Weight Management” over time and evaluate the characteristics of the clinic associated with the sustainability of the QI project.

Methods: This is a single-center, descriptive study to assess the sustainability of the QI project at the Family Medicine and Community Clinic in 2018. To examine the rates of intervention sustainability, data was obtained from the EHR for all patients seen at the clinic by November of 2020. Additionally, qualitative data was collected through staff surveys to identify the contextual factors associated with the sustainability of the QI project using the Practical Robust Implementation and Sustainability Model (PRISM) framework as a guide.

Results: Quantitative data showed that BMI screening and weight management documentation was 30.0 % (2019) and 30.8% (2020) which is lower compared to the rates at the end of the QI project in 2018 (33.89%) and the goal of 65% for reimbursement purposes. Although the rates remain low, the practice of BMI screening and weight management is sustained at this setting. Multiple factors including importance of practice, knowledge of intervention and administrative

support were identified as facilitator by nursing staff, while time constraint was the main barrier identified by providers to complete weight management documentation.

Conclusion: Study findings indicate that although BMI screening and weight management documentation is sustained at the Family Medicine and Community Clinic, the initial implementation efforts of increasing the rates of this intervention by the previous DNP project are not reached. Associated contextual factors identified by this study should be considered by the clinic leaders and future researchers to implement further interventions to improve the rate of BMI screening and weight management documentation in this setting.

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Dedication

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Sustainability of a DNP QI project on BMI screening and weight management documentation in Primary Care

Introduction

In 2001, the Institute of Medicine (IOM) published “Crossing the Quality Chasm”, which highlighted the lack of quality, effective, evidenced-based care and urged healthcare to make changes and improve the care we provide to our patients (Institute of Medicine Committee on Quality of Health Care in, 2001). This report emphasized that there is a considerable gap between technological and scientific advances and healthcare practice and delivery of care. Based on this, the IOM made an urgent call to reform the education and scope of practice of all healthcare professionals alike, including nurses and advanced nurse practitioners, and help bridge the gap between scientific innovations and healthcare delivery (Institute of Medicine Committee on Quality of Health Care in, 2001).

The call by the IOM and the pressing need to adequately and timely incorporate evidence-based knowledge into every day clinical practice, led the American Association of Colleges of Nursing (AACN) to endorse the Doctor of Nursing (DNP) program which helps prepare nurses to become expert leaders in improving clinical practice (Brown & Crabtree, 2013). To finalize this degree, DNP students successfully complete a practice change or quality improvement (QI) project that demonstrates their understanding of practice inquiry, influence healthcare outcomes and lead to future practice scholarship (American Association of Colleges of Nursing, 2015; Brown & Crabtree, 2013). Although the AACN mentions the importance of sustainability as an essential part of these projects, there is very limited data on whether these projects are sustained past their completion.

Background & Significance

The Doctor of Nursing practice degree is not new. The first recognized doctoral programs in nursing date back to 1924 when Teachers College offered Doctor of Education (EdD) for those nurses who wanted to teach. In 1979 Case Western Reserve University started the first doctor of nursing (DN) program, followed by the first DNP program by the University of Kentucky in 2001 (American Association of Colleges of Nursing, 2004; Chism, 2013). With the increased need for well-prepared nurses to address the complex needs of the nations' healthcare, in 2001 the AACN created a task force to assess the existing doctoral programs in nursing and provide further recommendations to develop doctoral practice programs (American Association of Colleges of Nursing, 2004). This led to the release of their Position Statement on the Practice Doctorate in Nursing in 2004, which required all clinical practice doctoral programs to transition to the Doctor of Nursing practice for their practice focused degree (American Association of Colleges of Nursing, 2006). Additionally, in 2006 the AACN released the Essentials of Doctoral Education for Advanced Nursing Practice which define the curricular recommendations for this program (American Association of Colleges of Nursing, 2006). The DNP degree prepares nurses to practice at the highest level of expertise and use their knowledge to analyze current practice, appraise existing research and develop strategies that can help transform healthcare and improve outcomes, not only for the general population but also the healthcare system (Brown & Crabtree, 2013). DNP prepared nurses have the knowledge and skills to collaborate with other professionals to create new models for practice based on current research evidence. More importantly, they have the expertise to put in practice these necessary changes and to evaluate the outcomes of these projects and ensure sustainability overtime (American Association of Colleges of Nursing, 2015).

DNP projects, as opposed to PhD dissertations, focus on improving clinical outcomes and healthcare processes rather than creating general knowledge (American Association of Colleges of Nursing, 2015). According to the AACN, the DNP students must create, implement, and evaluate the project (American Association of Colleges of Nursing, 2010). Thus, evaluation, and a plan for sustainability of these projects is an important step of the DNP project to ensure the efficacy, efficiency and outcomes of the implemented intervention (American Association of Colleges of Nursing, 2010; Proctor et al., 2015; Waldrop, Caruso, Fuchs, & Hypes, 2014). Although the number of successful quality improvement and evidence-based programs are increasing all over the nation, there is not sufficient data on the sustainability of these projects (Berta et al., 2019; Fleiszer, Semenic, Ritchie, Richer, & Denis, 2015a, 2015b; Shelton, Cooper, & Stirman, 2018; Wiltsey Stirman et al., 2012). Sustainability of these projects is the main outcomes as it ensures long-term endurance of the intended benefits of the intervention, thus improving quality and efficiency of healthcare.

