5-2022

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Citation

Vinson, M. S. (2022). Colorectal Cancer Screening in the Latino Population at a Family Medicine Clinic: A Quality Improvement Project. *The Eleanor Mann School of Nursing Student Works.* Retrieved from https://scholarworks.uark.edu/nursstudent/22

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Date of Submission: April 11, 2022

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Abstract

Background: Colorectal cancer (CRC) is a preventable and curable disease that affects all genders, races, and ethnicities, and its impact on society can be reduced with early screening. The Latino population is at greater risk compared to groups or ethnicities due to social determinants and health disparities within the community. Review of Literature: Language barriers, low education levels, persistent social stressors, poor healthcare navigation, and structural barriers make it difficult for this population to be properly screened at appropriate intervals. Purpose: This quality improvement (QI) project was designed to combat reduced screening rates seen in the Latino population. The target population for this project were Latino patients in a family medicine clinic living in Northwest Arkansas who are statistically vulnerable and medically underserved. This QI project aimed to increase uptake of CRC screening to meet or exceed the *Arkansas Healthy People 2020* goal of 67.7% through education, patient decision aid, and Motivational Interviewing (MI) techniques. Method: A quasi-experimental research design was used to compare pre-intervention group and post-intervention group. This project was accomplished in a two-month timeframe. Analysis of data was completed using descriptive and inferential statistics. Results: Pre-project CRC screening rates compared to post-project data utilizing a chi-square goodness of fit test revealed that no statistical difference was found between the two groups ($\chi^2(1) = .026, p > .05$). A statistical significance was appreciated using a paired samples *t*-test between pre- and post-intervention groups when measuring CRC knowledge change, indicating education and decision aid had a positive impact on participants ($t_{20} = 9.52, p < .001$, two-tailed). Conclusion: This QI project improved clinic CRC screening rates but it was not found to be statistically significant. Knowledge of CRC and screening methods increased among the Latino participants were statistically significant.

Keywords: colorectal cancer, colorectal cancer screening, screening uptake, Latino

Colorectal Cancer Screening in the Latino Population at a Family Medicine Clinic: A Quality Improvement Project

The purpose of this paper is to detail a Doctor of Nursing Practice (DNP) Quality Improvement (QI) project designed to increase the uptake of colorectal cancer (CRC) screening among the local Latino population in a family medicine clinic located in Northwest Arkansas (NWA). I will discuss the incidence of CRC screening in the Latino population, explore access and barriers affecting patients within this clinic, provide a review of literature on best practices for CRC prevention and implementation, and outline core concepts of a semi-structured intervention that cater to the unmet needs of this population. This paper will add to published research and look to supplement methods of CRC screening in the Latino population.

Background and Significance

Colorectal Cancer

Colorectal cancer affects men and women of all ages, races, ethnicities, and social classes and is preventable if detected early with supported screening methods (McCance & Huether, 2019). The development of CRC can be both genetic and environmental which leads to cellular changes from gene mutations and genomic instability (McCance & Huether, 2019). Gene mutations occur normally throughout a person’s lifetime, but the immune system is usually capable of preventing abnormal cell growth by discarding errant cells. However, when certain risk factors are present, the immune system may lose the ability to restrain production of abnormal cells. These cells eventually become polyps and can then develop into adenocarcinoma when left untreated.

Family history accounts for approximately 25% of CRC cases, leaving 75% from sporadic environmental causes (McCance & Huether, 2019). Known risk factors that increase the chance of tumor development are those inherited or acquired mutations from inflammatory bowel diseases, personal or family history, genetic syndromes, and certain lifestyle factors (McCance & Huether, 2019). Although rare, inherited gene mutations such as familial adenomatous polyposis (FAP) and Lynch syndrome are associated with highly penetrative cases, although are more rare accounting for 5% to 6% of the total percentage of CRC cases (McCance & Huether, 2019). These autosomal dominant diseases are characterized by the presence of hundreds or thousands of adenomas (Chung & Rodgers, 2020) or few to no polyps at all (Hall & Neumann, 2020). Lack of physical activity; diet low in fruits, vegetables, fiber, and high in fat and processed meats; overweight and obesity; alcohol consumption, and tobacco use are commonly found to increase the risk of CRC development (McCance & Huether, 2019).

Of cancers affecting both men and women, CRC holds the second leading mortality rate in the United States (US) (Dunphy et al., 2019) and the fourth leading cancer by new cases (Centers for Disease Control and Prevention [CDC], n.d.b). Globally, there were an estimated 1.9 million new CRC cases in 2020 and 935,000 deaths (Sung et al., 2021). This represents about one in 10 cancer cases and deaths (Sung et al., 2021). Worldwide CRC rates rank second in terms of mortality and third in incidence, nearly mirroring numbers found in the US (Sung et., 2021). There has been a decline of new cases in the US over the last 20 years (CDC, n.d.b) due to recent heightened awareness and conscientious lifestyle modification. Screening has increased by 13.1% for all adults over the past 10 years (Office of Disease Prevention and Health Promotion [ODPHP], 2020b). Yet, it remains below an objective and national goal of 74.4% from *Healthy People 2030* by an estimated 9.2% for all eligible adults combined (ODPHP, n.d.b). An estimated 149,500 cases of CRC are expected to be diagnosed in 2021 (American Cancer Society [ACS], 2020a) while mortality is projected to be 53,200 (ACS, 2020c). A frightening trend is the percentage of persons under 50 years of age diagnosed with CRC. From 2012 through 2016, CRC diagnoses of those younger than 50 increased every year by two percent (ACS, 2020a). In the same timeframe, those aged 50 to 64 are seeing a one percent increase every year (ACS, 2020a). The overall lifetime risk of developing CRC is roughly one in 24 and affects men slightly more than women (ACS, 2020a). The risk for CRC is likely to worsen based on the latest trend seen in younger age groups.

Roughly 61% of CRC is discovered in later stages due to low screening rates in the US, leaving only 39% of CRC found during early stages (Byrd et al., 2019). The percentage of CRC screening varies widely after separating into ethnicities and races. The non-Hispanic White population led national screening rates, followed by non-Hispanic Black, those identifying as having two or more races, Hispanic, Asian, and Native American, respectively (ODPHP, 2020b). This separation between ethnicities ranges from 67.6% in non-Hispanic Whites to Native Americans at 56.5% (ODPHP, 2020b). The low screening rates found among ethnicities and races ranking near the bottom of national statistics show the most significant potential for improvement.

Locally from 2013 to 2017, 45.0 per 100,000 new CRC cases were reported in Washington County, Arkansas (CDC, n.d.a), which is a higher rate than the 38.0 per 100,000 found in the US during that time span (CDC, n.d.b). During those same years, the State of Arkansas reported for every 100,000 Hispanic persons, 31.9 were found to have CRC (CDC, n.d.c) while the US Hispanic population showed a rate of 34.0 per 100,000 (CDC, n.d.c). This suggests the Latino population living in NWA have fewer CRC cases and healthier Latino communities, however, it does not account for the lack of CRC screening generally found in the Latino population (Byrd et al., 2019). Despite the overwhelming benefits of CRC screening, it remains underutilized, especially in medically vulnerable and marginalized populations (Cofie et al., 2020).

As the US population grows and ages, it is predicted to diversify and expand to become more multi-cultured. Latino growth in the US jumped 43% from 2000 to 2010, which was more than half the US population growth during that same time (Ko et al., 2014). As of 2020, the Latino population is nearly 20% of the US population (US Census Bureau, n.d.). The growth projected by the Latino population could be viewed as a chance to impact colorectal health with programs aimed to reduce barriers and increase adherence to CRC screening. At this time, Latinos are more likely to be diagnosed with advanced CRC than non-Hispanic Whites, increasing their mortality rate (Byrd et al., 2019), and consequently, experience lower five-year survival rates (Nápoles et al., 2015). Colorectal cancer screening rates for adults 45 years and older for the White population is 68% compared to 59% for Latino ethnicity (ACS, 2020c). Screening modality also varies widely between the two ethnicities with the majority of White individuals choosing colonoscopy at 63% and stool-based test (SBT) 10% versus Latino individuals at 52% for colonoscopy and 15% for SBT (ACS, 2020c). Inquiring about screening preference and screening practices during primary care visits can reduce incidence and mortality of CRC as it increases awareness and brings preventive health to the forefront during the appointment.

Recommendations for Screening

The US Preventive Services Task Force (USPSTF) recommends that asymptomatic adults 45 to 75 years of age of average risk for CRC undertake preventive measures with screening every year to every 10 years depending on the modality of screening (USPSTF, 2021). The recent addition of ages 45 to 49 mirrors the recommendation set by the ACS (2020b) and the American College of Gastroenterology (ACG) (Shaukat et al., 2021) and replaces the previous USPSTF recommendation from 2016. For clarity on risk, average risk implies the patient has no prior diagnosis of inflammatory bowel disease like ulcerative colitis or Crohn's disease, adenomatous polyps, and no personal or family history of CRC or genetic disorders such as Lynch syndrome or FAP, which predispose the patient to a higher lifetime risk of CRC (USPSTF, 2021). Including ages 45 to 49 in CRC screening is viewed as moderate net benefit to lessen CRC burden (USPSTF, 2021) and this project reflected these changes because they represent the concern of increasing rates for initial CRC findings at younger ages than has been typically seen in recent years. For persons aged 76 and over, preventive CRC screening is highly idiosyncratic, and the discussion of these recommendations exceeds the scope of this DNP project.

The detection of CRC relies on two approaches for screening with each providing different risks and benefits for the individual patient to consider. The first approach relies on three different, but related, SBTs in the form of high-sensitivity guaiac fecal occult blood test (HSgFOBT), fecal immunochemical test (FIT), and FIT-DNA kit. These three SBTs consist of materials needed to provide a sample of stool to be tested for hemoglobin and genetic materials predictive of CRC. The second screening approach is conducted with direct or structural visualization with use of an endoscopic camera for colonoscopy and flexible sigmoidoscopy or specialized x-ray equipment for computed tomography (CT) colonoscopy. Each test has its limitations in usefulness for every patient, so it must be individually determined by the patient and clinician, allowing the selection to be confidently chosen as the most appropriate screening modality for the patient.

Screening intervals are dependent on the selected screening strategy determined by patient preference and provider recommendation. SBTs are recommended annually for HSgFOBT and FIT and every year to three years for FIT-DNA as its method of detection is more precise with the presence of cancer biomarkers that shed from the lining of the colon and rectum (USPSTF, 2021). Among the strategies that describe direct and structural visualization, the gold standard is colonoscopy which only requires testing once every 10 years. Flexible sigmoidoscopy and CT colonoscopy recommendations are every five years. All abnormal screening findings and pathology report results require follow-up colonoscopy and screening interval adjusted by the gastroenterologist (USPSTF, 2021).

Barriers

Barriers to CRC screening in the Latino population persist despite increased awareness and national campaigns to close the screening gap between the Latino population and other races and ethnicities (Reuland et al., 2017). Numerous barriers have been identified in the literature and represent disparities within the context of preventive care. While examining the perspectives of Latino community members, common barriers were found, which can be seen in Figure 1 below.

Figure 1

Common Barriers Among Latino Population

• Fear of screening procedures and subsequent results	• Belief that CRC screening is unnecessary
• Low education levels	• Stigma of CRC
• Language barriers	• Embarrassment
• Low access to health care services	• Cancer fatalism
• Lack of health insurance	• Limited transportation
• Cost of screening	• Lack of physician recommendation
• Little to no knowledge of CRC	• Frustration with healthcare providers
• Low health literacy levels	• Lack of motivation
• *Machismo* (strong sense of masculine pride)	• Mistrust of the US health care system were barriers in this population

Alpert et al, 2021; Byrd et al., 2019; De La Torre et al., 2021; Gonzalez et al., 2020; Ko et al., 2014

Based on these challenges, a project for increasing CRC screening adherence may prove effective.

Communication between patient and provider has exhibited an affinity for increasing barriers related to CRC screening. Patients and clinical staff report that quality of communication affects CRC care and that a language barrier exaggerates this discrepancy (Alpert et al., 2021). A lack of confidence when discussing care with a non-Spanish speaking physician harms the interaction between patient and provider (Alpert et al., 2021). This lack of confidence can give way to fear of communicating with the provider, being unable to voice concerns, unable to address follow-up questions, and clarify discussions during medical encounters (Ko et al., 2014). Health literacy level and educational level have compounded barriers as written and verbal communication affect the care Latino patients receive (Alpert et al., 2021). Limited English proficiency by Latino patients can also harbor feelings of embarrassment by the individual (Ko et al., 2014). Shared decision-making is desirable when offering the patient multiple screening options (Nápoles et al., 2015). Adjusting the standard of preventive care to incorporate measures that reduce communication barriers will assist with closing the CRC screening gap.

Financial burden of CRC screening has demonstrated a consistent concern among Latino individuals. This financial insecurity is a liability for the Latino patient related to lost income from missed hours at work, time spent away from the workplace, and actual cost of screening (Alpert et al., 2021; De La Torre et al., 2021). Additionally, the perception of guilt over providing familial support and childcare responsibilities affects the patients' decision to accept screening (Alpert et al., 2021). The belief that screening is not necessary when the individuals are not exhibiting signs and symptoms is troublesome (Nápoles et al., 2015) and plays a role in the decision to be screened. Lack of health insurance compounds the problem within this group and perpetuates the underutilization of CRC screening in Latino communities (Alpert et al., 2021).

Lack of knowledge regarding CRC and the screening options available has been repeatedly identified in the literature. In a prior national survey assessing knowledge of CRC screening among ethnicities, 48% of the Latino population surveyed were familiar with the term "colonoscopy" compared to 85% of the total sample surveyed (Nápoles et al., 2015). Nearly 75% of Latino community members reported they had heard of CRC and screening, but only 25% were able to correctly identify and describe CRC and screening tests (Byrd et al., 2019). Researchers who aimed to develop and incorporate Latino-specific messaging found that more education on colon cancer prevention was needed and lack of initial knowledge about colorectal cancer screening contributed to decreased awareness (Thompson et al., 2019). Providing education in a variety of formats including one-on-one education, informational facts sheets, and health education classes is preferred for stakeholders and will likely engage the selected patient population (Thompson et al., 2019). In-person health education facilitates utilization of CRC screening among Latino individuals (Alpert et al., 2021). Misconceptions regarding CRC, screening, risk factors, and symptomology creates an opportunity for the provider to educate patients using preferred communication techniques.

Access to Care

A lack of access to medical care continues to threaten the health of those most vulnerable to illness and disease, especially those of Latino origin. Another objective of *Healthy People 2030* is expanding access to health services through insurance coverage, health services, and timeliness of care (ODPHP, 2021; ODPHP, n.d.a). Lack of adequate insurance coverage among the Latino population remains a prominent obstacle to preventive health screening and adds to the cost burden, and likelihood of later stage diagnosis and premature death from CRC. The largest barrier to completing CRC screening remains health care access (De La Torre et al., 2021). Attempts have been made to increase access with CRC screening outreach but are often cost-prohibitive and have limitations on resource allocation (Hahn et al., 2021). Lack of health insurance prevents patients from utilizing preventive medicine practices (Alpert et al., 2021) and finances to treat cancer can be expensive to the patient (Byrd et al., 2019) further driving the mindset of cost restriction. A small program that shows potential for low-cost operation and sustainability could contribute to increasing access for medically marginalized populations.

Problem Statement

The problem statement for this DNP QI project is that a lack of structured, semi-guided support for CRC screening and multilingual resources at a family medicine clinic are leading to missed or delayed CRC screenings in the local Latino population. Currently, this clinic does not have a policy for remedying barriers in screening opportunities, and educational materials to help guide the patient with reasoned decision-making are not available. Low educational attainment and low income are associated with poor CRC screening rates (Wittich et al., 2019), although having health insurance was found to be a predictor of screening uptake (Davis et al., 2017). Needs Assessment results indicate providing supportive content in the primary language spoken, increasing patient understanding of CRC screening process, educating patient on health insurance use, and exploring follow-up practices are issues to be considered for increasing the CRC screening rate at the clinic.

Purpose Statement

The purpose of this DNP QI project is to increase CRC screening in the local Latino population at this family medicine clinic by consistently offering a FIT or FIT-DNA kit in addition to a colonoscopy. It is expected development of a QI project that promotes multiple options for CRC screening modalities will reduce the number of missed or delayed screenings in hesitant or nonadherent patients. Patients that are eligible for CRC screening will also be provided with education and multilingual decision aids showing risks and benefits of FIT, FIT-DNA, and colonoscopy testing. Use of small media such as educational videos, brochures, and on-on-one interaction in-person or by telephone are promising strategies to CRC screening in the Latino population (Mojica et al., 2018). Additionally, use of Motivational Interviewing (MI) techniques can help to promote health behavior change. This innovation could increase screening rates, alleviate barriers to screening, and create a sustainable project aimed at endorsing less invasive and time intensive CRC screening in medically underserved patients.

PICOT Question

In Latino patients 45 to 75 years of age at a family medicine clinic (P), how does application of a semi-structured intervention developed to attend to the unmet needs for CRC screening in Latino patients (I) compared to current care for CRC screening (C) affect the percentage of CRC screening rates and adherence to recommended guidelines (O) within a two-month timeframe (T)?

Needs Assessment of a Family Medicine Clinic

Objective

The objective of the Needs Assessment was to ascertain common problems of the Latino community in the primary care setting that might lead to missed or delayed opportunities for CRC screening. This assessment was conducted via face-to-face interviews to determine themes that would be applicable to the formation of a project around increasing the CRC screening rate in the local Latino population.

Participants

The participants of the Needs Assessment included four key informants and one stakeholder at the clinic site. The five participants were interviewed and included a physician, medical assistant, laboratory/radiology tech, administrative assistant, and clinic manager. This target group of key informants and key influencer have a variety of professional qualifications and wide range of work experience in the health care setting ranging from 3 months to 20 years. The small number of employees at the clinic limited interview opportunities with those formally educated in medical and nursing practice.

Rationale of the Needs Assessment

Regular CRC screening is paramount to prevent CRC and potential complications from surgery to remove cancerous polyps or section of diseased colon. Colorectal cancer is the third leading cause of cancer in the United States and is also the third leading cause of mortality in the United States (CDC, 2020). A national objective of *Healthy People 2030* and state objective of *Arkansas Healthy People* 2020 was to establish the goal of increasing the number of eligible adults who receive CRC screening to 74.4% and 67.7%, respectively (ODPHP, n.d.b; Arkansas Department of Health [ADH], n.d.a), but years later the goal is still unmet. The Latino population remains one of the lowest screened ethnicities when compared to others in the United States and is still 16.7% below the national goal of 74.4% according to the latest data (ODPHP, n.d.b). Data from the family medicine clinic where this project will be held shows poor screening rates in the local Latino population. For patients aged 45 to 75, data show only 26% of Latino patients are currently up to date with CRC screening recommendations. When this dataset is adjusted to offset newer guidelines and age moved from 50 to 75, statistics indicate only 33% of patients satisfy the screening recommendations.

The family medicine clinic is located in an area with a high density of Latino individuals that could benefit from increased focus on preventive health screening within the community. Additionally, the attending physician at the clinic site is Latino and will help to build trust and rapport with the target population throughout project implementation. When screening is implemented at the recommended intervals, CRC can be prevented or found in early stages without the need for invasive surgery and potential post-operative complications.

Data Collection

The Needs Assessment of a local family medicine clinic interviewed key informants and stakeholders from clinical and non-clinical positions to gather concepts related to gaps in care and possible barriers to establishing a CRC screening initiative. Data collection was performed through a guided survey using both quantitative and qualitative measures. A five-point Likert Scale was utilized for quantitative measures and prominent and recurring common themes were the focus of qualitative measures. The survey contained 19 total questions, including both quantitative and qualitative, and each participant provided their answers using the Likert Scale or typing answers on the survey under the question being asked. The information provided from the questionnaire was used to develop a program related to uptake of CRC screening in the Latino population.

Sample, Sample Size, and Sample Procedure

The participants interviewed for the Needs Assessment were selected using convenient sampling, potential to assist with implementation of the initiative, and availability during normal business hours. A total of five interviews were conducted within the facility in a quiet and suitable area of the clinic to allow for uninterrupted guided interviews. All interviews were approximately 15 to 20 minutes in length and conducted between March 12, 2021 and March 19, 2021.

Implementation and Data Analysis

Interviews were conducted face-to-face during normal business hours and were scheduled based on staff availability. The interview topics included questions related to unmet needs in the clinic for CRC screening, perception of CRC screening rates in the clinic and community, perceived barriers to CRC screening specific to the Latino population, estimated knowledge base of the Latino community regarding CRC and CRC screening, and gauge receptiveness of project development to be implemented in the clinic.

The information collected during the Needs Assessment interviews revealed a need to further investigate CRC screening in this clinic to increase uptake. All of the participants interviewed demonstrated belief there were unmet needs regarding CRC screening, and improvements could be made in the clinic to produce higher rates of screening. The five interviewees felt that their Latino patients were “definitely not” or “probably not” aware of CRC, and “definitely not” or “probably not” understand the risks and benefits of CRC, or options for CRC screening, which could be a contributing factor in the screening delays experienced in the clinic. Participants thought roughly 41% to 80% complete CRC screening and thought the same 41% to 80% when asked about CRC screening delay. When questioned about delays in CRC screening, participants mean answer was 3.6 indicating a belief that approximately 2 to 3 months passed between CRC screening recommendation and completion of screening. The interviewees conveyed “probably” and “definitely” when prompted to answer if a project aimed to address wellness visit CRC screening in the Latino community and if CRC screening would result in a positive change. All of the participants questioned expressed “definitely” in their receptiveness to initiate a project aiming to reach the Latino population by tackling barriers and decreasing missed screening opportunities.

During the interviews exploring barriers to CRC screening, the participants voiced common themes that could benefit the potential project when addressed. All of the participants felt there was a language barrier, lack of supportive resources and multilingual content, and concerns with follow-up. Additional issues identified from the participants included topics of compliance, health literacy, reduced education level, poor understanding of process for CRC screening, trustworthiness of providers, and difficulty comprehending insurance coverages. Utilizing the Needs Assessment findings could drive the exploration of innovative methods to reach the Latino community and result in reducing the gap between current screening rates and the national and state targets. See *Appendix A* for Needs Assessment Questionnaire with Analysis.

Aim and Objectives

Specific Aim

The aim for this DNP QI project was to implement evidence-based strategies that increased CRC screening rates and compliance in Latino patients at the family medicine clinic. Implementation of this project that individualizes participants and focuses on addressing knowledge of CRC and CRC screening, provides information on multiple screening modalities with decision aids, and utilizing interviewing techniques for behavior change aimed to increase CRC screening percentage to meet or exceed the *Arkansas Healthy People 2020* goal of 67.7% by April 2022.

Objectives

- Identify Latino patients that qualify for recommended CRC screening during routine, annual, or acute health care evaluations.
- Increase knowledge of recommended CRC screening in eligible Latino patients at the family medicine clinic.
- Utilize a multilingual decision aid to assist with CRC screening test choice navigation.
- Assess participant readiness for behavior change utilizing components of Motivational Interviewing with the Transtheoretical Models' Stages of Change in eligible Latino patients at the family medicine clinic.
- Increase CRC screening rates in eligible Latino patients at the family medicine clinic.

Review of Literature

An online search of two scholarly databases, CINAHL Complete and MEDLINE Complete, was conducted with the assistance of a research librarian. The keyword search terms included *colorectal cancer screening* and *Hispanic or Latino or Latina or Mexican or Central American or South American or Hispanics or Latin or Latinx*. Inclusion criteria included peer-reviewed articles, written in English, and between years 2015 and 2021 that pertained to the DNP topic. Exclusion criteria included articles written before 2015, editorials, opinion articles, articles not written in English, and research unrelated to the DNP topic. There were no landmark studies on CRC screening utilized during this search. The initial search from CINAHL Complete and MEDLINE Complete using the search terms listed above yielded 601 results. After applying inclusion and exclusion criteria, 197 articles remained. A total of 32 articles were included in the review of literature as after reading 32 of the 197 articles, content saturation was reached.

Colorectal Cancer Screening

Colorectal cancer is a preventable disease through established screening practices and systematically addressing low screening rates in the Latino population. Promising strategies have been documented in the literature and utilize different tactics to meet the needs of individuals disproportionately affected. Risk factors associated with CRC include older age, a personal or family history, and lifestyle such as sedentary behavior, unhealthy diet, alcohol intake, and tobacco use (Cofie et al., 2020). There is not a specific screening test that is endorsed by any governmental, academic, and professional organization but relies on providers and patients to work together to create the best approach to accomplish the test.

Interventions

Strategies to increase CRC screening adherence have been published to cater to the underserved Latino population and bolster screening rates. Studies have examined outreach programs with mailed SBT and reminders (Baker et al., 2015), use of patient navigation to assist with reducing structural barriers (Alpert et al., 2021), obtaining culturally tailored education on CRC and CRC screening (Byrd et al., 2019), providing group-based educational interventions (De La Torre et al., 2021), and utilizing linguistically targeted print and video materials (Gwede et al., 2019). Mailed outreach with FIT kits plus patient reminders are associated with significantly higher screening kit returns among federally qualified health centers (FQHC) populations, but a systematic review found that optimal timing, content, and format of reminders was lacking (Thompson et al., 2019). There has not been a program identified that can meet all the needs of a certain population.

Multicomponent interventions show favorable results to increase CRC screening. Utilizing decision aids combined with patient navigation achieved high screening rates at 68% when compared to usual care at 27% in a randomized controlled trial (RCT) (Reuland et al., 2017). These results nearly mirror this project goal and current family medicine clinic data. Combining decision support with patient navigation from another RCT showed that adherence to CRC screening was significantly higher with the intervention group compared to the control group screening at 78% versus 43%, respectively (Myers et al., 2019). Unfortunately, there has not been a standardized approach identified that serves the need for all Latinos in the US. This could be due to the complexity of predicting patient behavior and uncertainty of a group of individuals who might not be as acculturated as others in the US.

Facilitators to CRC Screening

Implementation of successful programs to increase CRC screening vary in focus, but address recognized commonalities seen in Latino populations. Education is a common component reviewed during study implementation. Increasing knowledge of screening techniques, risks, and benefits was associated with increased uptake (Byrd et al., 2019; De La Torre et al., 2021). Evidence indicates that offering patients a choice of screening methods, specifically including a choice for SBTs in addition to primary colonoscopy, could aid in reaching vulnerable populations (Reuland et al., 2017). Physician recommendation with a focus on communication and interaction with the patient increases the odds of screening (Gonzalez et al., 2020).

Education as a Foundation

Low awareness in the Latino population and limited availability of culturally appropriate patient health information are factors thought to be a contributor of low screening rates in this population (Thompson et al., 2019). Adding an element that incorporates education into a project could remedy multiple barriers for this population. Patients in a study examining barriers and facilitators found that 40% of participants thought health education classes, along with brochures and other media, like videos and commercials, would help to dispel fears about screening procedures (Byrd et al., 2019). Designing a campaign or project that focuses on a message of prevention of cancer with screening rather than getting cancer was suggested by individuals in the Latino community (Byrd et al., 2019). This study showed that with more education, along with physician recommendation, participants were more likely to complete SBT as their preferred screening. Barriers such as little knowledge of CRC and screening, fear, and embarrassment shown to negatively affect CRC screening in Latino populations were discussed in the study and gave recommendations for incorporating like interventions.

Providing culturally and linguistically tailored educational interventions have indicated screening completion in Latinos will rise after integrating these materials into programs and projects. Applying education as part of a solution to mitigate barriers has its usefulness by clarifying misconceptions (De La Torre et al., 2021) and tackling inaccurate beliefs (Gonzalez et al., 2020). The effect of an educational decision aid that combined video and brochure in English and Spanish languages provided complementary results when addressing CRC screening (Reuland et al., 2017). With the addition of an educational component to the primary care clinic visit, one might see an increase in awareness and perception of the disease could be realized.

When presented with education about colon cancer as a prevention strategy, participants showed a heightened desire and interest in wanting additional information about CRC (Thompson et al., 2019). Presenting CRC education in focus groups or group-based education intervention (De La Torre et al., 2021) and outreach programs with clinician-directed interventions as part of multicomponent project demonstrated the greatest increase in CRC screening in Latino participants (Hahn et al., 2021). Overcoming barriers in the Latino population with educational activities in a variety of formats would be beneficial by generating awareness and correcting common misunderstandings.

Patient Decision Aid

An effective way to advocate for a patient population while promoting individualism during examination is use of a decision aid. A patient decision aid allows for shared decision-making between patient and provider and improves communication and trust (Reuland et al., 2017). Colorectal cancer screening decision aids provide a structured tool to demonstrate choices for patients and have been shown to increase patient knowledge of CRC screening, stated intent to complete screening, and CRC screening test ordering (Reuland et al., 2017). Decision aids act “proximally” in the screening process to enhance patients’ initial awareness of screening, promote patient-clinician communication, build intent, and clarify preferences (Reuland et al., 2017).

Patient Navigation

Another effective way to promote CRC screening across populations known to have low CRC screening rates is to provide patient navigation. Patient navigation is a service provided to patients that is designed to increase communication between their health care team, promote access to health services, and assist with decision-making. This service can effectively complement usual care by helping patients reduce barriers and guiding them through the healthcare system. Navigation has been shown to help overcome barriers for CRC screening in vulnerable patient populations (Reuland et al., 2017). Unlike decision aids, patient navigation acts more “distally” to address barriers to CRC screening completion that vulnerable populations face once an individual decides to be screened (Reuland et al., 2017). An RCT involving 265 participants recognized as vulnerable, in which more than 60% identified as Latino, concluded that a combination of a multilingual patient decision aid screening tool and patient navigation significantly increased uptake of CRC screening when compared to usual care during primary encounters (Reuland et al., 2017). Patient navigation addresses needs of the Latino population by providing the participants an avenue to discuss the screening plan, identifies barriers, and acknowledges readiness for screening.

Motivational Interviewing

Health beliefs of an individual play a huge role in determining whether the person will follow recommendations of the provider. Motivational Interviewing is a style of communication that uses “change talk” to reach a particular goal (Miller & Rollnick, 2013). Traditionally, MI has been used for people struggling with addiction, substance abuse, and mental health issues, but its use in other areas of health and medicine, beyond the traditional sense, is rapidly growing. Motivational Interviewing attends to the belief that by eliciting and exploring the person’s own reasons for change, they strengthen personal motivation for accomplishing a specific goal (Miller & Rollnick, 2013). This collaborative and goal-oriented style of communication requires an atmosphere of acceptance and compassion from the provider who utilizes MI (Miller & Rollnick, 2013). The MI technique could be used to assess patient readiness for behavioral change and guide and empower the individual as they approach the decision to be screened for CRC.

To date, only one article has presented MI as a possible solution to overcoming barriers in preventive screening and health practice in the Latino population. The study utilizing MI as an innovative strategy to promote health in Latinos found that use of this communication style between community health workers (CHW) and study participants saw open and free conversation allowing participants to discuss questions and concerns, ultimately addressing barriers and assisting with behavior change (Portillo et al., 2020). Participants reported feeling less intimidated, which allowed a closer partnership and empathy between them and CHWs (Portillo et al., 2020). This technique allows for guided conversation to address ambivalence toward making a change. Currently, there are no published articles utilizing MI for CRC screening uptake in the Latino population in the US.

Bridge for Health Promotion

Use of MI for CRC screening uptake in Latino individuals has not been investigated, yet this patient-centered communication technique offers the healthcare clinician an innovative and unexplored path to build an open, trusting, and understanding partnership. Motivational Interviewing seeks to enrich communication between patient and provider by addressing potential barriers the individual perceives. Solutions that incorporate MI in the goal revolve around accepting intrinsic factors that motivate the participant while acknowledging their values and beliefs. The participant will likely have “sustain talk” that counters “change talk” presented by the provider (Miller & Rollnick, 2013). “Sustain talk” is defined as having self-expressed language that counters an argument for change in behavior (Miller & Rollick, 2013). However, strategies to respond to “sustain talk” by shifting the conversation back to “change talk” is an important aspect of MI that the provider can create willingness and readiness to change over time (Portillo et al., 2020). Motivational Interviewing showed importance in the development of a community outreach program to incorporate health prevention measures in a densely populated immigrant Latino community (Portillo et al., 2020).

Access to Care

Access to care is still a problem for many Latino communities and disparities exist in this population. As the largest barrier to CRC screening completion is health care access, CRC screening programs should focus on facilitating access by connecting community members to clinical services (De La Torre et al., 2021). Programs applying CHWs have shown promise to diminish health access barriers for Latinos as they are more likely to link monolingual Spanish-speaking patients to health services and clinical facilities (De La Torre et al., 2021). They serve as liaisons between clinicians and the community and trusted advisors to the target community members (De La Torre et al., 2021). Building a program to include CHWs, or utilizing medically knowledgeable bilingual individuals from the community, could help mitigate barriers to health care access.

Theoretical Framework

The Transtheoretical Model (TTM) of Change is a framework for use with projects aimed at initiating behavioral change and has been a popular model for over 40 years (Prochaska, 1979). The model has been a foundation for preventive health projects in which researchers can base interventions to endorse better health. A systematic review of the TTM showed applicability of projects for creating change in human behavior and preventive health such as physical activity, eating behaviors, addictive behaviors, dental health, and protection from sunlight, along with cancer and chronic diseases (Hashemzadeh et al., 2019). This DNP QI project is grounded in promoting healthful behavior with the implementation of CRC screening in the Latino population while incorporating shared decision-making. The TTMs' Stages of Change align with the objectives to utilize informative videos, decision aids, and concepts of MI to initiate behavior change in the participants.

Prior to development of the TTM, there were over 300 written opinions on the approach to psychotherapy and wide variation of philosophies without consensus on best principles (Prochaska, 1979). This abundance of circulated information and lack of scholar consensus led to the need to reexamine theories and structure new concepts based on themes found within the published text. The TTM model was created after comparative analysis of 25 leading theories and health belief systems in psychoanalysis and identified five basic themes to change processes (Prochaska, 1979). During the mid-1980s, a sixth stage was recognized and added to the formal Stages of Change. The model attempts to explain decision-making of the individual and, therefore, would demonstrate readiness to change and intentional change behavior. The TTM Stages of Change are cyclic in nature and can be viewed as an everlasting ring with the ability of the patient to enter and exit between any of the six stages. A stage in the cycle is meant to define the decision-making juncture the individual is attempting to navigate at that moment. The clinician using the TTM to guide their practice needs to understand their patient's specific stage and construct a plan of action based on the stage. The individual can progress or regress through the stages and can become stagnant in their attempt to change the behavior identified. The TTM is effective for implementing intentional behavior change because behavioral change of the person never ceases and is rarely linear. The construct of the six Stages of Change allows this DNP project to be implemented with a patient focused approach to promote positive behavior change.

Stages of Change

The Stages of Change are classified as precontemplation, contemplation, preparation, action, maintenance, and termination/relapse (Prochaska et al., 2015). The construct of stages in this model is key and is important as the temporal dimension of the TTM model follows the understanding that behavior change takes time and is not accomplished quickly (Prochaska et al., 2015). Grasping the idea that change in behavior occurs over an indefinite length of time and differs for every individual will serve as a basis for the clinician utilizing this model.

Precontemplation

Precontemplation is the first Stage of Change and represents the idea that the individual is not intending to take action in the near future (Prochaska et al., 2015). Precontemplation characterizes a stage where the individual is uninformed, underinformed, or mindful they are not ready for the specific therapy and are considered to be at least six months away from completing the desired action (Prochaska et al., 2015). An individual at this stage might not be aware of their detrimental behavior so they do not perceive the health issue as a problem of concern (Prochaska et al., 2015). Patients who exhibit behavior found in the Precontemplation stage for CRC screening might not be aware that screening is recommended, that screening is necessary for prevention of CRC, or have attempted to screen in the past but became discouraged with the process. The DNP project addressed patients in this stage by introducing an educational video to make them aware of CRC and CRC screening options with hopes of them progressing toward the next stage.

Contemplation

The second stage in this model is Contemplation and is intended to describe people who are actively weighting the benefits and risks of the identified health issue (Prochaska et al., 2015). Here, the individual is intending to change their behavior within the next six months but can often procrastinate for extended lengths of time (Prochaska et al., 2015). Behavior intention exhibited at this stage can create profound ambivalence within the individual, often times suggesting “chronic contemplation or behavioral procrastination” (Prochaska et al., 2015, p. 127). The individual at this stage tends to believe that pros of the change outweigh the cons and they are acutely aware of the benefits that behavior change could bring (Prochaska et al., 2015). Motivation to move to toward a further stage is not intrinsic in individuals here and will need a clinician to work in a collaborative manner while maintaining a nonjudgmental stance. With the addition of a multilingual decision aid and utilization of MI techniques, patients would be further informed of CRC screening while assessing their desire to bring about change with open communication.

Preparation

The third stage in the TTM model is Preparation, which is found in individuals who are intending to take action in the immediate future, usually within a month's time (Prochaska et al., 2015). These individuals have given the desirable action considerable thought and are starting to form a plan of action. Traditional programs that are action-oriented are excellent avenues to explore when people are in this stage (Prochaska et al., 2015). This DNP project fits into a template for traditional models in that it provides the participant the opportunity to immediately request action after completion of interventions. Participants have made the conscious effort to move closer toward definitive action, making this the final stage in the model's use of *intentional* terminology into a transition concerning *actual* behavior change.

Action

The fourth stage is one of action where the individual has made the decision to act and fulfill the desired task or lifestyle modification (Prochaska et al., 2015). At this point in the Stages of Change, the plan of action has been put into motion and the intention is apparent and goal driven. The individual's action here is observable, often meeting criteria the medical professional has laid out during visits with the individual (Prochaska et al., 2015). The progress made throughout the Stages has come to fruition as the individual has chosen to act on their desire to change, and in this project, representation of the behavior change would be defined as completion of the CRC screening or scheduled colonoscopy for this DNP project.

Maintenance

Maintenance is the fifth Stage of Change in which the individual is working to prevent a hindrance in their decision to take action on the health issue identified (Prochaska et al., 2015). The individual here has completed the goal and is able to avoid temptation that might return them to prior ambiguous thoughts. They are also able to anticipate when action is needed to stay on track when temptation presents. The person is less interested in bad habits and more confident in their ability to cast change indefinitely (Prochaska et al., 2015). This project promoted maintenance by illustrating the impact of timely CRC screening during implementation and reviewing a plan of action based on the chosen screening modality. Exposing the individual to the appropriate interval for screening reinforced the activity and continued to endorse preventive practices.

Termination/Relapse

A sixth and final stage of this model for behavior change is Termination/Relapse. This stage is evident when the individual has no temptation to relapse into old behavior and able to terminate the action with confidence they will not return to unhealthy behaviors (Prochaska et al., 2015). With CRC screening, it is expected that a person will relapse into prior stages due to the wide window in which the person could potentially need screening again. Screening can range from one year to 10, so the individual will most likely need prompting from the clinician for future screening. Termination is not usually realistic for most individuals and has not received emphasis in recent research (Prochaska et al., 2015), therefore, emphasis within this project will not focus on this Stage of Change. See *Appendix G* for DNP QI Project Concept Map.

Methodology

Project Design

This DNP QI project utilized a quasi-experimental research design intended to increase CRC screening in Latino patients through implementation at a family medicine clinic. The approach to quasi-experimental research is one that represents an experiment in research where there is an independent variable that is manipulated or introduced but lacks randomization of assigned groups (Melnyk & Fineout-Overholt, 2019). This design is more practical and feasible for experimentation but are weaker than true RCTs as its ability to establish cause and effect is more difficult (Melnyk & Fineout-Overholt, 2019).

The quasi-experimental design was chosen to examine CRC screening rates during project implementation and compare results prior to initiation of the project. Convenience sampling will be used to select participants that present to the clinic and are eligible for CRC screening. The non-randomized design will look to examine the effect a variable, the semi-structured CRC screening intervention, has on the outcome of recommended screening achievement.

Project Description

This DNP project was quality improvement in nature as the main purpose of the project was to improve upon the existing CRC screening rate at the family medicine clinic utilizing established evidence. The results of the Needs Assessment identified low CRC screening rates among Latino patients being treated at this clinic and lack of screening resources to assist the patient with informed decision-making about screening options. The project attempted to address both issues by initiating a multilingual educational video and decision aid while applying communication techniques to engage the participant to consider positive behavior change.

Setting

The DNP project was implemented at a small, suburban family medicine clinic in NWA. The clinic is a dual specialty facility that operates a family medicine clinic on one side and an urgent care clinic on the opposite. The family medicine clinic where this project was implemented has six examination rooms that sees scheduling capacity around 30 patients per day ranging across all ages. Patients are seen for both well and acute care visits. The clinic serves a higher proportion of Latino patients in the NWA region compared to other clinics in the area so are likely to have a higher concentration of individuals who have lapsed CRC screening.

Study Population

The study population were Latino patients that visited the clinic and eligible for CRC screening. The study sample included Latino patients that present to the clinic for evaluation from the physician and are eligible for recommended CRC screening during the two-month implementation period. Inclusion criteria included adult patients 45 to 75 years of age; been identified as average risk for CRC; are found to be outside of the recommended CRC screening interval guidelines; self-identify as having Latino heritage and have adequate mental or physical capabilities to participate in the CRC screening education and CRC procedures. Exclusion criteria includes adult patients aged 44 years and younger; adult patients aged 76 years and older; those who have been previously diagnosed with CRC; those current with CRC screening; patients who self-identify as non-Latino, and those who lack the mental or physical capabilities to participate in the CRC screening education and CRC procedures.

Study Interventions

The interventions for this DNP project were a semi-structured operation to implement an innovative approach to CRC screening at this family medicine clinic in NWA. The project facilitated CRC screening in those Latino individuals who qualify for the recommended health prevention practice through multiple types of interaction. The first intervention utilized an educational CRC video that was developed to accommodate those at a fifth grade reading level (Colorado Program for Patient Centered Decisions [CPPCD], 2019b) and was adapted to incorporate Spanish subtitles with automated language technology. See *Appendix H* for snapshot of opening screen for CRC and CRC Screening Educational Video. The second intervention utilized a multilingual CRC patient decision aid that had been adapted with permission from the originating author at the University of Colorado (CPPCD, 2015; CPPCD, 2019a). See *Appendix I* for English CRC Screening Patient Decision Aid and *Appendix J* for Spanish CRC Screening Patient Decision Aid. In addition to the video and decision aid, I integrated MI into the implementation process and determined readiness for health change using a valid and reliable instrument that was adapted for use in this project (Leonard et al., 2013). See *Appendix K* for the English Stages of Change Instrument and Scoring Algorithm and *Appendix L* for Spanish Stages of Change Instrument and Scoring Algorithm.