To address this gap, this study will assess the sustainability of a QI project to improve rates of nutrition screening and weight management in a family practice clinic (McCormick, 2018). Although the definition of sustainability varies across the literature, for the purposes of this project, we will define it as continued use or maintenance of the original project's components which consisted of BMI screening and weight management documentation for patients with a BMI ≥ 30 .

The QI study completed in 2018 consisted of rapid cycle improvements, using the plan-do-study-act (PDSA) model, to identify problems and implement changes to increase body mass index (BMI) screening and documentation of a weight management intervention for any adult who had a BMI of 30 or above (McCormick, 2018). The aims of this original study were to

improve patient outcomes and meet the requirements set by the U.S. Preventive Task Force (USPSTF) and Medicare Access and CHIP reauthorization Act (MACRA) which would have a direct impact on practice reimbursement (McCormick, 2018). The interventions of this project through the three cycles were to initially educate one team of the office staff about the expectations regarding BMI screening and documentation, place visual cues to remind them of this process and provide additional education to all office staff in the clinic about the importance of these measures for reimbursement. The results of this study were promising as the rates of BMI screening and documentation of weight management increased from 0% at the start of the intervention in October of 2017 to 33.89% at the end of the project in February of 2018. Nonetheless, the interventions did not reach the reimbursement goal of 65% for MACRA measures (McCormick, 2018).

The study found that the main limitations and barriers to compliance with this expectation were time-constraints and difficulties with documentation in the electronic health record (EHR). Recommendations from the original study were to increase allotted time for the rooming process and make changes to the EHR that can facilitate documentation of this measure (McCormick, 2018).

Following this study, in May of 2018 the clinic independently set forth a program called “plus 20” which added an additional initial 20 minutes to the patient scheduling, allowing the nursing staff additional time for the rooming process, thus potentially increasing compliance with nutrition screening and BMI documentation (Sass, 2020). This project evaluated compliance three years later.

Problem Statement

Evidence-based QI projects, such as those undertaken by DNP students or DNP prepared nurses, have proven substantially useful in improving the health of the population, increasing the efficiency of healthcare services and lowering financial costs for the healthcare system (Curtis, Fry, Shaban, & Considine, 2017; Sharplin et al., 2019; Stone, Lee, & Sharek, 2016). These projects aim to fulfill one of the main objectives of this terminal degree, which is to improve the health and health delivery system by bridging the gap between knowledge and practice (Brown & Crabtree, 2013). While many projects are well accepted initially and have successful results, they eventually tend to fall by the wayside (Scoville R, Little K, Rakover J, Luther K, & Mate K, 2016; Wiltsey Stirman et al., 2012). The importance of translating existing research-based knowledge into clinical practice by implementing innovative measures is well supported by robust data (Brown & Crabtree, 2013; Fleiszer et al., 2015a; Glasgow et al., 2012; Wiltsey Stirman et al., 2012). Nonetheless, the sustainability of outcomes of these practice changes and the barriers of sustainability of these projects, have not yet gained much attention (Fleiszer et al., 2015b; Martin, Currie, Finn, & McDonald, 2011; Shelton et al., 2018; VanderKooi, Conrad, & Spoelstra, 2018; Wiltsey Stirman et al., 2012).

Objective

Assess the sustainability of the QI project titled: “Using Rapid Cycle Improvement to Improve Weight Management” over time and evaluate the characteristics of the clinic associated with the sustainability of the QI project.

Purpose/aim

1. Evaluate the rate of BMI screening and weight management documentation in the EHR since 2018.
2. Identify facilitators and barriers related to sustainability of documenting the BMI followed by weight management plan in the EHR from the perspective of providers, and nursing staff.
3. Identify possible solutions to address sustainability of documenting BMI & weight management documentation in the clinic.

Theoretical Framework

It is well known that the translation of scientific knowledge into the clinical practice is one way to provide safe and high-quality patient care (Curtis et al., 2017). Nonetheless, the effective implementation of these practices and long-term sustainability of the obtained benefits can be a challenge (Curtis et al., 2017; Lennox, Maher, & Reed, 2018; Rapport et al., 2018). With the everchanging healthcare system and unceasing advances in technology and science, it is very complicated to apply and maintain changes in healthcare. One way to improve the implementation process is through the use of tools such as theories and frameworks to guide the inclusion of these changes in daily practice and ensure effective outcomes and sustainable changes (Curtis et al., 2017; Rapport et al., 2018).

For this DNP project, the framework Practical Robust Implementation and Sustainability Model (PRISM) was selected. PRISM is an extension of the Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM) framework in addition to the Chronic Care Model (CCM), and quality improvement models (Feldstein & Glasgow, 2008). This framework

proposes that contextual factors are the main influence in the maintenance or sustainability of program outcomes. It helps understand the interaction between the quality improvement program and recipients by focusing on both internal and external factors that affect the implementation and adds them to the RE-AIM framework to determine the adoption, outcomes and sustainability of the program (Feldstein & Glasgow, 2008). Although PRISM is considered an implementation model, it places special emphasis on the different strategies that help adjust the implementation process and contextual factors that can ultimately determine the success and sustainability of the intervention (McCreight et al., 2019). Thus, this framework will be of valuable use to guide the assessment of the different contextual factors that contributed or limited the sustainability of the DNP project.

PRISM has four domains: Intervention, recipients, implementation and sustainability infrastructure, and external environment. For this project, these domains will be considered to identify the different contextual factors that had significance in the “Using Rapid Cycle Improvement to Improve Weight Management” project and assess their relationship to the sustainability of implemented interventions by analyzing facility-level quantitative and qualitative data from EHR data and individual staff interviews. These are summarized in table 2.

Review of Literature

According to a position statement by the AACN, DNP projects ought to include an impactful change that improves healthcare outcomes of a target population, and an implementation, evaluation and sustainability plan that is appropriate to the setting (2015). Although literature on the implementation of QI projects is vast, there is limited data on project

sustainability, specifically none related to DNP students. Therefore, for the purposes of this paper, the focus will be on all pertinent QI and evidence-based practice change literature.

While healthcare innovations and evidence-based practice changes are crucial to provide high quality, safe and efficient care, attaining change that is sustained does not easily occur (Lennox et al., 2018; Scoville R et al., 2016; Shelton et al., 2018). A systematic review of 125 studies on sustainability of QI or evidence-based practice innovations, found that less than half of these showed sustainability and from these, only half followed the intervention with high fidelity (Wiltsey Stirman et al., 2012). Up until recently, most research had been focused on implementing QI interventions to improve the care practices of institutions and organizations (Fleischer et al., 2015b; Martin et al., 2011). This knowledge has helped identify barriers to implementation and address stakeholder's concerns, ultimately gaining their trust and cooperation (Martin et al., 2011). Nonetheless, after these changes are incorporated into daily activities, their implementation is soon forgotten and people trend back to doing things the old ways, which the National Institute of Health (NIH) refers to as the 'improvement evaporation effect' (Martin et al., 2011; Shelton et al., 2018).

Sustainability of quality improvement efforts in healthcare has been deemed by many researchers as a challenging endeavor (Berta et al., 2019; Lennox et al., 2018; Sharplin et al., 2019; Virani, Lemieux-Charles, Davis, & Berta, 2009). One of the main reasons for this translational issue is the limited availability of research on sustainability in healthcare (Berta et al., 2019; Fleischer et al., 2015a; Proctor et al., 2015; Wiltsey Stirman et al., 2012). Additionally, in many practices change endeavors [DNP projects for instance] evaluation of sustainability may be limited due to time frame restrictions for project completion, lack of adequate resources or

funding to continue the project, changes in the context, or the need for immediate evaluation of implemented changes (Chambers, Glasgow, & Stange, 2013; Shelton et al., 2018).

Aside from the limited availability of data, one of the primary barriers of studying sustainability is the existing variability in the terms used to define this concept (Proctor et al., 2015; Wiltsey Stirman et al., 2012). What further complicates the study or measurement of sustainability is the variety of approaches that different authors take to evaluate project outcomes. For instance, as Wiltsey Stirman et al. (2012) point out, some studies prioritize the intervention itself and the organizational outcomes as the focus for sustainability. On the other hand, others suggest that contextual factors or a combination of these, such as interactions between leadership commitment, benefits or institutionalization and development and continuous assessment of learned lessons, influence sustainability (Fleischer et al., 2015a). Yet others argue that studying sustainability should focus on the type of intervention. For instance, an intervention implemented by a single provider may have different influential factors that enable or limit its sustainability when compared to an intervention that is dependent upon the work of multiple staff or collaborative partnerships (Scheirer, 2013). In general, the ideal situation would be to measure different sustainability outcomes considering stakeholders' priorities (Shelton et al., 2018).

Although there is yet no definite conclusion on how to measure sustainability or what affects the endurance of quality improvement outcomes, a category of factors that contribute to sustainability has been mentioned in the reviewed literature. The main influential factors are context, innovation, leadership, and processes (Fleischer et al., 2015a; M. Scheirer, 2013; Wiltsey Stirman et al., 2012). While studying these factors, it is necessary to take into consideration the effectiveness of the implemented interventions, the interactions of contextual factors and

development of strategies to sustain these changes over time (Glasgow et al., 2012; Proctor et al., 2015; Shelton et al., 2018).

Context: context refers to the internal (ex. leadership, resources, culture of organization) and external (ex. funding, policies) characteristics of the setting within which the new intervention is implemented (Øvretveit, 2011; Silver et al., 2016). The aspects of the setting may not necessarily be a part of the original QI intervention; however, the contextual factors may be detrimental in ensuring successful implementation, integration and spread of this practice (Øvretveit, 2011).

Innovation: This refers to the properties of the intervention itself that affect its implementation and sustainability in the specific context, such as fit of the intervention, or the beneficial outcomes (Fleischer et al., 2015a).