Study Measures

Conceptual Definitions. For the purpose of this DNP project, the conceptual definition of CRC screening was a screening test used to detect large colon and/or rectal disease that would indicate presence of cellular dysfunction within the gastrointestinal tract that may or may not result in observable symptoms.

Operational Definitions. For the purpose of this DNP project, the operational definition for completion of CRC screening were as follows: One month after intervention, final results for FIT will be listed in the electronic medical record (EMR) under the participant’s lab work; one month after intervention, final results for FIT-DNA will be listed in the EMR under the participant’s lab work, and one month after intervention, the patient will have scheduled colonoscopy or completed colonoscopy found under procedures in the participant's EMR. Completion of CRC screening was measured by conducting a retrospective chart review to determine number of participants who were adherent to recommended guidelines. Pre- and post-intervention data on CRC screening completion was compared following implementation.

Outcomes Measures. The outcome measures of this DNP project examined the impact of the CRC screening intervention in Latino patients in NWA. The outcome measures were operationalized as follows:

- Following interventions, scheduled CRC screening rates at the family medicine clinic will increase by at least 10%
- Following interventions, CRC and CRC screening knowledge scores of participants will increase by at least 20%
- Within one month of the intervention, participants agreeable to CRC screening will return FIT, FIT-DNA, or scheduled or completed a colonoscopy at the rate of 67.7%

These outcome measures were evaluated every two weeks and were shared with the attending physician and site champion. The bimonthly meetings ensured adequate recruitment and implementation was being met. This gave the clinical staff an opportunity report issues with the on-site project and an opportunity for me to clarify concerns.

Process Measures. The process measures for this DNP project were used to address the efficiency of implemented change. The process measures were operationalized as follows:

- During intervention phase, what was the amount of time spent performing the intervention?

- During recruitment of potential participants, how many eligible patients chose not to accept the invitation to participate in the intervention and project?
- During implementation phase, how many participants required interpretation services during the intervention?

The Plan-Do-Study-Act (PDSA) cycle was utilized to determine ongoing needs to address these measures during project implementation.

Balancing Measures. The balancing measures of this DNP project were used to determine positive and negative unintended effects of project implementation. The balancing measures were operationalized as follows:

- During implementation of project, how many patients rejected screening due to being uninsured
- During implementation of project, how satisfied was the clinical staff with project implementation

These measures helped to improve the project by addressing potential concerns that could have posed inadvertent harm with project implementation.

Benefits and Risks

Benefits of this QI project was increased understanding of CRC, hearing several methods to CRC screening, potential detection of CRC, and positive preventive health behavior change. These provide substantial net benefit in reducing CRC mortality and increase life-years (USPSTF, 2021). The risks of the project were small but included unintentional disclosure of participant’s heath information. This principal investigator (PI) reviewed benefits and risks with the participant during informed consent and minimized harms of potential leaked confidential health information by storing it on a password-protected computer.

Subject Recruitment

Subjects of this study were dually recruited by the attending physician and me. I performed a chart review to determine inclusion criteria had been met prior to patient visit with physician. After review, I informed the physician preceding patient examination that the patient was a candidate for CRC screening. The physician verified that the patient had not performed a CRC screening elsewhere and a result had not been uploaded into the EMR. The physician introduced the study to the potential participant and informed me of their decision to participate after examination. No additional enrollment occurred outside of the family medicine clinic.

Consent Procedure

Participants who met inclusion criteria for this QI project were presented with information regarding the study following their visit with the primary care physician. I presented the project outline to the potential participant in the examination room at the clinic utilizing interpretation services when appropriate. The project description, study interventions, data collected and stored, risks, and benefits were presented to the patient. If the patient was agreeable to the project, the participant was given the informed consent form in their preferred language and asked to carefully read the document, initial, sign, and date where indicated. The initialed and signed informed consent form was scanned into the participant's EMR and copy of the form was offered to the participant.

Subject Costs and Compensation

There was potential for some costs to be incurred by the subjects during this DNP project. Patients with private or federal health insurance could be billed any additional amount of the CRC screening costs that insurance companies refused to cover. With the passage of The Patient Protection and Affordable Care Act (ACA) in March 2010, companies providing health insurance should rarely require patients to incur out-of-pocket costs, although patients will be encouraged to check with their individual plans (ACS, 2021). Patients without health insurance were liable for all costs of the chosen screening method. Cost of FIT without insurance was $48 and between $200 and $600 for FIT-DNA kit. The cost of a colonoscopy without health insurance can range from $925 to upwards of $5,000 depending on the geographic region and whether the procedure is done in an outpatient or inpatient setting. Cost of a FIT, FIT-DNA, and screening colonoscopy should be covered by most private insurance companies, Medicare, and Medicaid (ACS, 2021). However, the patient was informed they should call their health insurance provider to determine if additional costs or deductible will be applicable. Those patients with Medicare who chose to have a colonoscopy were made aware they will need to pay the co-insurance cost if the colonoscopy results in removal of suspicious tissue for biopsy (ACS, 2021). Patient compensation for participation did not occur during this DNP project.

Project Timeline

Following Institutional Review Board (IRB) approval by the University of Arkansas and clinical site health system, project implementation occurred between January 2022 and March 2022, although initial plans were to span December 2021 through February 2022. The two-month timeframe allowed project implementation to begin and gain satisfactory recruitment of participants to indicate statistical significance. An additional month wait period was needed to allow participants to complete screening and for results to be placed into EMR. Data collection and analysis occurred until the first week of April 2022. Completion of the project and dissemination of findings occurred in April 2022 to clinic staff, University of Arkansas Eleanor Mann School of Nursing (EMSON) doctoral committee, and University of Arkansas EMSON doctoral students. Final and initial timelines of the project are presented as color-coded Gantt Charts in *Appendix Q*.

Resources Needed and Economic Consideration

There was minimal cost associated with the implementation of this DNP project. I spent approximately $100 to cover the cost of office supplies such as paper, printer ink, folders, ink pens, and staples. The cost of language interpretation services was provided by the healthcare system where the project is being conducted. Additional resources that were used include my personal laptop to store patient data and project information. Microsoft Excel (Microsoft Corporation, 2022), Statistical Package for the Social Sciences (SPSS) (IBM Corporation, 2022) and Qualtrics (Qualtrics, 2022) was utilized, but cost of use for these licensed materials provided by the University of Arkansas. See *Appendix R* for Project Budget Table.

Implementation

Study Interventions

The implementation phase involved a variety of interventions that offered two questionnaires, educational components utilizing video and patient decision aid, assessment of intention for health change, and integration of MI technique between participant and I in a small, local family medicine clinic in NWA. Two valid and reliable questionnaires were adapted for use to assess the knowledge of participants (Sepucha et al., 2014) and readiness for behavior change (Leonard et al., 2013). See *Appendix M* for English CRC Screening Questionnaire and *Appendix N* for Spanish CRC Screening Questionnaire. The CRC educational video was roughly six minutes in length and recorded in English with an option to provide auto-translation into multiple languages, including Spanish. The multilingual patient decision aid was given to the patient following the video and reviewed with the participant. Motivational Interviewing technique was utilized with participants throughout the encounter to verbally communicate using “change” language. The implementation phases were categorized by pre-implementation, implementation, and post-implementation phases. Interventions began January 10, 2022 following IRB approval from the University of Arkansas and clinic health system for this DNP project.

Pre-Implementation Phase

The DNP project proposal was approved by the University of Arkansas’s EMSON Doctoral Committee on October 21, 2021. Following approval by the committee, the proposal was submitted to the University of Arkansas IRB on November 2, 2021. Time spent between proposal submission to IRB focused on monthly interdisciplinary meetings with the preceptor, site champion, and clinical staff to ensure all necessary project materials and screening tests were within six months of expiration date and available in clinic. Two interdisciplinary meetings were held with the first featuring a mock implementation event with staff. The goal was to practice and review operation of the project and address questions and concerns prior to the start of the implementation phase. Due to staff turnover, a second meeting and exercise occurred with questions and answers provided following the practice session. During the time spent at these meetings, the office where the interventions were conducted was cleaned and organized, and lockable file cabinet placed in the room to securely store sensitive participant information. Time was also spent building English and Spanish questionnaires in Qualtrics, creating multilingual questionnaires in paper format, and printing the multilingual questionnaires, patient decision aids, and informed consent documents.

Approval from University of Arkansas IRB was granted on December 13, 2021, and information was shared with the doctoral committee and clinic administration. After forwarding the University of Arkansas IRB document to clinic administration, it was determined that IRB from their Corporate headquarters would be required before implementation could proceed. This setback delayed the initial project start date. The IRB paperwork for the clinic healthcare system was gathered and submitted on December 14, 2021, with final approval occurring January 10, 2022, signaling the end of the pre-implementation phase.

Implementation Phase

The implementation phase started on January 10, 2022 after proposal and IRB approval from the University of Arkansas and healthcare system where project site was completed. The implementation phase began with the identification of eligible participants in the EMR and development of an Excel spreadsheet to catalog all eligible Latino patients that tracked progress of interventions and outcomes throughout the project. If a patient was current on screening guidelines, then they were eliminated as a potential participant of the study. However, if they fell outside the of the recommended guidelines or no results were present in the EMR, this information was shared with the physician using verbal and written methods of communication. A “CRC?” was written and circled on the paper intake form as a reminder for the physician to ask the patient about enrollment in the study. This subtle reminder did not interrupt flow of the clinic and added very little additional work.

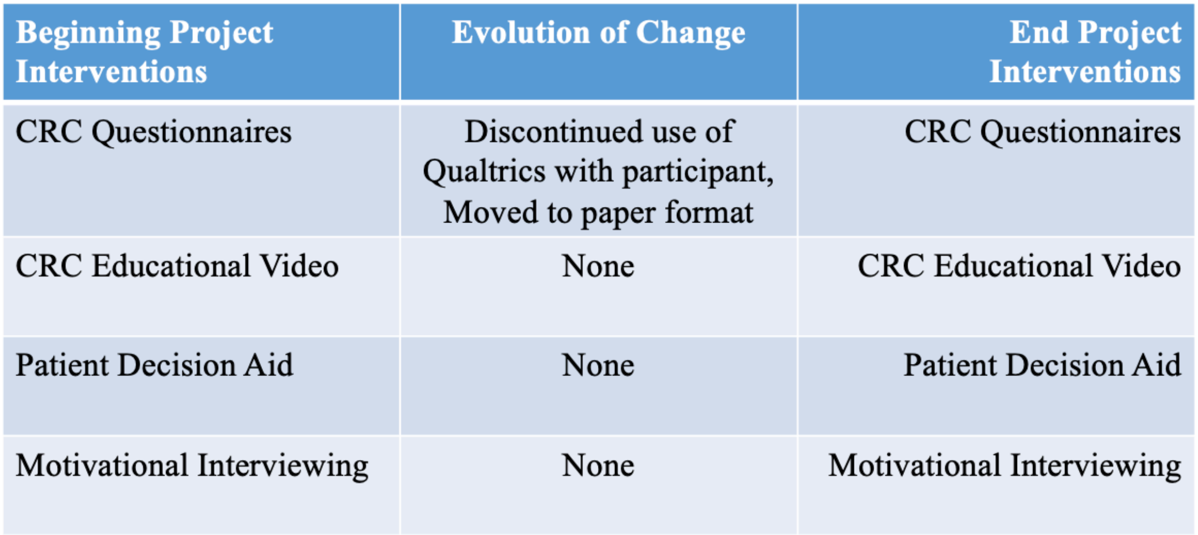
During planning of this project, a pre-implementation process flow chart was diagramed to visually illustrate the clinic’s process for CRC screening. A second process flow chart was designed to incorporate the steps of the project within the clinic flow. The flow charts begin to differ when the physician enters in the exam room and discusses the DNP project. Further comparison shows patient consent and project interventions as steps in the flow chart during implementation, then after, an option for participant CRC screening. At this point in the chart, the flow merges together again, and the physician places a GI referral or orders lab for the participant’s preferred method of CRC screening. Both flow charts end with provider acknowledgement of CRC screening results. See *Appendix C* for Process Flow Charts.

When a patient was found to be outside screening guidelines and had given verbal consent to the physician, he would then advise me of their interest and preferred language preference. I would then enter the exam room and explain the project in more detail, utilizing on-site interpretation services if indicated, and answer any questions about the interventions or project. This ensured they were aware of the benefits and risks and could retract interest in the study prior to initiation of interventions. After explanation of project and satisfying their questions, the informed consent form was initialed and signed by the patient and myself. See *Appendix O* for English Informed Consent and *Appendix P* for Spanish Informed Consent. The form would then be scanned into the participant’s EMR, and a copy made for them to take home. The participant was then guided to the office for further implementation activities.

Once the participant was seated in the office, expectations for completion and length of intervention were explained again, and timer was started to track intervention length of time. The first questionnaire containing questions about socio-demographics, CRC and CRC screening, and readiness for behavior change was given to the participant in their preferred language. This was initially accomplished in Qualtrics using this PIs personal laptop, however, this method switched to paper format after a PDSA cycle was run to reduce length of intervention time, which will be discussed in the section below. Figure 2 shows how project interventions evolved over time during the project.

Figure 2

Project Intervention Evolution



Beginning Project Interventions	Evolution of Change	End Project Interventions
CRC Questionnaires	Discontinued use of Qualtrics with participant, Moved to paper format	CRC Questionnaires
CRC Educational Video	None	CRC Educational Video
Patient Decision Aid	None	Patient Decision Aid
Motivational Interviewing	None	Motivational Interviewing

After the questionnaire was completed, the participant was shown the CRC educational video and informed they could stop the video at any time and ask questions if one arose during viewing. Afterward, they were handed the patient decision aid and I personally reviewed it with them. This gave me the opportunity to use MI during conversation that was collaborative and constructive in nature, allowing for open discussion to strengthen the participant's confidence in their ability to demonstrate change behavior. Self-reflection on preventive health practices was felt to empower the participant, gaining progress toward healthful behavior change with CRC screening. The implementation phase for this DNP project concluded on March 4, 2022.

PDSA Cycles

As the DNP project progressed, there were various deviations observed and monitored over the course of the implementation phase that led to unforeseen challenges. PDSA cycles were utilized to overcome the unanticipated hurdles resulting in positive changes. See *Appendix V* for all three PDSA Cycles.

Participant Recruitment. A lower sample size than expected was observed after the first two weeks of implementation. The expectation during that time was to recruit a minimum of one patient per day. Following the first two weeks of implementation, there were eight eligible patients seen in the clinic with only one patient agreeable to the project. A plan was put into motion that would aim to double the number of participants in one week. A meeting was conducted with physician, site champion, and me to discuss and detail current methods of recruitment. It was found that independent decisions during initial patient encounter had inadvertently reduced project acceptance from patients and low effort toward recruitment of certain patients deemed to be poor candidates for project outcomes was recognized. Resolution was achieved when clarification of recruitment goals, project expectations, and eligibility of patients was discussed with the team. The cycle resulted in the addition of four participants the following week, more than doubling the goal.

Clinic Closure. Loss of multiple working days occurred on two separate occasions due to inclement weather conditions and staff illness during the implementation process. This resulted in a substantial loss of possible patient recruitment necessitating another PDSA cycle. A meeting between the physician, site champion, and myself was held to explore solutions for additional patient recruitment. During the meeting, a plan was agreed upon by the interprofessional team to run a report to identify Medicare patients who are due for their annual wellness visit and eligible for CRC screening. This report was printed by the site champion and I reviewed it to examine and confirm eligibility requirements were met for this project. The printed and reviewed list was then given to the administrative and clinic staff to make phone calls to those patients identified.

Time to Complete Intervention. Length of time to complete intervention was a process measure of this project and was monitored to keep intervention at a minimum to respect the time of participants, physician, and clinic staff. After five interventions were completed, the length of time to finish intervention averaged nearly 30 minutes, notably exceeding the goal of 25 minutes per intervention. This prompted another PDSA cycle to search for a solution to reduce the total number of minutes during intervention. A dynamic run chart was used to actively track time of intervention after every participant. During the first weeks of interventions, I noticed some participants struggling with the questionnaire format in Qualtrics. A solution was recognized and documented when paper format questionnaires were given to all participants to decrease time spent completing online questionnaires and lessen overall intervention time. This resulted in a mean of 24 minutes at the end of the implementation phase and significant reduction of intervention time.

Post-Implementation Phase

Conclusion of the implementation phase marked the beginning of the post-implementation phase on March 5, 2022, lasting through April 4, 2022. This one-month phase allotted time for the participants to complete CRC screening. This phase was used to conduct EMR chart reviews and gather CRC screening data to compare pre- and post-project screening completion outcomes for this quasi-experimental design. All data that was stored in the Excel spreadsheet and Qualtrics was transferred to SPSS for statistical testing during this period of project implementation. Following completion of the project paper, results will be presented to the doctoral committee, University of Arkansas professors, DNP students, and key stakeholders from the family medicine clinic.

Evaluation of Results

Data Maintenance and Security

Participant medical information was retrieved, stored, and secured from several different systems, all requiring password protection and verification. I initially accessed participant health information using the medical clinic's EMR system, Athena, which required my specific username and password to gain entry. Surveys and statistical data were collected in Excel, Qualtrics, and SPSS. These online software applications stored information throughout the duration of this QI project. Both Qualtrics and SPSS require multifactorial authentication (MFA) with a password and a one-time code or facial recognition for access with Microsoft Authenticator in partnership with the University of Arkansas. Access to Excel is password protected on this PIs personal laptop. During data collection, patient identifiers were removed and given unique numbers to safely protect participant privacy and confidentiality. Data collection during and after project implementation was transferred from Excel and Qualtrics into SPSS spreadsheets with patient identification suppressed. Data collected from questionnaires in paper format was moved to Qualtrics by this PI after intervention session was completed. Paper questionnaires are stored in a secure filing cabinet and will remain there for three years to stay in compliance with University of Arkansas IRB request. The raw data was cleaned, organized, and statistical functions were run for analysis and evaluation. Following completion of the post-implementation phase, no other participant health information was collected for the purpose of this project.

Data Analysis

Data collected for this project was used to analyze and establish whether statistical significance was seen and gauge overall success of the semi-structured intervention. Analysis and evaluation of results for this QI project utilized descriptive and inferential statistics. Two questionnaires were given to participants to ascertain if there was CRC and screening knowledge gained and to determine readiness for behavior change among the participants. The instruments used to extract knowledge gain for CRC decision-making (Sepucha et al., 2014) and participant readiness for behavior change (Leonard et al., 2013) have exhibited good reliability and shown significant concurrent validity. Both instruments were adapted for use in this preventive health project.

The first outcome measure of this project was to determine if there was an increase in screening witnessed after project implementation. A chi-square (χ^2) goodness of fit test was utilized to compare pre- and post-project CRC screening rates. The pre-project group comprised of all Latino or Hispanic patients aged 45 to 75 years that had been seen by the clinic physician over the previous year prior to project implementation. The post-project group were eligible patients who met the qualifying conditions for interventions during the two-month project and consented to CRC screening during the project implementation phase. The completion of FIT, FIT-DNA, and scheduling or completion of colonoscopy within one-month was examined with this measure. These two independent groups compared the dichotomous variable of CRC screening completion. The expectation was to find significance between the pre- and post-implementation groups.

A second outcome measure was to assess CRC knowledge change through educational interventions. Distribution of the 10-item CRC Knowledge Questionnaire was given to initiate the interventions and as the last component to complete the intervention. A paired samples *t*-test was used to determine if there was a difference seen between the pre- and post-intervention questionnaire scores with the expectation that a statistical significance would be seen between the two attempts. The application of this descriptive statistical test was used to assess and evaluate interventions within the same group of participants but conducted at different points in time. The sample group of participants was compared to itself measuring pre- and post-questionnaire scores. Data from the questionnaires was transferred from paper format, then input into Qualtrics using the unique participant identifier to correctly match the same participant to pre- and post-questionnaire scores.

A third statistical measure to analyze and compare sociodemographic data with completion of CRC screening was attempted, however the sample size was too small to make accurate assumptions. A binary logistic regression test was to be run on sociodemographics and the dichotomous screening variable to determine if a relationship existed among them. The purpose of this statistical test was to determine the impact the sociodemographic data collected had on the decision to get screened. Had the data been positive between the dependent and independent variables, then one could predict an association and assume that it could a predictor in other studies. Unfortunately, logistic regression models require a larger sample size, therefore no associations could be statistically measured in this project.

Another primary objective and outcome measure of this project was to reach a 67.7% CRC screening completion rate for the two-month project implementation. Statistical modeling was unnecessary for this data as there was no comparative analysis required. The data collected on screening completion is shown in a pie chart with percentages listed within the figure. Lastly, a clustered bar graph was created to visually demonstrate where participants were located along the TTMs' Stages of Change in relation to completion of CRC screening following project implementation.