Leadership: Leadership is the support provided by management and senior leaders which helps build a culture supportive of continuous improvement. This factor can be very important in engaging staff and providing the necessary resources in order to promote a successful embedment of the innovation into the daily works of the organization and ensure durable success (Silver et al., 2016). Studies on sustainability of QI projects by Bray, Cummings, Wolf, Massing, and Reaves (2009) and Verma and Moran (2014), showed that leadership support seems to be a key factor in ensuring sustainment of QI efforts.

Processes: How the new intervention is implemented is also an important factor for sustainability. Staff training, engagement of stakeholders, continuous feedback, etc. are

all important processes that may lead to effective implementation and sustainable practice innovations (Wiltsey Stirman et al., 2012).

Further, while fidelity, or continued implementation of the original intervention is important when discussing sustainability, the literature also highlights the vitality of adaptation, or flexibility of adjusting the interventions to the changing environment of healthcare (Fleischer et al., 2015b; Shelton et al., 2018). As the healthcare system is ever changing, the sustainability of innovations should not be studied as if they were “static in nature” (Shelton et al., 2018). Some authors use the terms routinization and institutionalization interchangeably to mean the integration of the innovation as part of the usual practices of the organization (Fleischer et al., 2015a). Nonetheless, with the complexity of healthcare settings, it is not congruent to strictly adhere to fidelity of an implemented intervention when there is the opportunity to advance these practices and adapt these innovations to improve the fit to the healthcare setting and population and optimize the benefits (Chambers et al., 2013). In other words, sustainability should not necessarily be measured by the beneficial outcomes or maintenance of the original intervention; rather, it should be seen as a process of continued development and adaptation based on the needs of the specific setting (Lennox et al., 2018; Shigayeva & Coker, 2014). It is however worthy to mention here that the objective and reasons to assess sustainability also need to be considered. While development and adaptation may be important measures of sustainability overtime, it is also necessary to measure sustainability after implementation to assess if the expected outcomes are actually achieved (Scheirer & Dearing, 2011).

Knowledge Gap

Overall, the literature on sustainability of healthcare improvement projects, is limited and there is a considerable lack of high-quality studies on this subject. While it is apparent that sustainability of these interventions is essential, there are no adequate studies on their importance and/or long-term value for stakeholders (Shelton et al., 2018). Although a number of factors have been found to affect sustainability, there is no consensus on whether these should be taken into consideration individually, such as studying the impact of context on the intervention, or whether all factors are equally important and should be studied in conjunction or as interdependent. In addition, there are very few studies on strategies to improve or maintain sustainability of quality improvement or evidence-based practices and a lack of reliable and validated tools to do so (Luke, Calhoun, Robichaux, Elliott, & Moreland-Russell, 2014; Shelton et al., 2018). While many studies described different approaches to assess sustainability, there is significant variety among the constructs that each one considers (Lennox et al., 2018). Lastly, the negative financial impact of lack of sustainability of QI projects for the organizations has not been widely studied. Although this financial resources (M. Scheirer, 2013) and cost-effectiveness (Druss, von Esenwein, Compton, Zhao, & Leslie, 2011) is mentioned as a influential factor of sustainability, there are not many studies that highlight the importance of this.

Methods

Design

This is a single-center, descriptive project to assess the sustainability of a previous QI project completed by a DNP student at the clinic. To examine the current practice regarding BMI

screening and weight management documentation in the clinic, data was obtained from the EHR for all patient visits that were documented between October of 2018 to November of 2020.

Setting

The setting for this project was a family medicine clinic in a medium sized city in Kentucky. This setting is focused at providing primary, integrated, patient-centered care to patients of all ages. To support the mission of the college of Medicine, the providers at Family Medicine are well trained individuals who provide evidence-based, comprehensive care to their patients including annual and wellness checkups, well child checkups, chronic disease care and management and acute problems such as skin injuries.

The providers at this facility include experienced physicians, nurse practitioners and residents of different specialties. There are 40 providers that work in this setting and each provider has a panel of about 2000 patients and sees approximately 10-20 patients per day. In addition to the providers, there are also 22 nursing staff which include, 2 registered nurses (RN's), 10 licensed practical nurses (LPN's), and 10 medical assistants (MA's), who are an integral part of the patient care teams.

Congruence of project to selected agency's mission/goals/strategic plan

This project is based on evidence-based, scientific research with the purpose of assessing the outcomes of an innovative practice improvement project implemented at this clinic and identifying existing barriers to sustainability of this type of project. The ultimate aim of this project is to aid in increasing efficiency and efficacy of one DNP project by addressing its sustainability; thus, improving patient outcomes and lowering costs, all of which are congruent with the mission of this healthcare institution.

As an academic institution, this clinic is committed to research and education in order to provide the most advanced care to the population of Kentucky. Improving patient care and patient outcomes, and continuous improvements in quality performance are a part of the institution's strategic plan and are in line with the purposes of this project.

Description of stakeholders

The primary stakeholders are patients, primary care providers, nursing staff, nursing leaders, and executive administrators who attach great value to the success of QI projects. Additionally, the sustainability of DNP projects also affects future DNP students and their advisers who are invested in the success of students and their projects. Additionally, the patients that would benefit from the sustainable advantages of these interventions and the leaders of the healthcare system that will reap the financial benefits of a sustained, effective program are also stakeholders.

Procedure

Sample

The population for this study included all the patients that were seen at the Family Medicine Clinic between January of 2019 and November of 2020, 13570 patients. The sample included those patients with a documented BMI \geq 30 (5903) from the years 2019 and 2020.

Additionally, qualitative data was gathered from 11 nursing staff and 10 providers who volunteered to complete a survey.

Institutional Review Board Approval

The Institutional Review Board (IRB) approval for this study was a part of the umbrella IRB approved for the previous study.

Measures and instruments

To assess the sustainability of BMI screening and weight management, data was obtained from the Director of Population Health and Practice Facilitation at the clinic on a spreadsheet. This included raw data from all the patients attributed to the clinic at the time data was gathered in November of 2020. Data points included patient age, gender, race, ethnicity, date of last appointment, BMI and BMI documentation date and the date of weight consultation if they had any.

To identify the contextual factors associated with the sustainability of the QI project, a survey was developed using the domains of the PRISM framework as a guide. Two tables were created, one for nursing staff and one for providers with the different factors. In addition, a few open-ended questions were added to the survey to further explore the staff's practice and perception of BMI screening and weight management documentation. The questions and factors used to assess the provider's and nursing staff's perspectives of the barriers and facilitators to BMI screening and weight management documentation were aligned with the domains of the framework (Appendix A). The staff survey had five questions and the provider survey asked three questions. No demographic information was collected from nursing staff or providers.

Data Collection

Patient data was kept on the original spreadsheet and the data points that were not needed for this study were hidden. This data was only available to the student and the statistician who helped with the analysis.

Surveys were manually distributed by the DNP student. After a short explanation of the DNP project, the printed surveys were handed to volunteers. Once filled out, the surveys were

returned to the student or placed on the staff's desk, which were collected later by the student. All surveys were completed anonymously.

The results of all the questions by nursing staff and providers were then recorded separately on a word document and analyzed using frequency distribution. The results are summarized in table 1.

Data analysis

A quantitative data analysis was performed for the documented patient data using descriptive statistics. Frequency distributions were used for both the documented patient data and to summarize staff's perceptions towards BMI screening and weight management documentation, specifically the factors considered as barriers or facilitators for this practice. The patient data utilized for the analysis included the last appointment date, documented BMI, date of BMI documentation, and date of weight consult. Demographic information was also used to describe the population.

Using the staff surveys, quantitative and qualitative analysis were completed to identify different contextual barriers or facilitators by using the domains of the PRISM framework to categorize the responses. The elements are summarized in table 2.

To perform the statistical analysis, the help of an expert biostatistician affiliated with the university was requested by the primary investigator with the approval of the committee and the clinic.

The DNP project completed in 2018 aimed to increase rates of BMI screening by nursing staff and weight management plan and documentation for adults of age 18 or older who had a BMI >30 by providers. While conducting the research for this paper, the Director of Population

Health and Practice Facilitation of the clinic mentioned that the current clinic guidelines require weight management education or counseling to anyone with a BMI outside of a 'normal' range which is a BMI of 25 or higher for those of age 18-64 and BMI 30 or over for those of ages 65 or older (Sass, 2020). Thus, for the data analysis, this project considered patients with a documented BMI \Rightarrow 25 as this may be useful for the clinic, and those with BMI \Rightarrow 30 separately to allow for evaluation of the sustainability of the previous DNP project..

Dates included in data set, specifically for BMI date documentation and consultation date, ranged from July 24, 2013 to October 29, 2020. During this period, 13570 adult patients were seen at this clinic. As the QI project was completed in 2018, and the last appointment dates only included patients seen in 2019 and 2020, it was determined to analyze data for those with BMI \Rightarrow 25 and those with BMI \Rightarrow 30 separately for the years of 2019 and 2020 and compare these results with those obtained in 2018. The total number of patients with a documented BMI for the years 2019 and 2020 was 13291.

Results

There were 13468 patients that were seen in the clinic between the year 2019 and 2020. Nine thousand, seven hundred eighty-nine had a documented BMI \Rightarrow 25, and five thousand, nine hundred three patients had a documented BMI \Rightarrow 30. Three thousand, six hundred and twenty of these were female and two thousand, two hundred eighty-three were male with an average age of 49. Most of the population seen were Caucasian (78%) which included Hispanics (3%), followed by African American or black (16%), Asian (4%) and the rest (2%) did not have a documented race.

Objective 1: Rate of BMI screening and weight management documentation in the EHR:

Out of the total number of patients seen in the clinic in 2019 and 2020, 98.6 % have a documented BMI. For adults with a BMI \Rightarrow 25, 30.0 % (2019) and 30.8% (2020) of patients had a documented BMI and weight management documentation within a 12-month period. For patients with a BMI \Rightarrow 30, the percentages were 31.1 % and 32.2 % for the years 2019 and 2020, respectively. Although it is apparent that there was a slight increase from the year 2019 to 2020, when compared to results obtained at the end of the study in 2018 (33.89%), the rate of BMI screening and weight management documentation seems to have decreased.