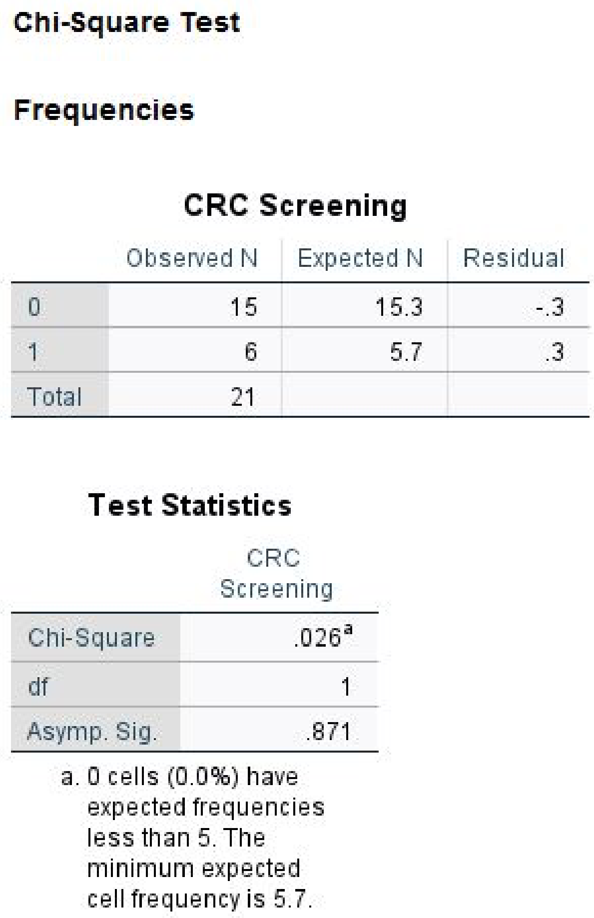
Outcome Measures

Outcome measures for this QI project assessed the effectiveness of a semi-structured program on participant's decision to be screened for CRC. During the two-month implementation phase, a total of 71 potentially eligible Latino patients were seen in the clinic by the physician. Of those, 33 had already satisfied CRC screening guidelines leaving 38 who met eligibility requirements to participate in the DNP project. A total of 21 patients consented to participate in the project while 17 declined project participation.

The first outcome measure was to compare pre- and post-project CRC screening rates utilizing a chi-square goodness of fit test. A quality management report was run in Athena to pull data on CRC screening to determine the number of patients who had satisfied screening criteria. A total of 222 patients had been seen by the clinic physician, and 60 (27%) had satisfied the criteria for CRC screening while 162 (73%) were not up to date with screening guidelines. During the two-month project, 21 participants agreed to CRC screening, but only six completed screening within the one-month time allowance in the study. Table 1 is a chi-square goodness of fit test depicting observed data from project CRC screening outcomes and expected data from the pulled EMR dataset. The expected number of 15.3 patients represent those who would likely not be screened and the 5.7 patients who would likely complete screening based on the data pulled from the year prior. This project experienced a near exact number of 15 observed patients electing not to screen or declining screening after interventions. To counter screening objection, six observed patients completed screened. This was nearly identical to the expected value of 5.7 patients comparing the previous year. Chi-square statistics showed very little association between the variables and found not to be significant ($\chi^2(1) = .026, p > .05$). Data analysis using this statistical hypothesis model revealed the intervention from the project had very little change on the outcome of CRC screening in this clinic, therefore, we would expect the intervention had little to no effect.

Table 1

Comparison of Pre-Post Project CRC Screening



Chi-Square Test

Frequencies

CRC Screening

	Observed N	Expected N	Residual
0	15	15.3	-.3
1	6	5.7	.3
Total	21		

Test Statistics

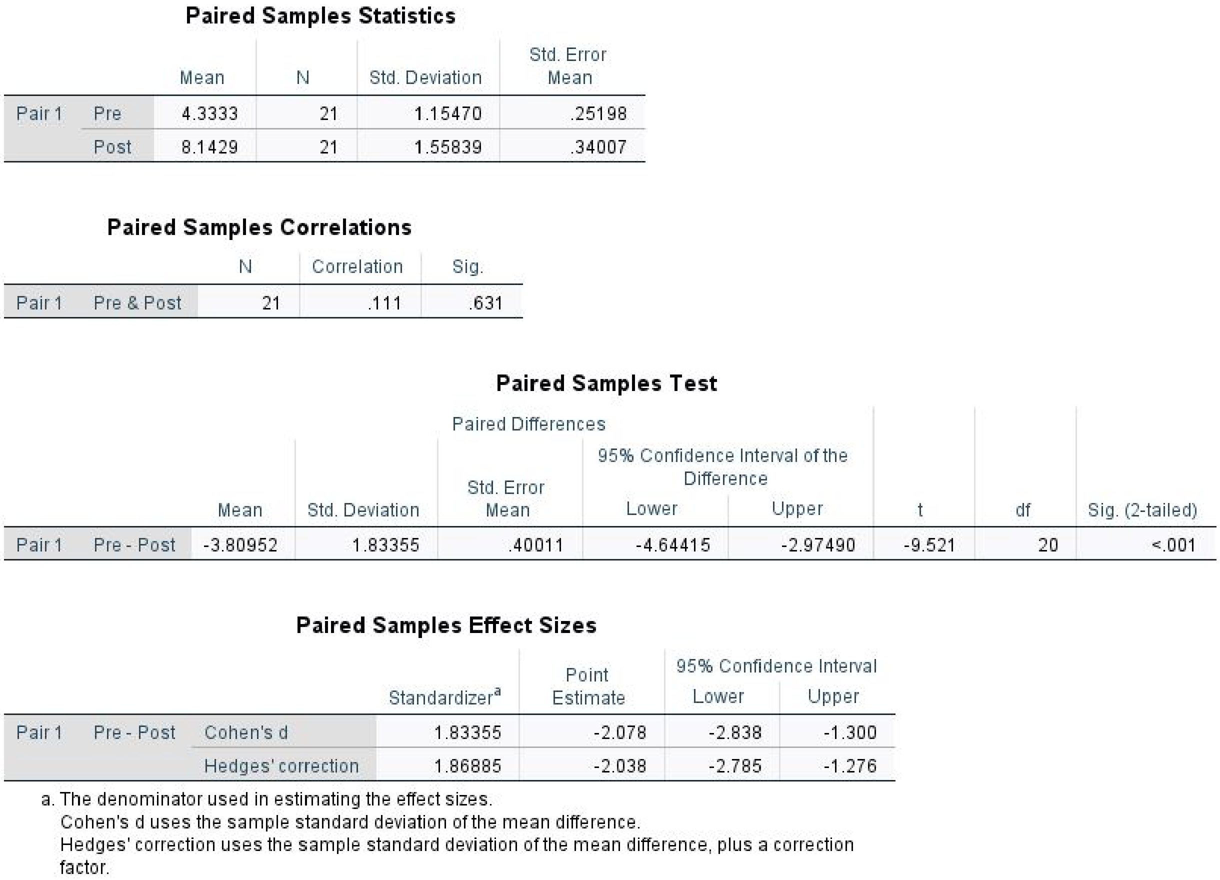
	CRC Screening
Chi-Square	.026^a
df	1
Asymp. Sig.	.871

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 5.7.

The second outcome measure assessed short-term CRC and screening knowledge change before and after the interventions. Data from the 10-item questionnaire was exported from Qualtrics into SPSS and a paired samples *t*-test was run to link and evaluate pre- and post-intervention scores. Data from the 21 participants in Table 2 shows a pre-intervention score mean of 4.33 while a mean of 8.14 was found in the post-intervention group indicating there was a sizable increase in scores following intervention. On average, post-intervention scores were 3.81 points higher than pre-intervention scores with a high certainty that a nearly three-to-four-and-a-half-point increase would be seen (95% CI [-4.64, -2.97]). The difference between the two groups was found to be statistically significant (t_{20} = 9.52, *p* <.001, two-tailed). The large *t*-score and very small *p*-value establishes that this result is likely repeatable and we can safely conclude based on the results of the knowledge questionnaire that the intervention had a positive impact in short-term knowledge gain for the participants of the project.

Table 2

Comparison of CRC Knowledge Scores



Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre	4.3333	21	1.15470	.25198
	Post	8.1429	21	1.55839	.34007

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre & Post	21	.111	.631

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper			
Pair 1	Pre - Post	-3.80952	1.83355	.40011	-4.64415	-2.97490	-9.521	20	<.001

Paired Samples Effect Sizes

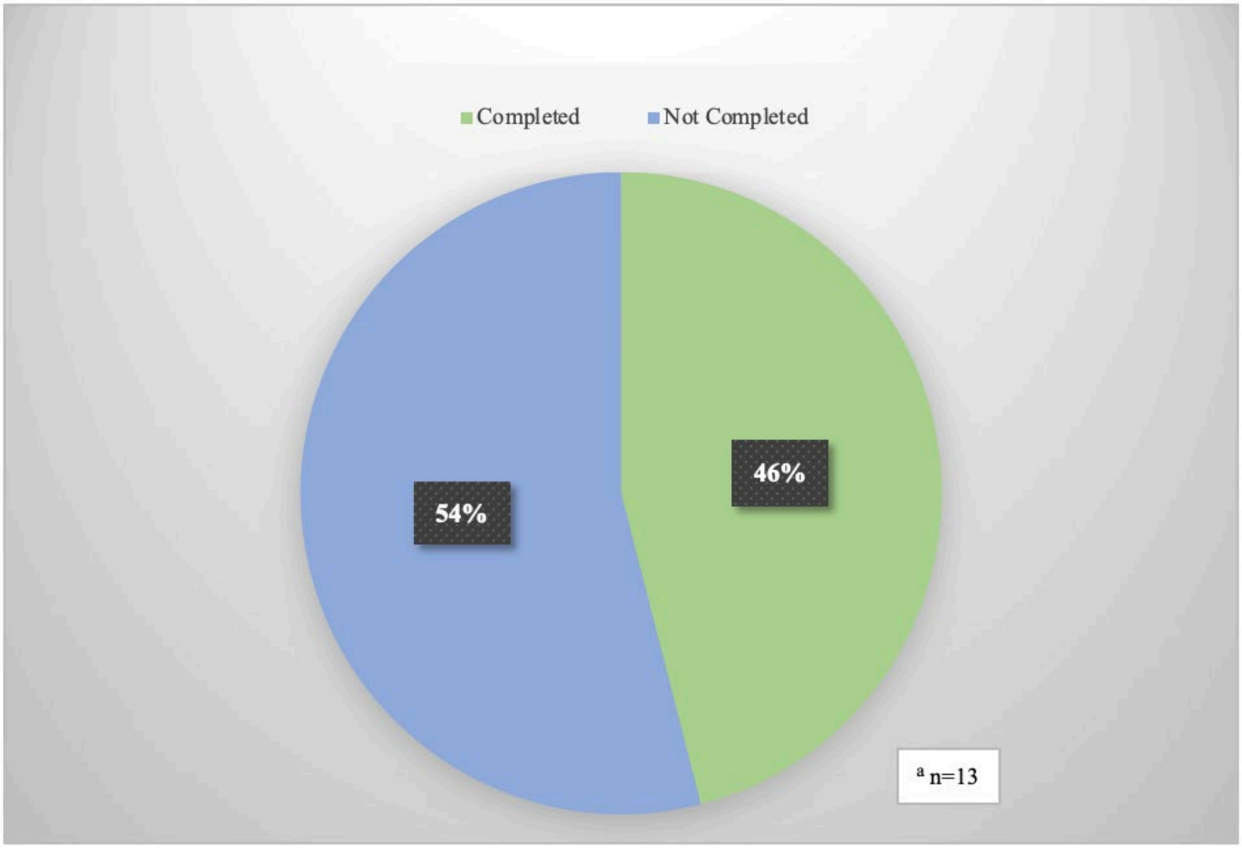
			Standardizer[a]	Point Estimate	95% Confidence Interval Lower	95% Confidence Interval Upper
Pair 1	Pre - Post	Cohen's d	1.83355	-2.078	-2.838	-1.300
		Hedges' correction	1.86885	-2.038	-2.785	-1.276

a. The denominator used in estimating the effect sizes.
Cohen's d uses the sample standard deviation of the mean difference.
Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

A third outcome measure was to showcase a CRC screening completion rate of 67.7% following conclusion the DNP project. There were 21 participants who entertained project interventions, and 13 of those agreed to CRC screening. After the one-month time allotment, only six participants had completed their preferred screening test representing a 46% completion rate. This percentage is 20% lower than the intended match of *Arkansas Healthy People 2020* value. Table 3 is a pie chart representing the breakdown of participant implementation data into screening percentages from the project. The green shading indicates screening completed and blue signifies screening not completed.

Table 3

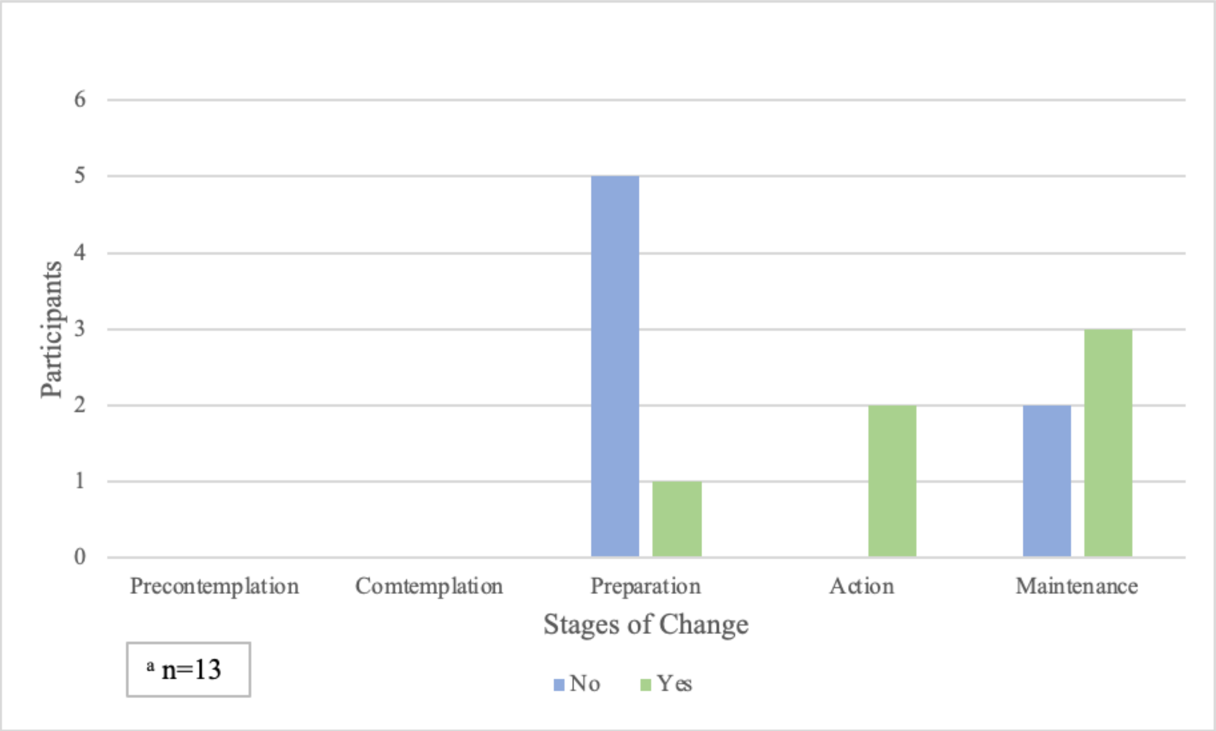
Project CRC Screening Completion



A final unplanned graphic for the project was sought after implementation to determine where participants were located on the Stages of Change theoretical model in relation to their CRC screening outcome. Information gathered during and after project implementation showed that variation was found among the stages. Those participants who completed screening are shown in green shading; three were found in the Maintenance stage; two in the Action stage, and one in the Preparation stage. For the seven other participants who agreed to CRC screening but were not able to complete it within the timeframe, two were plotted in the Maintenance stage and remaining five were in Preparation, denoted by the blue shading. Table 4 displays the clustered bar graph for easy identification of participants' Stages of Change relative to screening completion.

Table 4

Participants' Stage of Change

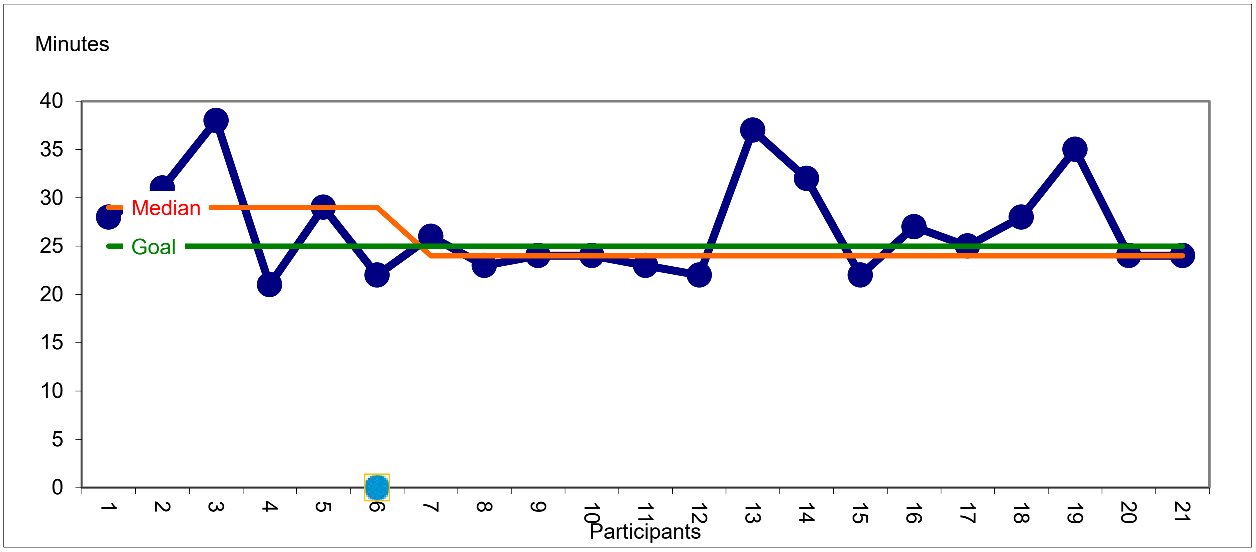


Process Measures

The first process measure focused on the amount of time it takes to complete individual project implementation. This measure aimed to keep implementation within 25 minutes to respect participant and provider time. After five participants, data showed this process measure goal had eclipsed 25 minutes in all individual implementation except one. A PDSA cycle was run to determine possible solutions to reduce implementation time. The solution was to forgo using the online survey application, Qualtrics, as participants were visibly anxious which delayed progression into interventions. The move to exclusively use paper format was determined for ease and simplicity. This resolved the majority of cases and reduced the mean of 29 minutes to 24 minutes to complete implementation.

Table 5

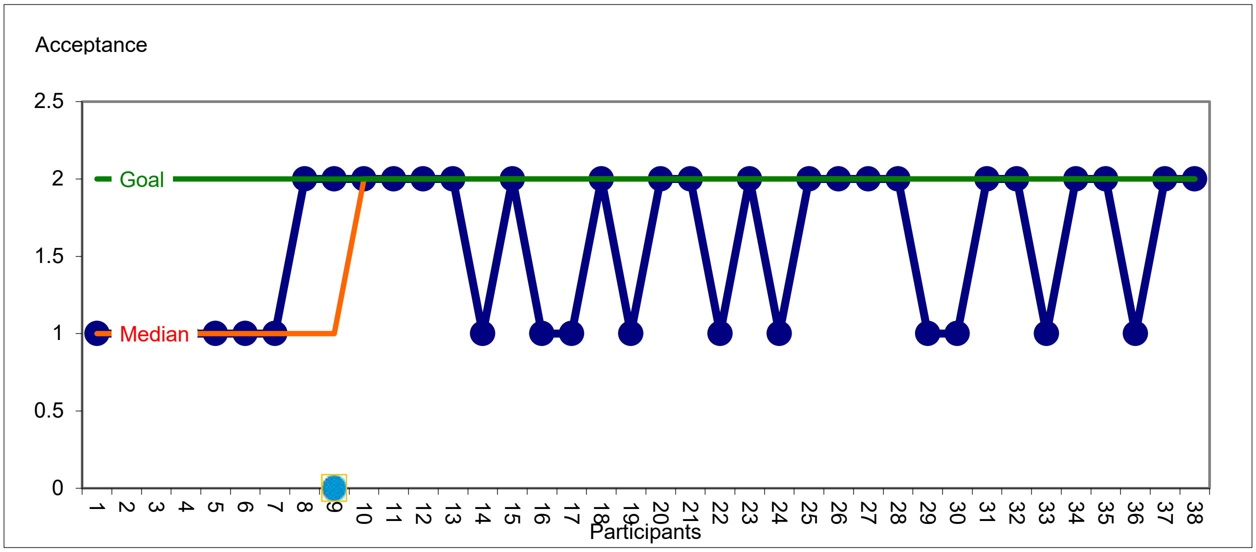
Length of Project Intervention



A second process measure chose to examine the number of eligible patients who accepted and declined the invitation to participate in the intervention. In the first weeks, the measure showed very low acceptance with only one participant out of eight eligible patients, prompting a PDSA cycle to look for explanations. A meeting was held with the physician, site champion, and this PI to consider possible solutions for patient participation. After assessing the situation, a renewed focus on asking all eligible patients and clarification on eligibility requirements, recruitment goals, and project expectations increased participation. The PDSA cycle resulted in greater than 66% participation throughout the remainder of project implementation.

Table 6

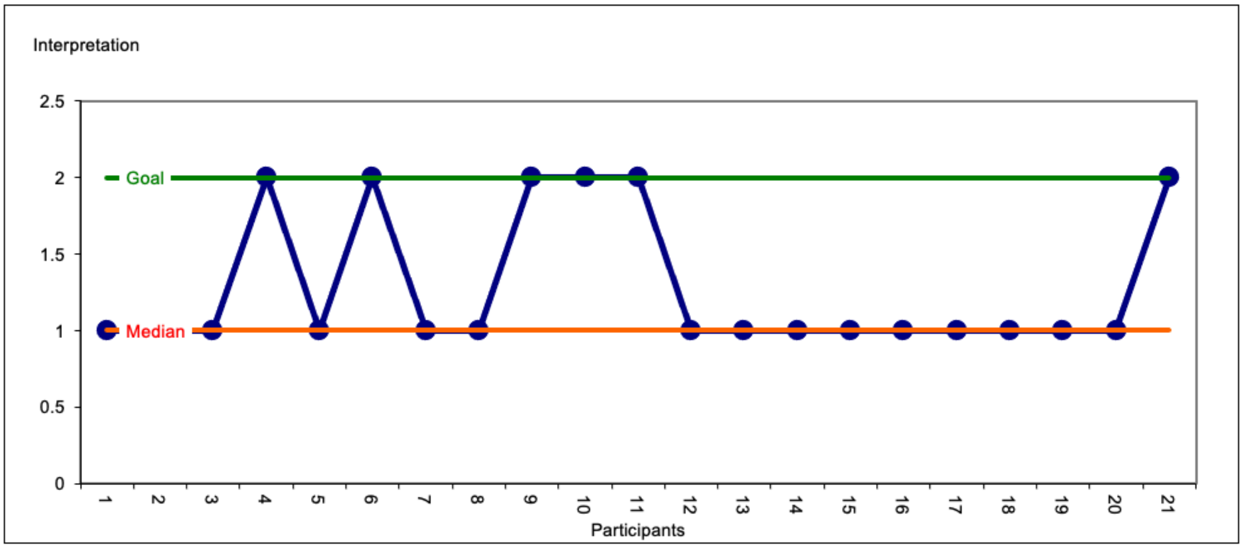
Patient Project Acceptance



The third process measure was to track participants needing interpretation services for project implementation. Of the 21 participants who agreed to the project, six declined services and were able to complete implementation without utilizing on-site interpretation. This data was useful to determine if changes were needed in interpretation services to improve the participant experience during the intervention. It was determined that no additional changes were needed at the time of intervention to improve outcomes.

Table 7

Participants Requiring Interpretation Services



Balancing Measures

Project balancing measures examined how many patients declined participation due to lack of health insurance or insurance concerns and how satisfied clinical staff was with project implementation. Of the 38 participants, only five did not have health insurance. Two of those patients had recently entered the US and were not able to make elective, preventive screening a priority at that time. A lone patient agreed to participate even though they were without insurance, and after completing the intervention, agreed to CRC screening utilizing the FIT kit method. Unfortunately, objective data could not be obtained for clinical staff satisfaction, however, no complains or concerns were noted during the entire duration of project implementation. Continued eagerness and support for the project was displayed from all staff during implementation. End of project implementation well wishes were a common theme during the final week for on-site work at the clinic.

Discussion

This DNP project provided a distinct avenue in which to explore new techniques for approaching preventive health in the Latino community. Findings at the conclusion of the project indicated mixed statistical outcomes and additional needs to address communication barriers. Results for CRC screening completion was similar to expected values had participants not received interventions of the project. There was not statistical significance established between pre-project and post-project groups when comparing the effect this intervention had on CRC screening outcomes. An explanation could be found with the identified communication barrier following implementation. Electronic chart review suggests interpretation services were not accessible or utilized from referral staff which could have harmed screening outcomes for the participant and project.

With the exception of one participant, all chose to screen for CRC utilizing colonoscopy as their preferred testing choice. This finding is contrary to prior research that suggests SBT utilization is the favored method of screening in this population, especially among those most vulnerable (Byrd et al., 2019; Reuland et al., 2017). Although significance between pre-project and post-project groups was not recognized statistically, clinical significance was observed during post-implementation chart review which found CRC screening interval reduction following colonoscopy for two participants.

The project finished with a 46% screening completion percentage for those who agreed to testing. This number is approximately 20% below the *Arkansas Healthy People 2020* goal of

67.7% implying screening hesitancy continued to be discovered in this Latino community after implementation. Conversely, aims to increase CRC and CRC screening knowledge were successful by utilizing a multicomponent intervention with educational video, patient decision aid, and MI as means to stimulate interest and provide health education. Colorectal cancer knowledge scores between pre-intervention and post-intervention groups were statistically significant with results showing scores nearly doubled to an almost four-point increase and that results would likely be repeatable. This corresponds to literature stating that providing CRC education to patients is associated with increased screening uptake (Byrd et al., 2019; De La Torre et al., 2021; Reuland et al., 2017).

This project also unintentionally found that after plotting participant's intention to screen for CRC utilizing the Stages of Change instrument, an inverse relation was positively portrayed. Participants observed in the Preparation stage who did not complete screening follows the theory's notion that introduction to behavior change is temporal and transitioning between stages to achieve certain goals involves patience and time. The TTM model was able to accurately forecast participants located in the Maintenance stage would follow through with screening completion.

This project was most successful increasing health literacy of CRC and screening modalities utilizing multilingual resources as indicated with knowledge score gained. The study also presented a unique and untapped opportunity to address participant's apprehension toward CRC screening by applying MI techniques throughout the encounter. To date, outside of this project, MI is an unexplored path when combining CRC screening and Latino health. This strategy was effective in addressing unfamiliarity with screening options while gently tackling fears, embarrassment, and misconceptions in this population, which are recognized barriers to care.

Economic and Cost Benefits

Addressing the gap in CRC screening rates among regional and US Latino populations could augment projected cost savings. Although CRC screening percentages for this project remained on par with current clinic rates, increasing specific resources would expect to see positive economic impact. CRC costs for the average American can reach substantial amounts and is expected to rise as expenses in the healthcare industry show no promise of slowing down. The annual cost of care for CRC is projected at 14.1 billion dollars and makes up 11% of all cancer treatment costs in the US (CDC, 2021). On average, spending for Medicare patients with newly diagnosed CRC ranges from $40,000 to $80,000 depending on the stage of the cancer when diagnosed (CDC, 2021). Unfortunately, this adds an economic burden on companies whose employees have been diagnosed with CRC and a financial impact on the individual diagnosed. Cancer survivors have annual losses that equal roughly $1,000 when compared to people without a cancer history (CDC, 2021). This is due to missed workdays, disability, slow return to work, and unable to perform all tasks because of illness or distress (CDC, 2021).

Costs of this project were not directly calculated for the participant or clinic. Unfortunately, absolute economic impact could not be measured because increased rates of screening were not shown during the project. However, savings for patients could be viewed as reduced chance of missed workdays and income over the long-term when being routinely screened. Positive cost outlook for the clinic could be observed as a reduction of missed CRC screening opportunities, thereby missing imbursement from insurance companies. All but one participant of this study who agreed to screening had health insurance, which should ensure reimbursement from insurance after screening completion. The only participant who did not have insurance preferred a FIT as it was only 48 dollars from the clinic. This screening option could be beneficial for future patients and a strategic trade-off for those without funds for federal or private insurers. By increasing CRC screening to near national goal of 70% from current levels, Medicare spending on care could reduce by $14 billion in 2050 (CDC, 2021). The goal of this project to reach higher screening rates with fractional overhead ensured additional economic benefit for the clinic and larger healthcare system. While higher CRC screening uptake did not occur during the two-month implementation, they could with continuation of the project with reintroduction to screening practices and continued education of CRC.

Healthcare Quality Impact

The implementation of this CRC screening project increased knowledge of CRC and CRC screening options which aided in reducing an identified education gap. This barrier has been noted in multiple studies (Alpert et al., 2021; Byrd et al., 2019; Thompson et al., 2019) and helped ameliorate informed decision-making for Latino patients of this study. The impact of this project could extend to other clinics in NWA as participants were encouraged to share the paper patient decision aid and discuss all screening modalities with friends and family. These discussions could have an exponential impact on the regional healthcare system for the Latino community and increase compliance rates in local clinics.

As screening rates rise, the quality of life for patients also rises. If rates of CRC screening were to reach 80% by 2030, the number of individuals diagnosed with CRC could reduce to 22% and increase 5-year survival rates (CDC, 2021). Additionally, the number of deaths from CRC by 2030 could be reduced by 33% if screening were to reach 80% (CDC, 2021). These percentages would be more distinguished in Latinos as they have a larger number of late-stage

CRC cases and higher mortality rates (Byrd et al., 2019). Participants who consented to the intervention received high-quality, evidence-based guidance, which also expanded the amount of time discussing CRC and screening. This extended length of time discussing CRC alleviated some communication barriers expressed in literature (Ko et al., 2014) and contributed to quality of communication throughout project implementation. Improving the quality of healthcare Latino communities receive through meaningful communication and education serve to lower the cost of CRC and increase life-years gained.

Project Limitations

Several limitations presented during the implementation and post-implementation phases of the project that affected the project outcomes. First, confounding bias between scheduling coordinators and referral for GI visit was noticed after project cessation. This unintentional bias distorted project outcomes in relation to screening completion for scheduling of colonoscopy. Additionally, implicit bias by me could have altered the preferred screening test of the participant. However, efforts to neutralize internal beliefs and attitudes was constantly exhibited.

Transferability of the project was also felt to present a project limitation in some regard. The project utilized a Spanish speaking physician to recruit patients for participation, lessening straight forward transition to other healthcare clinics. Family medicine clinics in NWA might not possess Spanish speaking staff or interpretation services required for obtaining positive screening results.

Time Constraint

Several limitations presented during the implementation and post-implementation phases of the project. A considerable limitation was the restriction of time spent in the implementation phase due to the delay observed during pre-implementation with clinic site IRB permissions.

This delay pushed the anticipated start date back roughly one month, effectively shortening the project timeline by 33% from the original target of three months. Compounding this limitation were two inclement weather events and one widespread staff illness forcing closure of the clinic spanning eleven total days of project implementation. These factors amounted to significant loss of potential participants with the absence of days spent in clinic. Efforts were made to minimize this limitation by reaching out to Latino Medicare patients due for their annual wellness visit with hopes of attracting new participants to the study. The limitation also affected evaluation of the project as fewer participants meant less data was subjected to analysis resulting in insufficient or lack of statistical power from the small sample size.

Communication and Interpretation

Another limitation found during this project was communication between participants, staff, and me. Communication between myself and participants who required interpretation was not as fluid compared to those that did not need services which resulted in unnatural pauses and flow of communication or miscommunication with the need to repeat sentences. Nine of the 13 participants who agreed to CRC screening with me required interpretation services, and of those nine, five did not complete screening. A minimum of three attempts were made by referral coordinators to schedule an appointment with the gastroenterologist, however, three of those five participants were Spanish speaking participants. Unfortunately, no attempt to provide interpretation services was noted by the referral coordinators. Results of the primary objective to increase CRC screening in the Latino population were weakened by this project limitation. If those three participants had been able to properly communicate with staff and complete testing, screening outcome would have risen by 23% to 69%, surpassing the goal of 67.7% for this project. Additional resources to supplement usual practice could have been utilized by including third-party tele-interpretation services for acceptable communication. This limited preventive health outcomes of those three participants and added to the ongoing challenges and access to care the Latino population is confronted with on a consistent basis.

Some participants communicated they felt the CRC education video was difficult to follow as it was only produced in English. The option for Spanish auto-translation was sufficient for most participants, however, some needed to pause the video to keep up with the Spanish closed caption translation. Production value of the video could increase if it was dubbed in Spanish language. Statistical outcomes measuring CRC and screening knowledge indicated scores were not adversely affected as gain in scores were found to be significant. However, route of communication in the video could improve content and information quickly understood by Spanish speaking patients.

Recommendations

Policy Implications

There are no healthcare policies on CRC screening at this medical clinic that specifically address the components of the DNP project. However, clinical site policy and procedures could be developed using this QI project as a guide to increase adherence to recommended national and state guidelines. Participants in this study often did not receive adequate communication in their preferred language after their clinic visit, creating delays in CRC screening or poor follow-up interactions with referral coordinators and staff. Given the repeated unfavorable collaboration efforts this population experienced in the healthcare system, accompanying policy and procedure changes could prove beneficial for many Latino individuals. Creating standards to offer Latino patients such as Spanish-speaking employees or third-party interpretation services could enhance communication between patients, clinical staff, and clinician. This attempt at policy change could lead to patient and staff endorsement while simultaneously reducing stress and dissatisfaction. Fostering better communication efforts increases confidence of patients and reduces fears of interaction with providers (Alpert et al., 2021; Ko et al., 2014).

Contribution to Nursing Practice

Although not all goals of this project were met during the two-month implementation period, specific interventions added to the field of nursing practice and research. Common barriers faced by Latino patients in the clinic setting were addressed by utilizing simple handouts with illustrations and open dialogue regarding CRC screening options. These discussions highlighted medical hardships encountered and exemplified how concentration on individual needs and educational interventions can offset those affected. The shared decision-making between the patient and provider shown during this project can expand to other areas of medical care that will lead to improved health outcomes.

Translation

Successful components of this DNP project could be applied to other family medicine clinics within this healthcare system. Findings from this project could be disseminated to administration from those respective clinics in the region and facilitate policy change that leads to positive patient health outcomes and support among medical staff. Interoperability of this project to other healthcare systems is unknown due to their capability to provide on-site Spanish interpretation and current proprietary programs that also strive to increase Latino CRC screening. The ability of this project to be conducted in other high-density Latino communities could prove to be a valuable resource for healthcare leaders and systems in the future.

Sustainability

Leaders at the clinic site where project implementation was performed have expressed interest in continuing the project and have been committed to helping during the post-implementation phase. The facility has an interest in the success of this proposed project because it increases access to preventive services in a traditionally underserved population, improve health outcomes in the community, create heightened awareness surrounding CRC screening practices among the patients and staff, and increase revenue from quality-based programs.

This project could be sustained by providing the clinic a distinctive route and opportunity to approach eligible Latino patients during the intake process. After gathering pertinent patient information, the medical assistant or nurse could give the multilingual decision aid to the patient and begin the educational video prior to provider visit. This would provide the patient an opening to discuss CRC screening and act as a prompt for the clinician. This approach is feasible for the clinic and would not put undue stress on the staff. Another method for project sustainment would be development of a standard protocol for CRC screening that utilizes the CRC education materials to address screening shortcomings and suggested expansion of interpretation services for follow-up in the patient's language of choice. Adding components of patient navigation and timely follow-up would benefit the project as unintentional missteps have been observed with the availability of downstream interpretation services. Approving measures comparable to ones described above would punctuate commitment and support from the healthcare system.

Dissemination

This DNP QI project will be disseminated to the University of Arkansas EMSON professors and students on April 20, 2022 following approval of final paper by the doctoral committee. This will be the first of four dissemination opportunities. A second dissemination will happen on April 22, 2022 and held at the family medicine clinic where the project occurred.

Findings of project will be presented to clinic staff, site champion, and preceptor over their lunch break. A notice of presentation will be posted in the facility one week prior to the event to allow for appropriate scheduling and accommodations. The third opportunity for dissemination will be at the Graduate Research Symposium on the University of Arkansas campus on May 13, 2022. This research day will host other graduate students from University colleges to discuss and display their work via poster presentation prior to graduation. Lastly, a fourth dissemination will follow when the project paper is submitted to academic journals *Hispanic Health Care International*, *The Journal for Nurse Practitioners*, and *The Nurse Practitioner*.

Conclusion

This DNP QI project aimed to increase CRC screening utilizing a multicomponent intervention that would lead to expansion of CRC knowledge and screening methods in the Latino population. The implementation of CRC screening interventions to improve screening rates at this family medicine clinic finished with mixed outcomes. Screening rates between pre-project and post-project groups marginally increased but were not found to be statistically significant. Among participants who accepted screening opportunity after interventions, an increase in CRC screening percentage was observed, however this value did not reach the *Arkansas Healthy People 2020* goal. Change in pre-intervention and post-intervention CRC screening knowledge scores was the strength of this project and saw statically significant results in this population.

There were few drawbacks to the project although attempts to provide appropriate interpretation services for Latino individuals could be expanded in future efforts to sustain this project. Future academic research of CRC screening in the Latino population could focus on mitigating communication, language, and follow-up barriers by adding patient navigation in combination with the materials and MI techniques used in this project. The Stages of Change instrument revealed it could give the clinician another resource to measure behavior change in the setting of preventive health practices. This project underscored how advanced practice registered nurses (APRN) can influence CRC screening practice for Latino patients when applying leadership skills that contribute to health promotion and prevention, education, and clinical research.

References

Alpert, E. N., Clark, T., Garcia-Alcaraz, C., Eddington, S. N., Carrizosa, C., Haughton, J., de la Torre, C. L., Garcia-Bigley, F., Arredondo, E. M., Ramers, C., Nodora, J., & Wells, K. J. (2021). Comparing Latino community members' and clinical staff's perspectives on barriers and facilitators to colorectal cancer screening. *Journal of Cancer Education*, 1-9. doi:10.1007/s13187-021-02007-0

American Cancer Society (ACS). (2020a, June 29). *About colorectal cancer*. ACS. Retrieved from https://www.cancer.org/content/dam/CRC/PDF/Public/8604.00.pdf

American Cancer Society (ACS). (2020b, November 17). *American cancer society guideline for colorectal cancer screening for people at average risk*. ACS. Retrieved from https://www.cancer.org/cancer/colon-rectal-cancer/detection-diagnosis-staging/acs-recommendations.html

American Cancer Society (ACS). (2020c). *Colorectal cancer facts & figures 2020-2022*. ACS. Retrieved from https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/colorectal-cancer-facts-and-figures/colorectal-cancer-facts-and-figures-2020-2022.pdf

Arkansas Department of Health (ADH). (n.d.a). *Arkansas cancer facts & figures 2017*. ADH. Retrieved from https://www.healthy.arkansas.gov/images/uploads/publications/ARCancerFacts2017.pdf

Arkansas Department of Health (ADH). (n.d.b). *Healthy people 2020: Arkansas's chronic disease framework for action*. ADH. Retrieved from https://www.healthy.arkansas.gov/images/uploads/pdf/HealthyPeople2020.pdf

Baker, D. W., Brown, T., Buchanan, D. R., Weil, J., Balsley, K., Ranalli, L., Lee, J. Y., Cameron, K. A., Ferreira, M. R., Stephens, Q., Goldman, S. N., Rademaker, A., & Wolf, M. S. (2014). Comparative effectiveness of a multifaceted intervention to improve adherence to annual colorectal cancer screening in community health centers: A randomized clinical trial. *JAMA Internal Medicine, 174*(8), 1235-1241. doi:10.1001.jamainternmed.2014.2352

Ballentine, H. (2021, October 1). *Colon cancer screening decision aid*. [Video]. YouTube. https://www.youtube.com/watch?v=Nf71CT15f0M

Byrd, T. L., Calderón-Mora, J., Salaiz, R., & Shokar, N. K. (2019). Barriers and facilitators to colorectal cancer screening within a Hispanic population. *Hispanic Health Care International, 17*(1), 23-29. doi:10.1177/1540415318818982

Centers for Disease Control and Prevention (CDC). (n.d.a). *Cancer burden: Washington county, Arkansas. Colon and rectum, 2013-2017*. Retrieved from https://gis.cdc.gov/Cancer/USCS/DataViz.html

Centers for Disease Control and Prevention (CDC). (n.d.b). *Leading cancer cases and deaths, all races/ethnicities, male and female, 2013-2017*. Retrieved from https://gis.cdc.gov/Cancer/USCS/DataViz.html

Centers for Disease Control and Prevention (CDC). (n.d.c). *Leading cancer cases and deaths, Hispanic, male and female, 2013-2017*. Retrieved from https://gis.cdc.gov/Cancer/USCS/DataViz.html

Centers for Disease Control and Prevention (CDC). (2020, June 8). *Colorectal cancer statistics*. CDC. Retrieved from https://www.cdc.gov/cancer/colorectal/statistics/

Centers for Disease Control and Prevention (CDC). (2021, August 18). *Cost-effectiveness of* *colorectal cancer interventions*. CDC. Retrieved from https://www.cdc.gov/chronicdisease/programs-impact/pop/colorectal-cancer.htm

Cofie, L. E., Hirth, J. M., Cuevas, A. G., & Farr, D. (2020). A national study of gender and racial differences in colorectal cancer screening among foreign-born older adults living in the us. *Journal of Behavioral Medicine, 43*(3), 460-467. doi:10.1007/s10865-019-00107-3

Colorado Program for Patient Centered Decisions (CPPCD). (2015, July 9). *Colon cancer screening*. University of Colorado. https://patientdecisionaid.org/wp-content/uploads/2020/09/CRC-Infographic-V-7-11-20-15-English-1.pdf

Colorado Program for Patient Centered Decisions (CPPCD). (2019a, March 26). *La detección de cancer del colon*. University of Colorado. https://patientdecisionaid.org/wp-content/uploads/2020/03/SP-CRC-infographic-V8-3.26.19.pdf

Colorado Program for Patient Centered Decisions (CPPCD). (2019b, March 27). *Supporting evidence for the development of the colon cancer decision aid*. University of Colorado. https://patientdecisionaid.org/wp-content/uploads/2016/06/CRCDevelopmentDoc03.27.19.pdf

Davis, S. N., Christy, S. M., Chavarria, E. A., Abdula, R., Sutton, S. K., Schmidt, A. R., Vadaparampil, S. T., Quinn, G. P., Simmons, V. N., Ufondu, C. B., Ravindra, C., Schultz, I., Roetzheim, R. G., Shibata, D., Meade, C. D., & Gwede, C. K. (2017). A randomized controlled trail of a multicomponent, targeted, low-literacy educational intervention compared with a nontargeted intervention to boost colorectal cancer screening with fecal immunochemical testing in community clinics. *Cancer, 123*(8), 1390-1400. doi:10.1002/cncr.30481

De La Torre, C. L., Dumbauld, J. N., Haughton, J., Gupta, S., Nodora, J., Giacinto, R. E., Ramers, C., Bharti, B., Wells, K., Lopez, J., Díaz, M., Moody, J., & Arredondo, E. M. (2021). Development of a group-based community health worker intervention to increase colorectal cancer screening among Latinos. *Hispanic Health Care International, 19*(1), 47-54. doi:10.1177/1540415320923564

Dinan, M. A., Curtis, L. H., Hammill, B. G., Patz, E. F. Jr, Abernethy, A. P., Shea, A. M., & Schulman, K. A. (2010). Changes in the use and costs of diagnostic imaging among medicare beneficiaries with cancer, 1999-2006. *JAMA, 303*(16), 1625-1631. doi:10.1001/jama.2010.460

Dunphy, L. M., Winland-Brown, J. E., Porter, B. O., & Thomas, D. J. (2019). *Primary care: The art and science of advanced practice nursing – An interprofessional approach* (5th ed.). F. A. Davis.