Objective 2: Facilitators and barriers identified by staff:

The surveys were completed by 11 nursing staff and 9 providers. No demographic data was collected for the survey respondents. The surveys revealed several barriers and facilitators to this process which are presented in table 1. Time ranked highest as a barrier for providers (n=9; 100%). This was followed by EHR (n=4; 44.4%), and a tie between importance of practice, training, and insurance reimbursement (n= 2; 22.2%). Further, for the factor lack of BMI documentation by nursing staff, 77.7% (n=7) of providers responded that this is not a contributing factor, while there was a tie of 11.1% (n=1) between those who labeled this as a facilitator or barrier.

On the other hand, Importance of BMI screening and documentation and knowledge of the practice however were ranked as the highest facilitating factor for nursing staff (n=9; 81.8%) followed by EHR (n =7; 63.6%) and time (n=6; 54.5%). Thirty-six percent of nursing staff did not think time was a contributor at all. Providers had variable answers on these as for instance 44.4% (n=4) thought of knowledge of practice as a facilitator, 22.2% (n= 2) as a barrier and

33.3% (n=3) said it is not a contributor. In addition, although most nursing staff ranked EHR as a facilitator, 44.4% (n=4) of providers thought of this as a barrier. Likewise, while training was identified as a facilitator by 45.4% (n= 5) of nursing staff, 66.7% (n=6) of providers thought this was not a contributor. Among the rest of the nursing staff there was a tie (n=3; 27.3%) for this factor for those who said that it was a barrier and those who believe it is not a contributor. Lastly, although administrative support is deemed a facilitator by 54.5% (n= 6) of nursing staff, 36.4% (n=4) of them and 88.8% (n=8) of providers believe that this is not a contributing.

Eleven nursing staff completed the surveys. When asked how often they complete the BMI screening when rooming patients, 73% (n=8) of nursing staff responded always and when asked if they thought that +20 had helped with completing BMI screening, 82% (n=9) responded yes. There were also two questions that required nursing staff to write in their own words why this practice was important and what other factors they identified as barriers or facilitators. The later question only elicited one new factor that had not been already addressed in the table, and this was that some patients refuse to get on the scale or to talk about their weight. When asked about the importance, the responses were similar with most of them responding that BMI screening leads to overall health improvement with answers such as “important to keep our patient healthy” or “ to make sure the patient receives the correct counseling”.

The provider surveys had two open-ended questions that asked how often they paid attention to the BMI when seeing patients and what they thought was the major barrier to addressing obesity and weight management documentation. Out of 9 providers, 67% (n=6) responded always and the rest said sometimes to the first question. When asked why not always, two of these said that because it was not part of the patient’s chief complaint or primary reason for consult. As the major barrier, the responses varied from “time constraints” to “they are not

interested in weight loss”, “hurting someone’s feelings”, “lack of ease of documentation in EHR” or “patients are complex, and we have to choose what can be accomplished in a visit”.

Discussion

Objective 3: Identify possible solutions to address sustainability of documenting BMI & weight management documentation in the clinic.

This study aimed to assess the sustainability of a prior DNP project on documentation of BMI screening and weight management completed in 2018 in a family medicine clinic, using the PRISM framework as a guide. While the rates of BMI screening with a follow up weight management documentation are slightly lower when compared to the results of the previous project and do not approach the target goal for MACRA, the practice of BMI screening and weight management for adult patients with a BMI \geq 30 is sustained at this clinic.

Documentation of BMI screening and weight management is ongoing and is a continuing challenge. It was surprising to find that while time seems to be a major barrier from the providers’ perspective (100%), the majority of the nursing staff (54.5 %) considered time as a facilitator. It may be safe to assume that this is because the nursing staff has been given +20 minutes to room patients. This is supported by the project finding as when asked if this has helped to complete BMI screening, 81.8 % (n= 9) of nursing staff responded yes. This may also be due to the fact that nursing staff believes this practice is important to the overall health of patients, another finding of this project. On the other hand, the providers who responded that they do not always complete the weight management consult alluded that this was due to time constraints and irrelevance to the patient’s chief complaint(s).

To assess the sustainability of projects that have different components such as this one, it is important to take into account the different interventions involved and use pertinent strategies to assess their sustainability (Scheirer, 2013). For instance, the project completed in 2018 identified knowledge deficit and time constraint as barriers to BMI screening and management. Surveys conducted for this study showed that although nursing staff, who are responsible for completing the BMI screening and may also provide nutrition management handouts, do not identify these factors as the biggest barriers anymore. On the other hand, providers still reported time is a major barrier to completing weight management counseling and documentation. While the addition of +20 may have led to compliance and increasing rates of BMI screening, it does not seem to have had much effect in the weight management component which is mostly completed by providers. Sustainability of these type of “multicomponent” interventions, require the coordination of different staff members, thus making administrative support and training very important factors for implementation and long-term sustainability of the project (Scheirer, 2013). For instance, if taken separately the two interventions involved in the project (BMI screening and weight management documentation), BMI screening rates are impressive as 98.7% of patients has a documented BMI, whereas the results for documentation of weigh management for these patients were low showing that barriers identified by providers need to be considered to help improve rates of documentation.

The study results about EHR being either a facilitator, a barrier or not contributing are interesting. Nursing staff reported that EHR as a facilitating factor, while providers’ perceptions about EHR varied considerably among participants. Incorporating BMI screening and documentation within the EHR has allowed nursing staff to complete this intervention more easily. A very helpful feature of the EHR identified by the Director of Population Health and

Practice Facilitation (Sass, 2020), and as outlined in the clinic's rooming protocol, is the ease to choose and print an already built-in educational handout for patients who have a BMI ≥ 25 . This is consistent with the literature as other studies have found that technological reminders may increase BMI screening (Jay et al., 2015; Kahan & Manson, 2019); however, they may not contribute or limit weight management consultation (Jay et al., 2015). While the EHR may remind staff that the patient's BMI is out of range, not having adequate resources, training or time may limit counseling patients or documenting weight management. Thus, it may be necessary to take the different components of this project and address the identified barriers according to the type of intervention or personnel involved.

Contextual factors such as training, and leadership support are also extremely influential in ensuring sustainability of quality improvement interventions (Scheirer & Dearing, 2011; Shelton et al., 2018; Verma & Moran, 2014; Wiltsey Stirman et al., 2012). For the implementation and sustainability infrastructure domain of the PRISM framework, three factors (training, EHR, administrative support) were chosen to assess their influence as either barrier, facilitator or not contributors for the completion of the expected intervention. While identified as facilitators by the majority of nursing staff, training and administrative support were not reported as contributing factors to completion of weight management by providers. This suggests that providers do not perceive lack of adequate training or knowledge of this practice as a barrier to providing weight management advice and do not believe that administrative support is an important factor to complete this task. Provider perception of their training may indeed limit their willingness to complete this task as some providers may think that they have received adequate training in nutrition and weight management while others think that this is outside of their role (Jay et al., 2015). Administrative support, although not identified as a contributor by

providers in this study, has shown to be an essential factor in sustainability of quality improvement projects (Fleischer et al., 2015a) and should certainly be considered to improve rates of compliance in this setting.

The majority of the providers responded that although they always look at BMI documentation, time was identified as a major barrier to complete the second part of the intervention, which may explain the low rates of weight management documentation. This is not a new finding as other studies on obesity management have also attributed time constraints as one of the barriers to addressing obesity in primary care (Kahan & Manson, 2019; Kaplan et al., 2018) and in a study by Petrin, Kahan, Turner, Gallagher, and Dietz (2017), 67% (n=1501) of providers also responded that having additional time would improve their “ability to counsel a patient with obesity”.

Sustainability can be improved by embedding new interventions into the daily routine of staff (routinization), feedback through sharing of outcome improvements, and ongoing support and training (Fleischer et al., 2015a; Minnier, 2014; Stone et al., 2016). As routinization of the intervention may have contributed to increased rates of BMI screening and sustainment of this intervention by nursing staff, weight management documentation has not become a habitual part of the providers’ routine due to multiple factors such as time constraints or EHR usability. Thus, investing in measures such as adding a built-in discussion form in the documentation for providers, and continued reminders or reinforcements through quality improvement data sharing could lead to better provider buy-in and compliance.

Implications for Practice, Education, Policy and Research

Quality improvement projects such as those completed by DNP students are very important in improving both individual and community health care. A lot of effort and resources are invested in the implementation of these projects thus planning for long term sustainability of the intervention and beneficial outcomes is imperative. A focus on sustainability is needed in DNP programs. The results obtained from this study can be used by healthcare leaders, providers and future DNP students to further address the identified barriers, find other limitations and develop strategies to improve the rates of BMI screening and weight management in the primary care setting. Future DNP students could also use this project as a guide to future sustainability projects. Refining the process of evaluating sustainability could lead to new models, use of different frameworks or perhaps a different structure for sustainability evaluation.

Healthcare is a very complex setting and while evidence-based interventions may be the answer to improving the care we provide and the health of our population, developing strategies to sustain these interventions is as important as implementing them. The PRISM framework was very helpful in identifying the barriers and facilitators for the sustainability of the intervention studied for this project. Developing reliable frameworks or theoretical models to address different factors and strategies that affect the intervention can be useful in planning and sustaining change and should be considered for future research (Shigayeva & Coker, 2014).

Sustainability as the main outcome of the intervention or project, may also serve to show long-term effectiveness of the implementation efforts and gain the support of stakeholders and policy makers (Scheirer & Dearing, 2011). Practice changes sustained over time also allow for more comprehensive and rigorous evaluations. Collaborative efforts from different healthcare staff and continuous assessment of the intervention through improvement models [such as the

plan-do-study-act model (PDSA) used in the DNP study in 2018] should be utilized continuously (Parand, Benn, Burnett, Pinto, & Vincent, 2012) and the effects of these strategies should also be studied in the future.

Limitations

One major limitation for this study is the lack of access to current data as the clinic is going through changes with their documentation software. It would be beneficial to have access to the data as used for MACRA purposes to get a better idea of the rate of compliance with this measure. While MACRA measures seem to be determined by considering the enterprise data as a whole, the data available for this project was limited to the EHR of this clinic which may lead to discrepancy when comparing quality measures. Another barrier was the inability to categorize patient visits for acute visit versus wellness visit for instance, as the reason they were at the clinic seemed important for the completion of this measure by providers. For example, the providers may be more prone to addressing obesity or weight management if the patient is being seen for an annual wellness visit whereas acute complaint visits may understandably have other priorities.