Fisher, D. A., Maple, J. T., Ben-Menachem, T., Cash, B. D., Decker, G. A., Early, D. S., Evans, J. A., Fanelli, R. D., Fukami, N., Hwang, J. H., Jain, R., Jue, T. L., Khan, K. M., Malpas, P. M., Sharaf, R. N., Shergill, A. K., & Dominitz, J. A. (2011). Complications of colonoscopy. *Gastrointestinal Endoscopy, 74*(4), 745-752. doi:10.1016/j.gie.2011.07.025

Gonzalez, J. J., Wahab, A., Samalik, J., Ramirez, E., Saint-Phard, T., Gonzalez, E., & Adekolujo, O. S. (2020). Barriers and facilitators of colorectal cancer screening among a Hispanic community in Michigan. *Journal of Racial and Ethnic Health Disparities, 7*(1), 137-143. doi:10.1007/s40615-019-00643-3

Gwede, C. K., Sutton, S. K., Chavarria, E. A., Gutierrez, L., Abdulla, R., Christy, S. M., Lopez, D., Sanchez, J., & Meade, C. D. (2019). A culturally and linguistically salient pilot intervention to promote colorectal cancer screening among Latinos receiving care in a federally qualified health center. *Health Education Research, 34*(3), 310-320. doi:10.1093/her/cyz010

Hahn, E. E., Baecker, A., Shen, E., Haupt, E. C., Wakach, W., Ahuja, A., Imley, T. M., Gould, M. K., & Kanter, M. (2021). A patient portal-based commitment device to improve adherence with screening for colorectal cancer: A retrospective observational study. *Journal of General Internal Medicine, 36*(4), 952-960. doi:10.1007/s11606-020-06392-y

Hashemzadeh, M., Rahimi, A., Zare-Farashbandi, F., Alavi-Naeini, A. M., & Daei, A. (2019). Transtheoretical model of health behavioral change: A systematic review. *Iranian Journal of Nursing and Midwifery Research, 24*(2), 83-90. doi:10.4103/ijnmr.IJNMR_94_17

IBM Corporation. (2022). *SPSS statistics* (Version 28.0). [Computer app]. IBM. https://www.ibm.com/products/spss-statistics

Ko, L. K., Reuland, D., Jolles, M., Clay, R., & Pignone, M. (2014). Cultural and linguistic adaptation of a multimedia colorectal cancer screening decision aid for Spanish-speaking Latinos. *Journal of Health Communication, 19*(2), 192-209. doi:10.1080/10810730.2013.811325

McCance, K. L. & Huether, S. E. (2019). *Pathophysiology: The biologic basis for disease in adults and children* (8th ed.). Elsevier Mosby.

Melnyk, B. M., & Fineout-Overholt, E. (2019). *Evidence-based practice in nursing and healthcare: A guide to best practice* (4th ed.). Wolters Kluwer.

Microsoft Corporation. (2022). *Microsoft excel* (Version 16.59). [Computer app]. Microsoft Corporation. https://www.microsoft.com/en-us/microsoft-365/excel

Miller, W. R., & Rollnick, S. (2013). *Motivational interviewing: Helping people change* (3rd ed.).

The Guilford Press.

Mojica, C. M., Parra-Medina, D., & Vernon, S. (2018). Intervention promoting colorectal cancer screening among Latino men: A systematic review. *Preventing Chronic Disease, 15*(31), 1-7. doi:10.5888/pcd15.170218

Myers, R. E., Stello, B., Daskalakis, C., Sifri, R., González, E. T., DiCarlo, M., Johnson, M. B., Hegarty, S. E., Shaak, K., Rivera, A., Gordils-Molina, L., Petrich, A., Careyva, B., de-Ortiz, R., & Diaz, L. (2019). Decision support and navigation to increase colorectal cancer screening among Hispanic patients. *Cancer Epidemiology, Biomarkers, & Prevention, 28*(2), 384-391. doi:10.1158/1055-9965.EPI-18-0260

Nápoles, A. M., Santoyo-Olsson, J., Stewart, A. L., Olmstead, J., Gregorich, S. E., Farren, G., Cabral, R., Freudman, A., & Pérez-Stable, E. J. (2015). Physician counseling on colorectal cancer screening and the receipt of screening among Latino patients. *Journal of General Internal Medicine, 30*(4), 483-489. doi:10.1007/s11606-014-3126-0

Office of Disease Prevention and Health Promotion (ODPHP). (2020a, October 8). *Cancer*. ODPHP. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/cancer/objectives

Office of Disease Prevention and Health Promotion (ODPHP). (2020b, October 8). *Cancer: C-16 increase the proportion of adults who receive a colorectal cancer screening based on the most recent guidelines*. ODPHP. Retrieved from https://www.healthypeople.gov/2020/data-search/Search-the-Data#objid=4054;

Office of Disease Prevention and Health Promotion (ODPHP). (2021, June 11). *Access to health services*. ODPHP. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/Access-to-Health-Services

Office of Disease Prevention and Health Promotion (ODPHP). (n.d.a). *Health care access and quality*. OHPHP. Retrieved from https://health.gov/healthypeople/objectives-and-data/browse-objectives/health-care-access-and-quality

Office of Disease Prevention and Health Promotion (ODPHP). (n.d.b). *Increase the proportion of adults who get screened for colorectal cancer – C-07*. OHPHP. Retrieved from https://health.gov/healthypeople/objectives-and-data/browse-objectives/cancer/increase-proportion-adults-who-get-screened-colorectal-cancer-c-07

Portillo, E. M., Vasquez, D., & Brown, L. D. (2020). Promoting Hispanic immigrant health via community health workers and motivational interviewing. *International Quarterly of Community Health Education, 4*(1), 3-6. doi:10.1177/0272684X19896731

Prochaska, J. O. (1979). *Systems of Psychotherapy: A Transtheoretical Analysis*. Dorsey Press.

Prochaska J. O., Redding, C. A., & Evers, K. E. (2015). The transtheoretical model and stages of change. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior: Theory, research, and practice* (5th ed., pp. 125-148). John Wiley & Sons.

Qualtrics. (2022). *Qualtrics XM*. [Computer app]. Qualtrics. https://www.qualtrics.com/

Redaelli, A., Cranor, C. W., Okano, G. J., & Reese, P. R. (2003). Screening, prevention and socioeconomic costs associated with the treatment of colorectal cancer. *Pharmacoeconomics, 21*(17), 1213-1238. doi:10.2165/00019053-200321170-00001

Reuland, D. S., Brenner, A. T., Hoffman, R., McWilliams, A., Rhyne, R. L., Getrich, C., Tapp, H., Weaver, M. A., Callan, D., Cubillos, L., de Hernandez, B. U., & Pignone, M. P. (2017). Effect of combined patient decision aid and patient navigation vs usual care for colorectal cancer screening in a vulnerable patient population. *JAMA Internal Medicine, 177*(7), 967-974. doi:10.1001/jamainternmed.2017.1294

Sepucha, K. R., Feibelmann, S., Cosenza, C., Levin, C. A., & Pignone, M. (2014). Development and evaluation of a new survey instrument to measure the quality of colorectal cancer screening decisions. *BMC Medical Informatics and Decision Making, 14*(72), 1-9. doi:10.1186/1472-6947-14-72

Shaukat, A., Kahi, C. J., Burke, C. A., Rabeneck, L., Sauer, B. G., & Rex, D. K. (2021). ACG clinical guidelines: Colorectal cancer screening 2021. *American Journal of Gastroenterology, 116*(3), 458-479. doi:10.14309/ajg.0000000000001122

Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Journal for Clinicians, 71*(3), 209-249. doi:10.3322/caac.21660

Thompson, J. H., Davis, M. M., Michaels, L., Rivelli, J. S., Castillo, M. L., Younger, B. M., Castro, M., Reich, S. L., & Coronado, G. D. (2019). Developing patient-refined messaging for a mailed colorectal cancer screening program in a Latino-based community health center. *Journal of the American Board of Family Medicine, 32*(3), 307-317. doi:10.3122/jabfm.2019.03.180026

Wittich, A. R., Shay, L. A., Flores, B., De La Rosa, E. M., Mackay, T., & Valerio, M. A. (2019). Colorectal cancer screening: Understanding the health literacy needs of Hispanic rural residents. *AIMS Public Health, 6*(2), 107-120. doi:10.3934/publichealth.2019.2.107

US Census Bureau. (n.d.). *QuickFacts: United States*. US Census Bureau. Retrieved from https://www.census.gov/quickfacts/fact/table/US/RHI725219

US Preventive Services Task Force (USPSTF). (2021, May 18). *Final recommendation* *statement: Colorectal cancer: Screening*. USPSTF. Retrieved from https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/colorectal-cancer-screening#fullrecommendationstart

Appendix A: Needs Assessment Questionnaire with Analysis

Needs Assessment Questionnaire

The purpose of this questionnaire is to collect information on colorectal cancer (CRC) screening in the Latino population at your clinic. The information obtained will be used to further investigate CRC screening in your clinic and community, improve uptake of CRC screening using approved methods, and improve health outcomes in this patient population. All the information gathered from the interview will be kept confidential and without identifiers. A 5-point Likert Scale will be used for quantitative measurement and given to you before the questionnaire. Questions without a 5-point Likert Scale will require written responses and used to find common themes. Clarification of questions will be provided upon request. The interview will take approximately 10 to 20 minutes to complete.

Roles: Physician (1), Medical Assistant (1), Lab/Rad Tech (1), Secretary (1), and Clinic Manager (1)

5-point Likert Scales:
Questions 1-2, 4, 9-14, 18-19:
(1) Definitely Not, (2) Probably Not, (3) Possibly, (4) Probably, or (5) Definitely

Questions 6-7:
(1) 0% to 20%, (2) 21% to 40%, (3) 41% to 60%, (4) 61% to 80%, or (5) 81% to 100%

Question 8:
(1) 0 days to 14 days, (2) 15 days to 30 days, (3) 1 month to 2 months, (4) 2 months to 3 months, or (5) 3+ months

Needs Assessment Questions with Mean and Common Themes:

1. Do you feel there are unmet needs in colorectal cancer (CRC) screening for Latino patients at your clinic?
    - **Mean: 4.4**

2. Do you feel there could be an improvement in CRC screening at this clinic for Latino patients?
    - **Mean: 4.6**

3. Which area(s) of the CRC screening process do you feel could use improvement in your clinic, if any?
    - **Informative resources for Latino and Marshallese patients**
    - **Compliance**
    - **Health Literacy**
    - **Follow-up**
    - **Process for CRC screening**

4. Do you feel you could make a difference with a project aimed to address wellness visit CRC screening in the Latino community?
    - **Mean: 4.6**

5. At what age do recommend CRC screening to your Latino patients?
    - **Mean: 50**

6. What percentage of Latino patients get their wellness visit CRC screening?
    - **Mean: 3.6**

7. What percentage of Latino patients delay their recommended wellness visit CRC screening?
    - **Mean: 3.6**

8. How much time do you feel is found between the recommendation for wellness visit CRC screening and completion of CRC screening method?
    - **Mean: 3.6**

9. Do you feel a change in the process for CRC screening would result in a positive change?
    - **Mean: 4.6**

10. Do you feel most Latino patients know what CRC is?
    - **Mean: 2**

11. Do you feel most Latino patients understand the risks and benefits of CRC screening?
    - **Mean: 2**

12. Do you feel most Latino patients know the different options for CRC screening?
    - **Mean: 1.8**

13. Do you feel that Latino patients receive all the necessary information to complete the recommended CRC screening?
    - **Mean: 2.2**

14. Do you feel a CRC screening project could significantly increase missed opportunities for CRC screening?
    - **Mean: 5**

15. What barriers to you encounter for CRC screening in the Latino community? Qualitative answer here:
    - **Language**
    - **Poor resources**
    - **Reduced education level**
    - **Trustworthiness of provider**
    - **Lack of knowledge of CRC screening process**

- **No support for visual learning**
- **Insurance coverage**

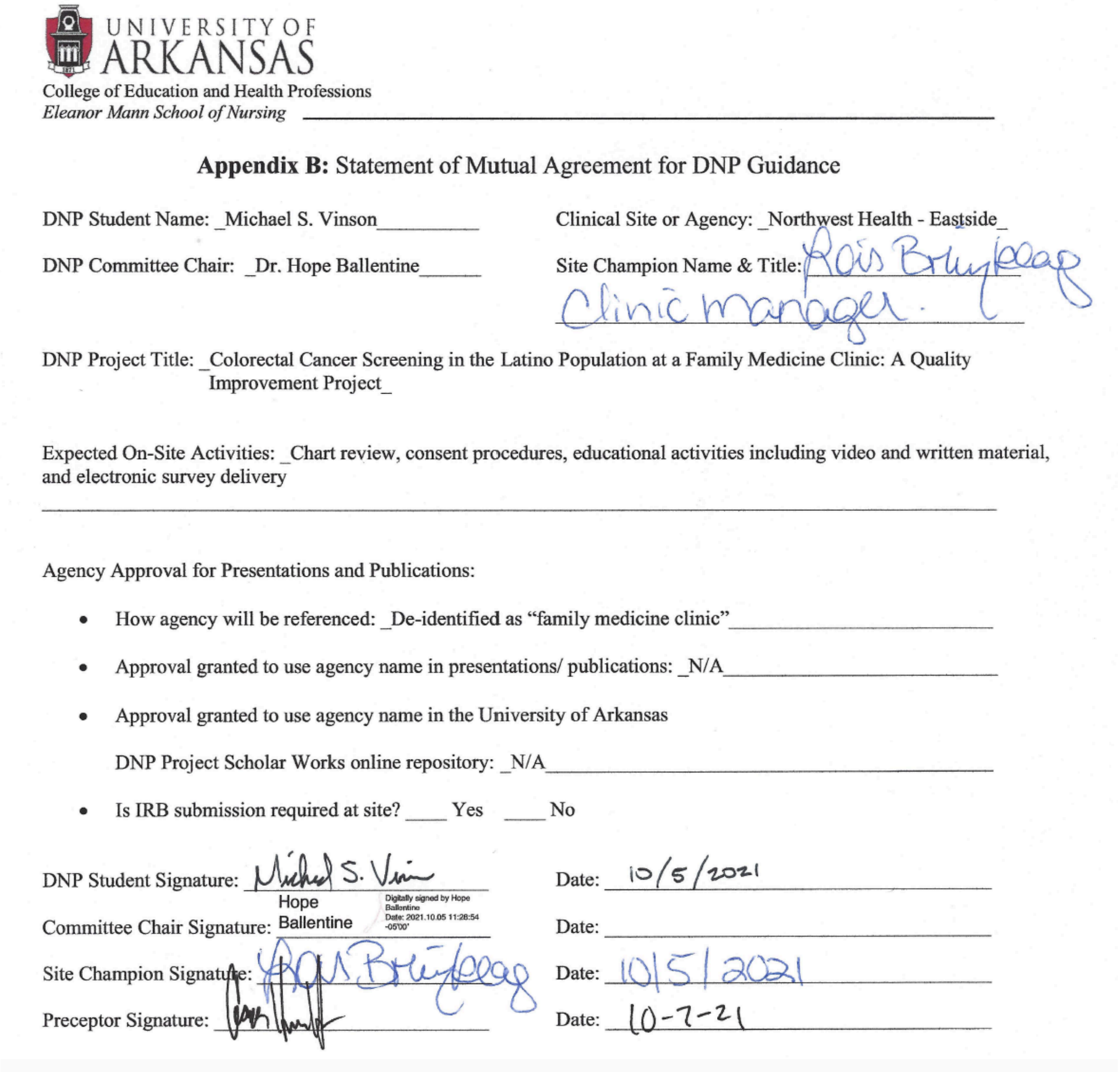
16. What do you feel is the best way to approach missed opportunities, if any, for CRC screening in the Latino community?
    - **Provide information in clinic**
    - **Utilize visual literature**
    - **Provide proper translation**
    - **Need better follow-up**
    - **Alerts on electronic charts**
    - **Deliver information to Hispanic community**

17. Which methods or modalities do you feel would be best to address CRC screening in the Latino community? Select all that would apply: (1) FOBT, (2) FIT, (3) FIT-DNA, and (4) Direct Visualization
    - **1 (60%)**
    - **2 (60%)**
    - **3 (80%)**
    - **4 (100%)**

18. Do you recall having a project at this clinic that addressed CRC screening in the Latino community?
    - **Mean: 1**

19. Do you feel this clinic has a readiness for change?
    - **Mean: 5**

Appendix B: Statement of Mutual Agreement for DNP Guidance



UNIVERSITY OF ARKANSAS

College of Education and Health Professions

Eleanor Mann School of Nursing

Appendix B: Statement of Mutual Agreement for DNP Guidance

DNP Student Name: _Michael S. Vinson__________

Clinical Site or Agency: _Northwest Health - Eastside_

DNP Committee Chair: _Dr. Hope Ballentine______

Site Champion Name & Title: Clinic manager.

DNP Project Title: _Colorectal Cancer Screening in the Latino Population at a Family Medicine Clinic: A Quality Improvement Project_

Expected On-Site Activities: _Chart review, consent procedures, educational activities including video and written material, and electronic survey delivery

Agency Approval for Presentations and Publications:

- How agency will be referenced: _De-identified as "family medicine clinic"_________________________
- Approval granted to use agency name in presentations/ publications: _N/A__________________________
- Approval granted to use agency name in the University of Arkansas

  DNP Project Scholar Works online repository: _N/A____________________________________
- Is IRB submission required at site? ____ Yes ____ No

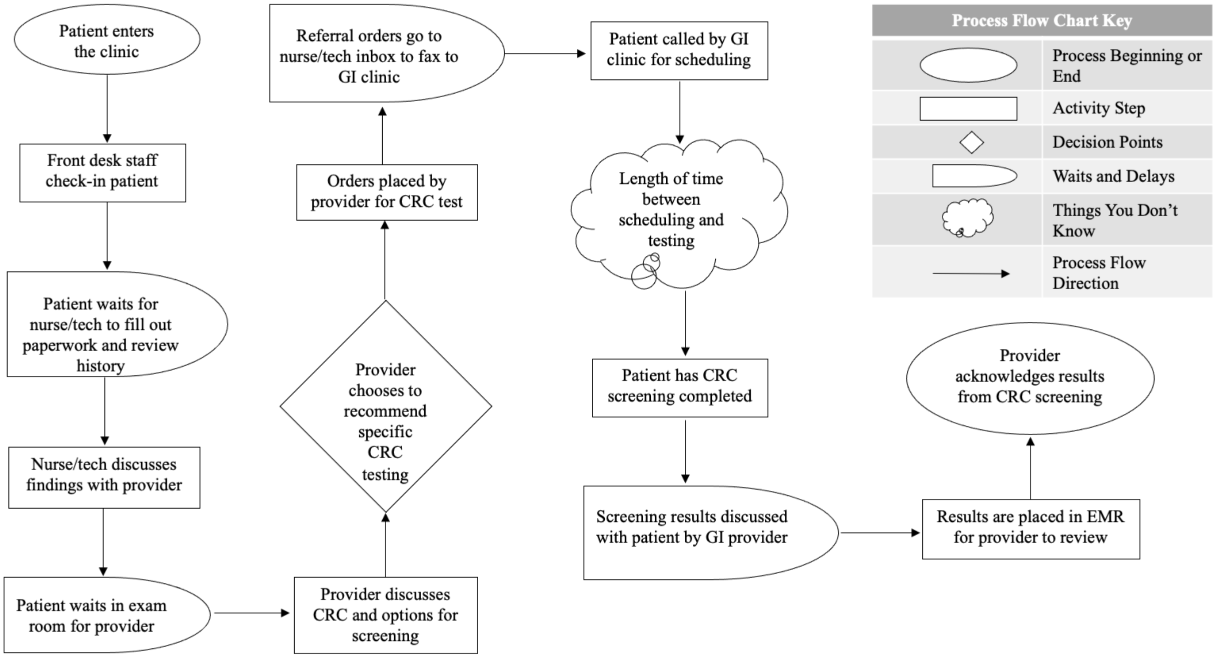
DNP Student Signature: Michael S. Vinson Date: 10/5/2021

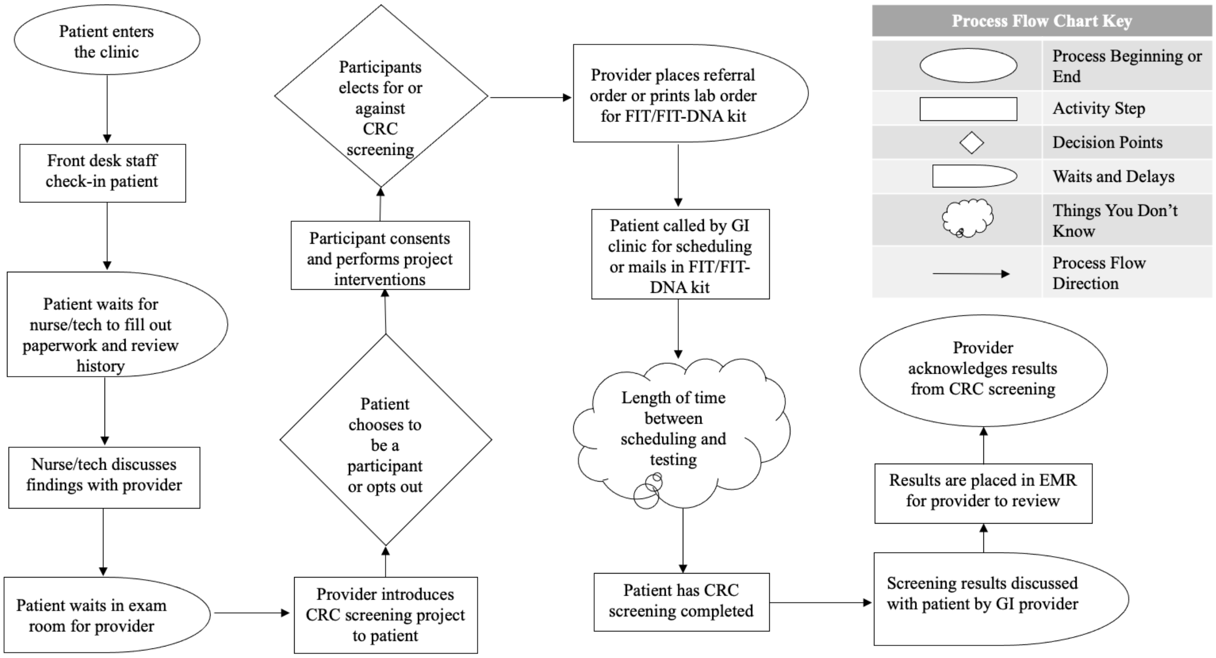
Committee Chair Signature: Hope Ballentine Digitally signed by Hope Ballentine Date: 2021.10.05 11:28:54 -05'00' Date: ______

Site Champion Signature: Date: 10/5/2021

Preceptor Signature: Date: 10-7-21

Appendix C: Process Flow Charts





Appendix D: Global Aim Statement

Write a Theme for Improvement: Improve colorectal cancer (CRC) screening in the Latino population with development of a tailored project to encompass the needs and gaps found in this medically vulnerable population.