Due to the limitations of this study, it was not possible to assess if the identified facilitators led to sustainability of the intervention of the previous DNP project. Although knowledge, importance of the intervention, and the EHR were identified facilitators by most of the nursing staff, the results cannot be attributed to the previous DNP project. In addition, due to time constraints for this study, the surveys were only given to a limited number of providers. Although the responses were consistent, the limited data may not be generalizable to the feelings of those who did not participate.

Conclusions

The DNP program was developed to prepare nurses to practice at the highest level of expertise and help bridge the gap between scientific innovations and quality healthcare. Although DNP projects serve to translate evidence-based findings into practice to improve the quality of care, the sustainability of their beneficial outcomes has not been well studied. This project assessed the sustainability of a previous DNP project at a Family Medicine clinic. The results of this study show that while the practice of BMI screening and weight management documentation is sustained at the clinic, the rates are slightly lower compared to those obtained at the end of the previous DNP project and are much lower than the quality benchmark goal for MACRA. By using the domains of the PRISM framework, this study identified different barriers and facilitators that could be further studied to improve the rates of BMI screening and weight management in this and other settings. Addressing these barriers and reinforcing the facilitators could help improve this quality measure, thus ensuring the sustainment of beneficial health and financial outcomes.

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Tables

Table 1: Provider and Nursing Staff survey results (Provider n=9; Nursing n=11)

Question of survey: Please put a check mark in the columns for each of the factor whether you think is a facilitator, a barrier or does not contribute to BMI screening and documentation in your clinic.

Factors	Facilitators		Barriers		Not a Contributor	
	Nursing Staff	Providers	Nursing Staff	Providers	Nursing Staff	Providers
Time	54.5%		9.1%	100%	36.4%	
Importance of this practice	81.8%	44.4%		22.2%	18.2%	33.3%
Knowledge (of intervention)	81.8%		9.1%		9.1%	
Training	45.4%	11.1%	27.3%	22.2%	27.3%	66.7%
EHR	63.6%	33.3%		44.4%	36.4%	22.2%
Administrative support	54.5%		9.1%	11.1%	36.4%	88.8%
Lack of BMI Documentation by NSG		11.1%		11.1%		77.7%
Insurance Reimbursement		11.1%		22.2%		66.7%

Table 2: Elements of PRISM used for Staff Surveys

Elements of PRISM used for Survey		
PRISM Domain	Open-ended Questions	Factors
Nursing Staff		
Intervention (Organizational perspective)	<ul style="list-style-type: none"> • How often do you complete BMI screening when you room patients? • Do you think having 20 minutes to room patients has helped with completing BMI screening? 	<ul style="list-style-type: none"> • Time
Recipients (organizational and patient characteristics)	<ul style="list-style-type: none"> • In your own words describe why is BMI screening important or not important. 	<ul style="list-style-type: none"> • Importance (of practice) • Knowledge (of practice) • Training
Implementation and sustainability infrastructure		<ul style="list-style-type: none"> • Leadership support • EHR • Training
Providers		
Intervention (Organizational perspective)	<ul style="list-style-type: none"> • What do you think is the major barrier to addressing obesity/weight management with your obese patients? 	<ul style="list-style-type: none"> • Time
Recipients (organizational and patient characteristics)		<ul style="list-style-type: none"> • Importance (of practice) • Training • Lack of BMI documentation by CSTs
Implementation and sustainability infrastructure		<ul style="list-style-type: none"> • Lack of BMI documentation by CSTs • EHR
External environment		<ul style="list-style-type: none"> • Insurance Reimbursement

Appendices

Appendix A: Staff & Provider Questionnaires

BMI Screening Questionnaire for Nursing Staff

1. How often do you complete BMI screening when you room patients? (if not always please describe why).

- A. Always B. sometimes C. Never

If not always why:

2. Do you think having 20 minutes to room patients has helped with completing BMI screening?

- A. Yes B. No

3. In your own words describe why is BMI screening important or not important. (Does not need to be in complete sentences).

4. Please put a check mark in the columns for each of the factor whether you think is a facilitator, a barrier or does not contribute to BMI screening and documentation in your clinic.

<i>Factor</i>	<i>Facilitator</i>	<i>Barrier</i>	<i>Not a Contributor</i>
Time			
Importance			
Knowledge			
Training			
Electronic health record			
Administrative support			

5. In your own words, what do you think are the main or other barriers or facilitators to completing BMI screening on all your patients:

- Barriers:

- Facilitators:

BMI Screening Questionnaire for Providers

1. How often do you pay attention to BMI when seeing patients? (if not always, please describe why).

- a. Always B. sometimes C. Never

Why not always:

2. Please put a check mark in the columns for each of the factor whether you think is a facilitator, a barrier or does not contribute to weight management (for patients with BMI > 30) and documentation in your clinic.

<i>Factor</i>	<i>Facilitator</i>	<i>Barrier</i>	<i>Not a Contributor</i>
Time			
Importance/necessary			
Training			
Electronic health record			
Lack of BMI documentation by CSTs			
Administrative support			
Insurance reimbursement			

3. In your own words, what do you think are the major barriers to addressing obesity and documenting weight management for your obese patients?