Global Aim Statement

Create an aim statement that will help keep your focus clear and your work productive:

We aim to improve: the CRC screening rates among the Latino population by designing a program specifically targeting those eligible for recommended screening.
(Name the process)
In: A Family Medicine Clinic in Northwest Arkansas
(Clinical location in which process is embedded)

The process begins with: patient check-in at family medicine clinic
(Name where the process begins)

The process ends with: completion and verification of CRC screening
(Name the ending point of the process)
By working on the process, we expect: to increase the number of individuals screened for CRC, capture previously unscreened individuals, and address existing barriers to CRC screening in the Latino population.
(List benefits)

It is important to work on this now because: data demonstrates the Latino population has low screening rates compared to other ethnicities, literature details the sequalae of poor screening rates, and introduction of early preventive measures reduces morbidity and mortality.
(List imperatives)

Specific Aim Statement

We will: ☐ improve ☒ increase ☐ decrease

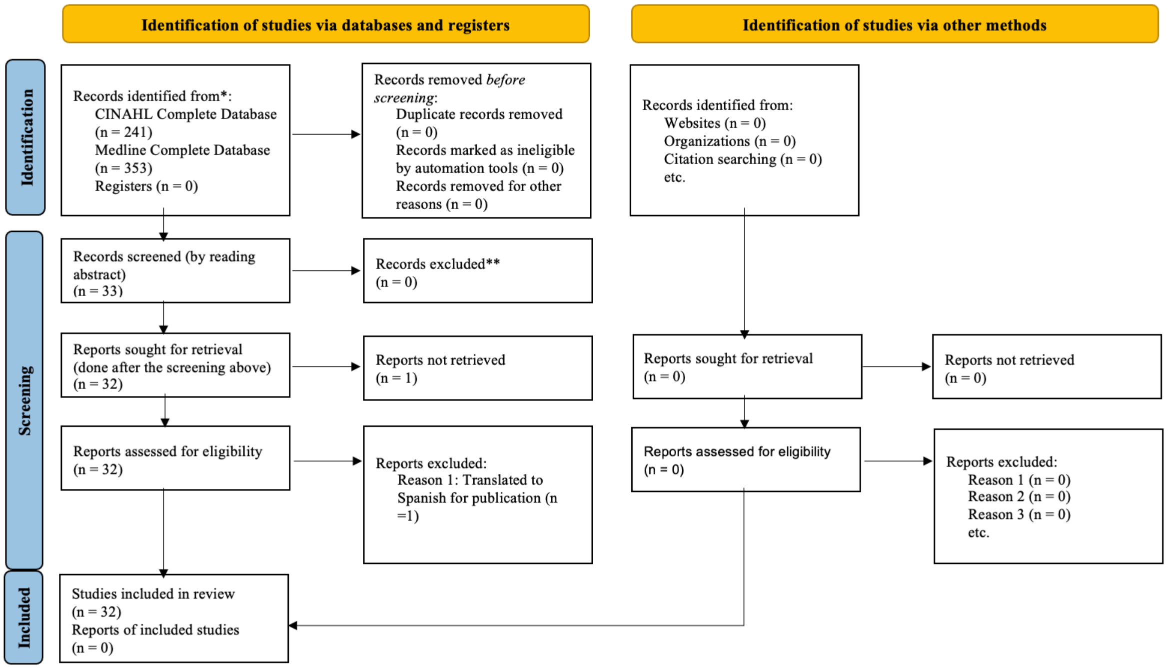
The: ☐ quality of ☐ number/amount of ☒ percentage of eligible individuals recommended for CRC screening by 10%.
(process)

From: a baseline of 57.7% (Office of Disease Prevention and Health Promotion (ODPHP), 2020)
(baseline state/number/amount/percentage)

To: 67.7%. (Arkansas Department of Health (ADH), 2017)
(describe the change in quality or state the number/amount/percentage)

By: May 1st, 2022
(date)

Appendix E: PRISMA Flowchart 2020



*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).
**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: http://www.prisma-statement.org/

Appendix F: Evidence Table

Authors	Year	Country where research conducted	Theory guiding the study and identification of concepts	Independent or Treatment Variable(s)	Dependent or Outcome Variable(s)	Research Design	Sample Method (N=)	Data Collection Process	Brief Summary of Results	Strength of evidence (Level)
US Preventive Services Task Force (USPSTF)	2016	USA	Theory: N/A Concepts: Colorectal cancer (CRC), screening, preventive care	Patient age, screening method	Incidence of CRC, morbidity, harms of screening tests	Systematic review	Method: Qualitative analysis that compared statistics to guide recommendations for guidelines N= Unavailable or suppressed	CISNET models to compare screening intervals for different screening methods and starting and stopping ages	Article is a clinical practice guideline (CPG) that examined the benefits and harms of CRC screening and gave recommendations based on the results. Findings included those aged 50 to 75 at average-risk and asymptomatic to complete accepted modalities for screening. Those aged 75 to 85 years will need to determine patient's overall health and prior screening history. Update in progress for CRC screening to possibility	I

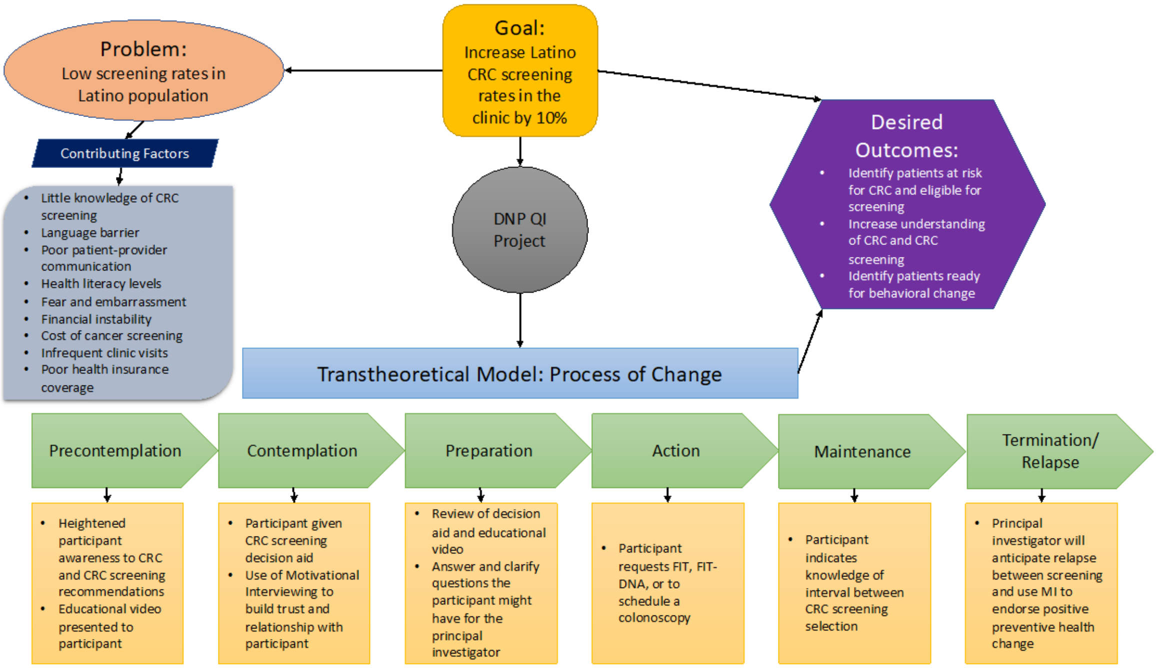
									include age 45 to 49.	
Wittich, A. R., Shay, L. A., Flores, B., De La Rosa, E. M., Mackay, T., & Valerio, M. A.	2019	USA	Theory: N/A Concepts: Education, barriers, CRC screening	Sex, education level, income	Perceived risk of CRC, perceptions of screening efficacy, participant attitudes regarding CRC	Quantitative and qualitative study	Method: Convenience sample N= 58	Questionnaires and 6 focus groups were conducted with semi-structured moderator's guide	Low educational attainment is associated with low cancer screening rates. Increasing exposure to CRC screening information results in greater screening participation. Transportation and accessibility for rural residents is an issue. Low income remains a barrier even with health insurance.	VI
Davis, S. N., Christy, S. M., Chavarria, E. A., Abdula, R., Sutton, S. K., Schmidt, A. R., Vadaparampil, S. T., Quinn, G. P., Simmons, V. N., Ufondu, C. B., Ravindra, C.,	2017	USA	Theory: Preventive Health Model (PHM) Concepts: FIT, CRC screening	Targeted education with booklet and DVD with distribution of FIT kit (CARES condition), standard CDC "Screen for Life" brochure with	Increase in CRC screening with CARES condition, sociodemographic data, and health-related beliefs	Randomized control trial (RCT)	Method: Convenience sample N= 416 (210 randomized to CARES condition, 206 randomized to CDC comparison condition)	Federally qualified health center (FQHC) and community health clinic (CHC) in the Tampa Bay area collected data with simple verification of FIT and using 5-point Likert scale for health-	Uptake of FIT with targeted education was **not** found to change completion percentage when compared to standard FIT education. Having health insurance was found to be the primary factor in	II

Schultz, I., Roetzheim, R. G., Shibata, D., Meade, C. D., & Gwede, C. K.				distribution of FIT kit				related belief measures	predicting lack of FIT screening. FIT uptake mostly occurred within 30 days and virtually no kits were returned after 90 days.	
Salinas, J., Brito, J., Rincones, C., & Shokar, N. K.	2020	USA	Theory: N/A Concepts: FIT uptake, geographical and socioeconomic factors	Low-income and uninsured Latinos living in El Paso, TX	CRC screening uptake	Quantitative study	Method: Convenience sample N= 5,777	US Census Bureau data in El Paso, TX	Geographical hot spot analysis is an effective way to target Hispanic population to increase CRC screening uptake. Older age (65 years and older) was associated with lower CRC screening uptake.	V
Lairson, D. R., Kim, J., Byrd, T., Salaiz, R., & Shokar, N. K.	2018	USA								
Castañeda, S. F., Gallo, L. C., Nodora, J., Talavera, G. A., Penedo, F. J., Evenson, K. R., Lopez-Gurrola, M., Smoller-	2019	USA	Theory: Behavioral Model of Health Services Use (BMHSU) Concepts: Latino, CRC	Individual's predisposition to use services (age, education, income, acculturation), factors that enable	Uptake of CRC screening, recent FOBT screening, recent sigmoidoscopy	Cross-sectional cohort epidemiological quantitative study	Method: Individuals were selected using a stratified two-stage probability sample design and convenience sampling with door-to-door recruitment	Study enrolled Hispanic cohorts from 4 US cities (Chicago, San Diego, Miami, Bronx)	For Hispanic men and women, having insurance, recent physician visit, and personal cancer history correlates with CRC screening.	IV

Wassertheil, S., Sanchez-Johnsen, L. A. P., Gonzalez, P., Perreira, K. M., & Gupta, S.			screening, access, barriers	healthcare use (recent physician visit, insurance, recent mammogram), the need for care (health-related QoL, family and personal history of cancer)	or colonoscopy		N= 5,313		Older women who see the benefit of screening were more likely to have CRC screening done. (Use personal or family history as motivation to be screened for CRC)	
May, F. P., Yano, E. M., Provenzale, D., Brunner, J., Yu, C., Phan, J., Bharath, P., Aby, E., Dinh, D., Ehrlich, D. S., Storage, T. R., Lin, L. D., Jamaluddin, N. N., & Washington, D. L.	2019	USA	Theory: N/A Concepts: Follow-up, barriers, colonoscopy, FIT, Veterans	Patients aged 50 to 75 with positive FIT result	Follow-up evaluation with colonoscopy within 6 months of positive FIT result, reasons for lack of follow-up	Retrospective cross-sectional study	Method: Non-probability, purposive sample N= 10,635	Electronic medical record (EMR)-derived data to identify patients who met inclusion criteria	Patient decline and hesitancy was the most common reason for lack of follow-up and increased with age of patient. Having a referral for colonoscopy resulted in highly likelihood of diagnostic colonoscopy. Average time interval for colonoscopy was 83 days after positive FIT. (Need to develop multimodal interventions to	IV

									increase follow-up if FIT test is positive)	
Mojica, C. M., Parra-Medina, D., & Vernon, S.	2018	USA	Theory: N/A Concepts: Hispanic, men, barriers, CRC screening	Intervention modalities	CRC screening uptake	Systematic review	Method: Qualitative sample from keyword searches N= 7 articles met the inclusion criteria	Electronic database search from MEDLINE, CINAHL, and PsychINFO from 2004 through 2016	One-on-one education, use of small media like decision aids highlighting risks and benefits, and reducing structural barriers are promising strategies. 4 studies used individualized patient navigation strategy to promote CRC screening, and all found statistical significance. Applying Spanish language in small media (brochures) is useful but need to continue to address cultural beliefs and norms of this population.	I

Appendix G: DNP QI Project Concept Map



Problem:
Low screening rates in Latino population

Goal:
Increase Latino CRC screening rates in the clinic by 10%

Desired Outcomes:

- Identify patients at risk for CRC and eligible for screening
- Increase understanding of CRC and CRC screening
- Identify patients ready for behavioral change

Contributing Factors

- Little knowledge of CRC screening
- Language barrier
- Poor patient-provider communication
- Health literacy levels
- Fear and embarrassment
- Financial instability
- Cost of cancer screening
- Infrequent clinic visits
- Poor health insurance coverage

DNP QI Project

Transtheoretical Model: Process of Change

Precontemplation

- Heightened participant awareness to CRC and CRC screening recommendations
- Educational video presented to participant

Contemplation

- Participant given CRC screening decision aid
- Use of Motivational Interviewing to build trust and relationship with participant

Preparation

- Review of decision aid and educational video
- Answer and clarify questions the participant might have for the principal investigator

Action

- Participant requests FIT, FIT-DNA, or to schedule a colonoscopy

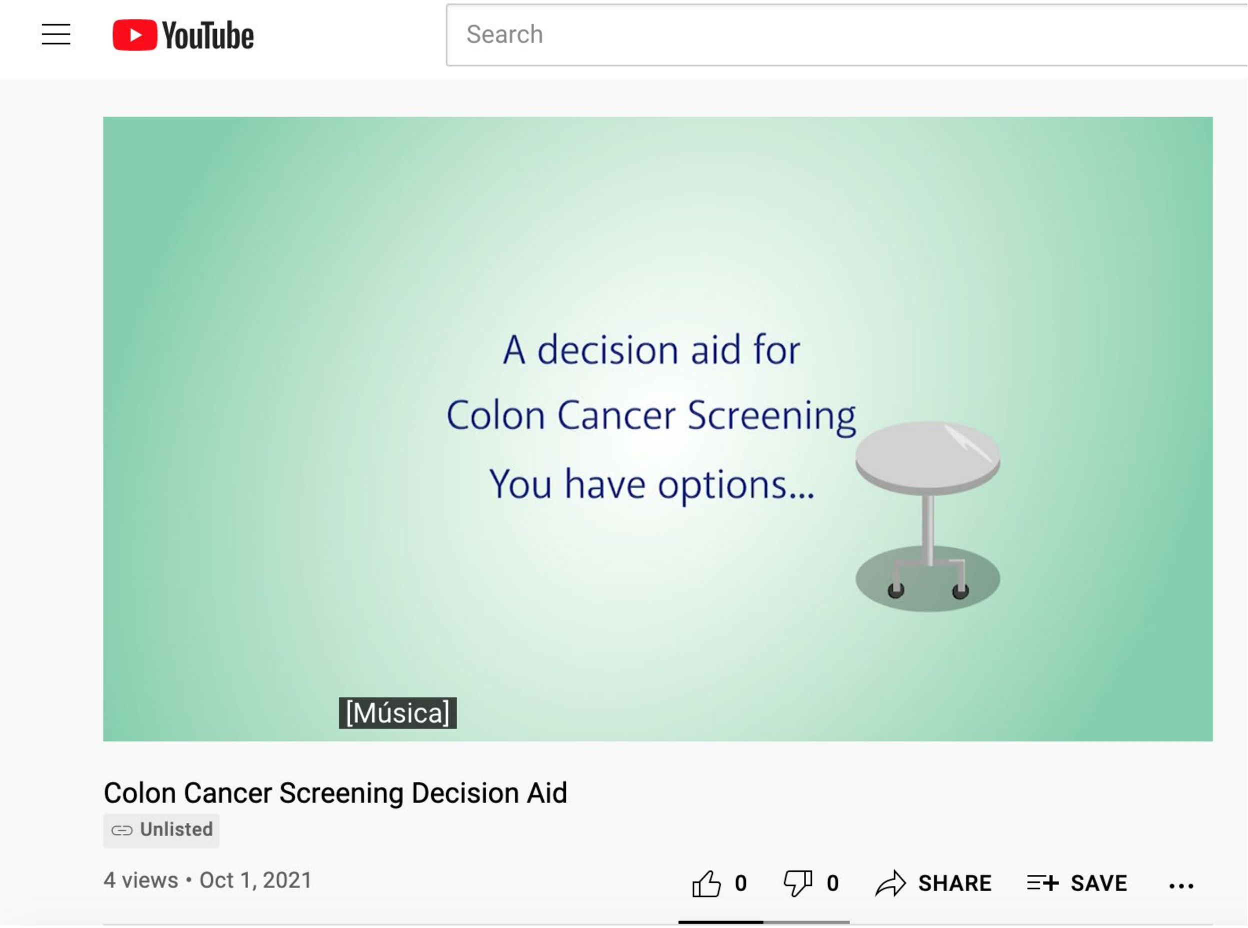
Maintenance

- Participant indicates knowledge of interval between CRC screening selection

Termination/ Relapse

- Principal investigator will anticipate relapse between screening and use MI to endorse positive preventive health change

Appendix H: CRC and CRC Screening Educational Video

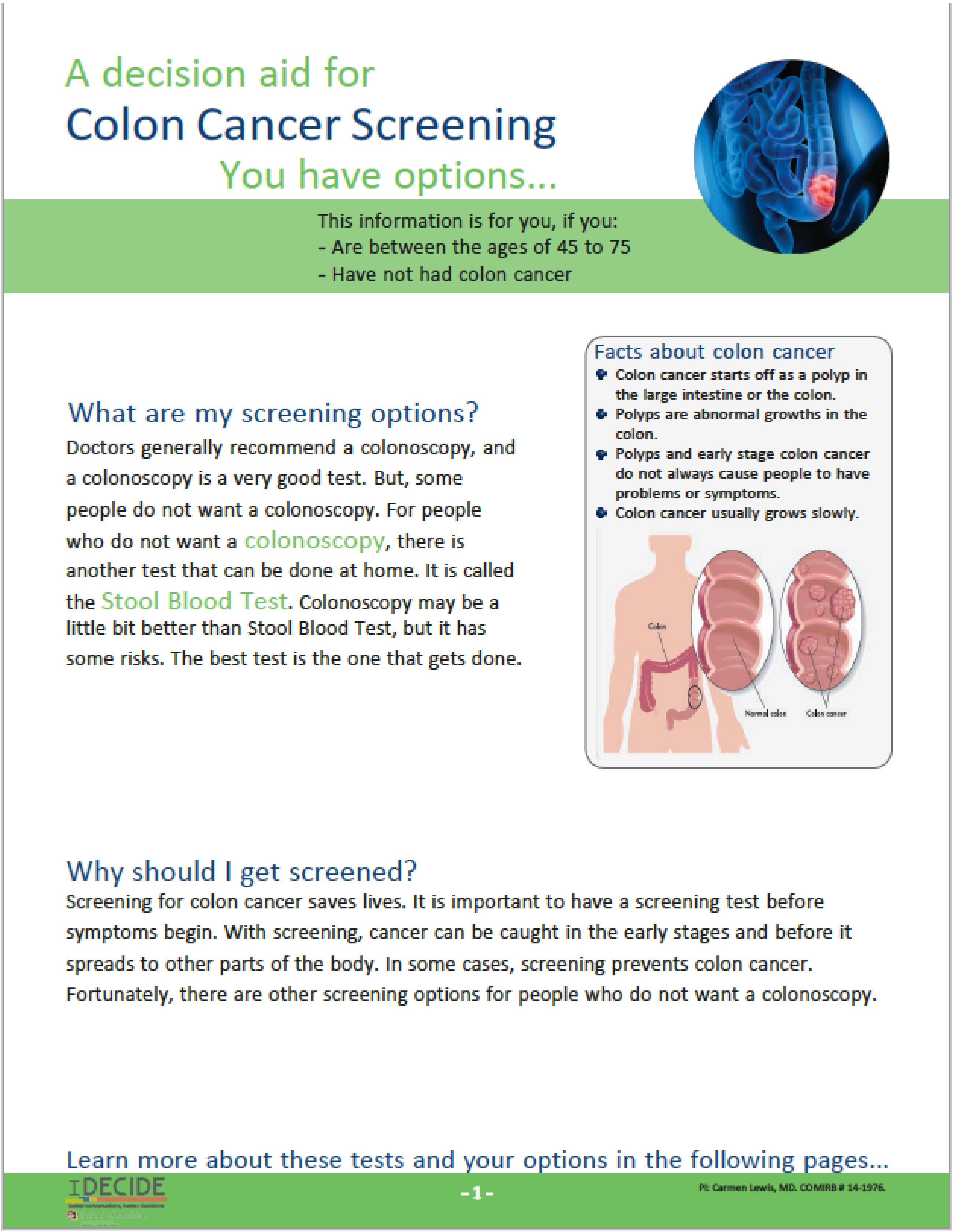


A decision aid for
Colon Cancer Screening
You have options...

Colon Cancer Screening Decision Aid

4 views • Oct 1, 2021

Appendix I: English CRC Screening Patient Decision Aid



A decision aid for
Colon Cancer Screening
You have options...

This information is for you, if you:
- Are between the ages of 45 to 75
- Have not had colon cancer

Facts about colon cancer

- Colon cancer starts off as a polyp in the large intestine or the colon.
- Polyps are abnormal growths in the colon.
- Polyps and early stage colon cancer do not always cause people to have problems or symptoms.
- Colon cancer usually grows slowly.

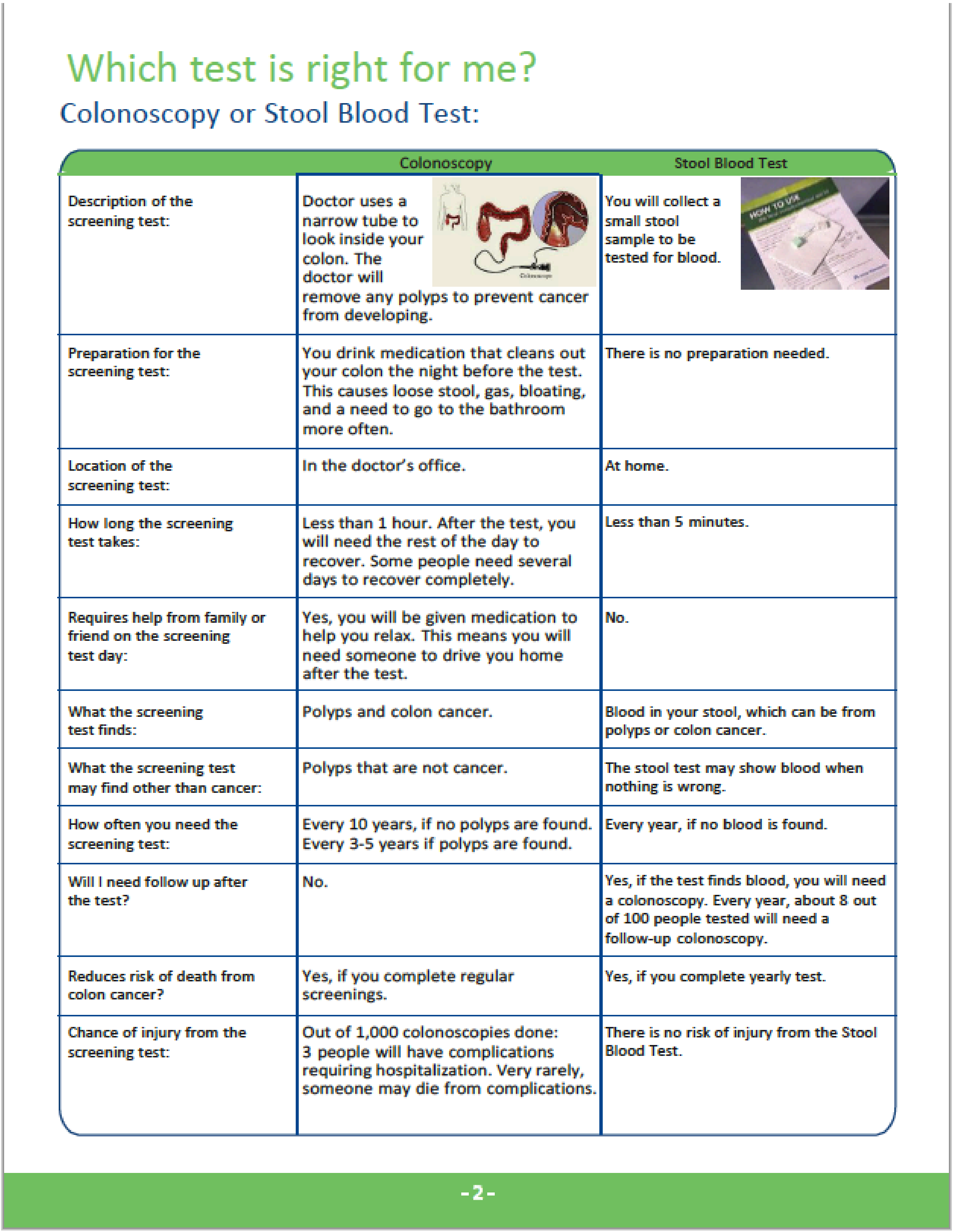
What are my screening options?

Doctors generally recommend a colonoscopy, and a colonoscopy is a very good test. But, some people do not want a colonoscopy. For people who do not want a colonoscopy, there is another test that can be done at home. It is called the Stool Blood Test. Colonoscopy may be a little bit better than Stool Blood Test, but it has some risks. The best test is the one that gets done.

Why should I get screened?

Screening for colon cancer saves lives. It is important to have a screening test before symptoms begin. With screening, cancer can be caught in the early stages and before it spreads to other parts of the body. In some cases, screening prevents colon cancer. Fortunately, there are other screening options for people who do not want a colonoscopy.

Learn more about these tests and your options in the following pages...



Which test is right for me?

Colonoscopy or Stool Blood Test:

	Colonoscopy	Stool Blood Test
Description of the screening test:	Doctor uses a narrow tube to look inside your colon. The doctor will remove any polyps to prevent cancer from developing.	You will collect a small stool sample to be tested for blood.
Preparation for the screening test:	You drink medication that cleans out your colon the night before the test. This causes loose stool, gas, bloating, and a need to go to the bathroom more often.	There is no preparation needed.
Location of the screening test:	In the doctor's office.	At home.
How long the screening test takes:	Less than 1 hour. After the test, you will need the rest of the day to recover. Some people need several days to recover completely.	Less than 5 minutes.
Requires help from family or friend on the screening test day:	Yes, you will be given medication to help you relax. This means you will need someone to drive you home after the test.	No.
What the screening test finds:	Polyps and colon cancer.	Blood in your stool, which can be from polyps or colon cancer.
What the screening test may find other than cancer:	Polyps that are not cancer.	The stool test may show blood when nothing is wrong.
How often you need the screening test:	Every 10 years, if no polyps are found. Every 3-5 years if polyps are found.	Every year, if no blood is found.
Will I need follow up after the test?	No.	Yes, if the test finds blood, you will need a colonoscopy. Every year, about 8 out of 100 people tested will need a follow-up colonoscopy.
Reduces risk of death from colon cancer?	Yes, if you complete regular screenings.	Yes, if you complete yearly test.
Chance of injury from the screening test:	Out of 1,000 colonoscopies done: 3 people will have complications requiring hospitalization. Very rarely, someone may die from complications.	There is no risk of injury from the Stool Blood Test.

Which test is right for me?

Weighing your options:

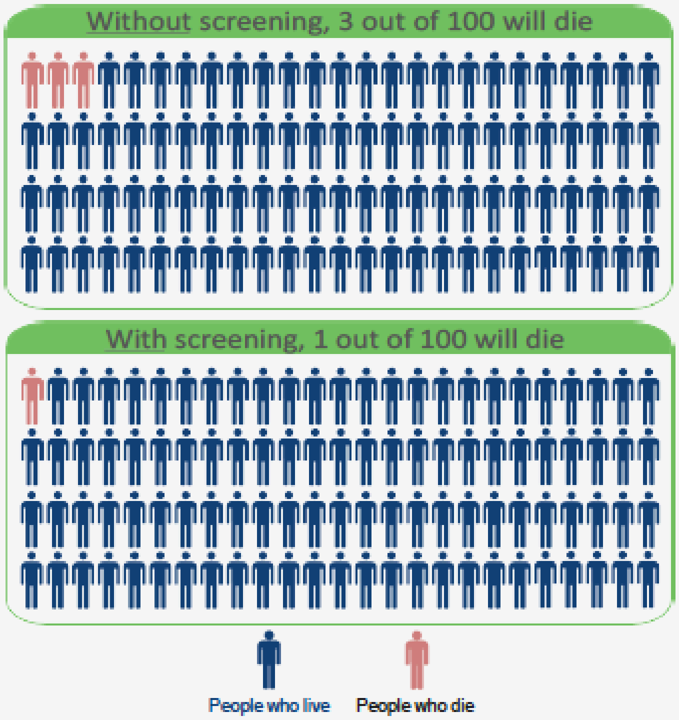
You may decide to have a colonoscopy because...

- » It finds polyps and removes polyps during screening
- » It does not have to be done yearly
- » It does not involve you handling your stool

You may decide to have a stool blood test because...

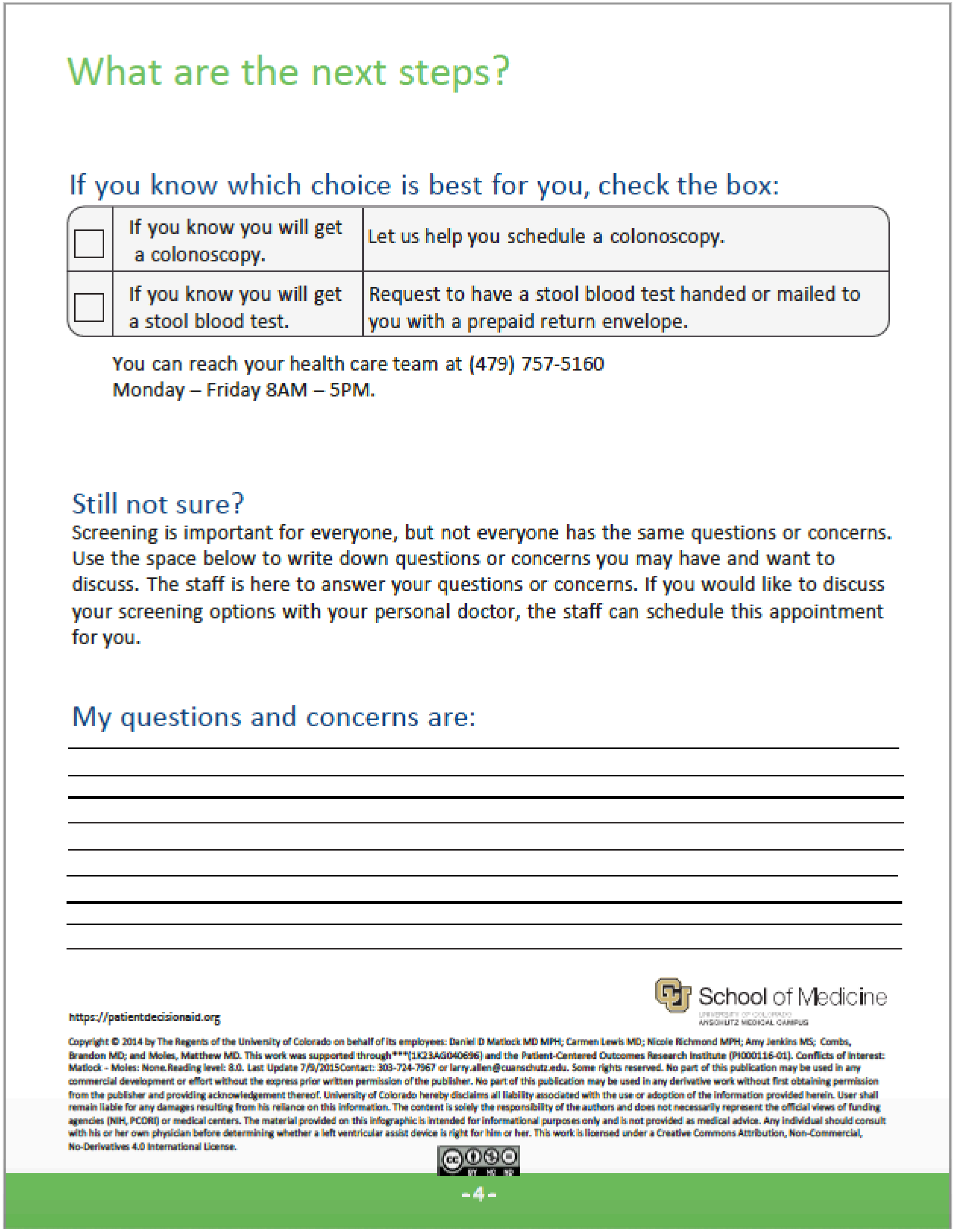
- » There is no risk of injury
- » It is done at home
- » You don't mind doing a yearly test
- » You are willing to have a colonoscopy if the test is positive

How many lives does screening save?



This means that:

- 3 out of every 100 people who do not get screened will die from colon cancer.
- With either type of screening, this goes down to 1 person out of every 100.
- 2 lives are saved with screening.
- In other words, either test lowers your chance of dying from colon cancer by about 64%.



What are the next steps?

If you know which choice is best for you, check the box:

☐	If you know you will get a colonoscopy.	Let us help you schedule a colonoscopy.
☐	If you know you will get a stool blood test.	Request to have a stool blood test handed or mailed to you with a prepaid return envelope.

You can reach your health care team at (479) 757-5160
Monday – Friday 8AM – 5PM.

Still not sure?

Screening is important for everyone, but not everyone has the same questions or concerns. Use the space below to write down questions or concerns you may have and want to discuss. The staff is here to answer your questions or concerns. If you would like to discuss your screening options with your personal doctor, the staff can schedule this appointment for you.

My questions and concerns are:

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Appendix J: Spanish CRC Screening Patient Decision Aid

Ayuda para la toma de decisiones sobre La detección de Cáncer del Colon

Usted tiene opciones...

Esta información le será útil si usted:

- Tiene entre 50 y 75 años de edad
- Nunca ha padecido de cáncer del colon

¿Qué opciones tengo para detectar cáncer del colon ?

Los médicos generalmente recomiendan una colonoscopía, la cual es una prueba muy buena para detectar cáncer en el colon. Sin embargo, algunas personas prefieren evitar una colonoscopía. Para personas que no quieren una colonoscopía, hay otro examen que se puede hacer en casa. Se le conoce como Examen de Sangre en Heces. La colonoscopía es un poco mejor que el Examen de Sangre en Heces pero tiene algunos riesgos. El mejor examen es aquel que se realiza.

Datos sobre el cáncer del colon:

- El cáncer del colon empieza como un pólipo en el intestino grueso o en el colon.
- Un pólipo es un crecimiento anormal de tejido y crece en el colon.
- Los pólipos y el cáncer del colon que están en una etapa temprana no siempre causan problemas o síntomas.
- El cáncer del colon usualmente crece despacio.

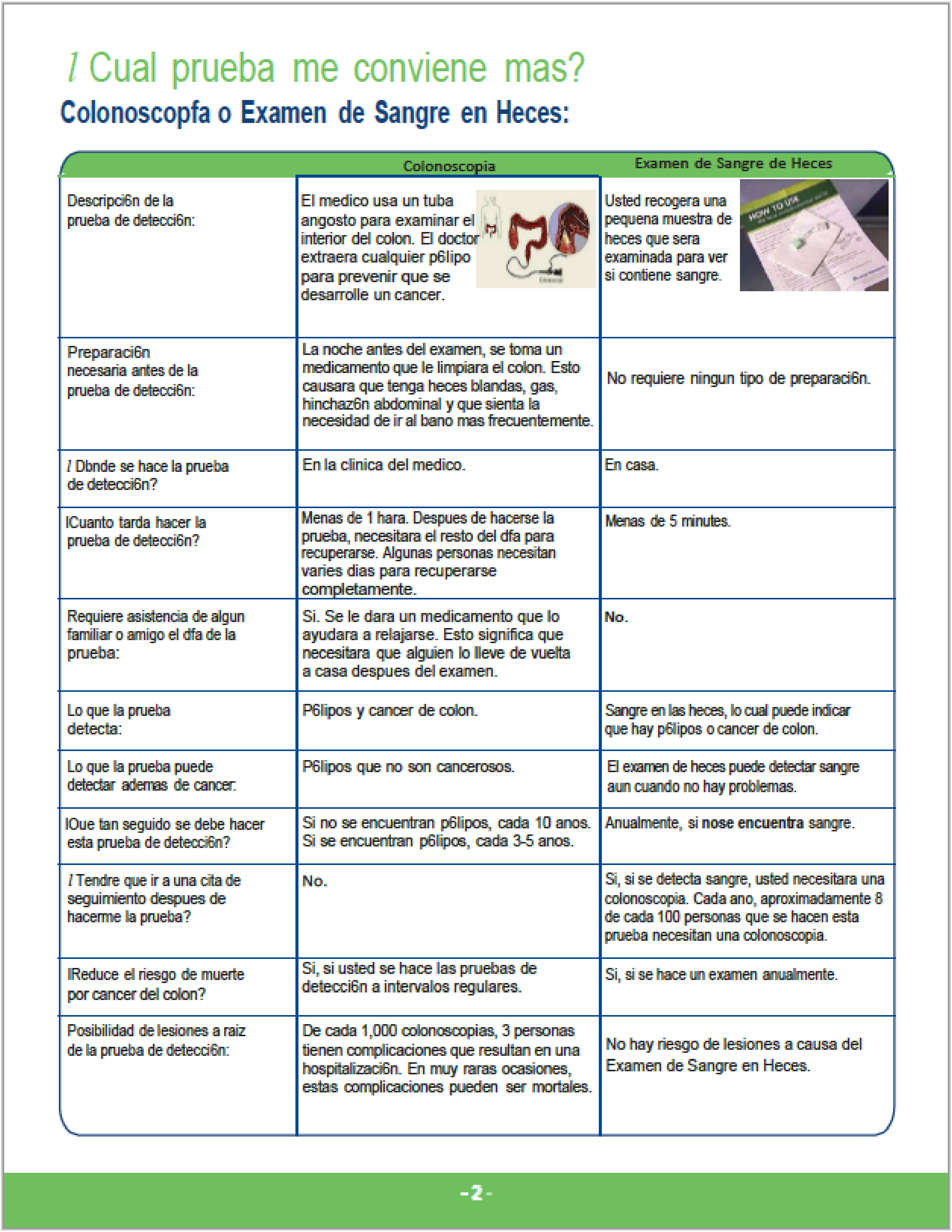
¿Por qué me debería hacer una prueba de detección de cáncer?

Las pruebas de detección para cáncer del colon le pueden salvar la vida. Es importante hacerse una prueba antes de presentar síntomas. Mediante una prueba de detección, el cáncer se puede encontrar cuando aún está en una etapa temprana, antes de que se extienda a otras partes del cuerpo. En algunos casos, hacerse una prueba de detección puede prevenir el desarrollo del cáncer del colon. Afortunadamente, hay otras pruebas de detección para las personas que prefieren evitar la colonoscopía.

Lea más sobre estas pruebas y sus opciones en las siguientes páginas...

- 1 -

PI: Carmen Lewis, MD. COMIRB # 14-1976.



I Cual prueba me conviene mas?

Colonoscopfa o Examen de Sangre en Heces:

	Colonoscopia	Examen de Sangre de Heces
Descripci6n de la prueba de detecci6n:	El medico usa un tuba angosto para examinar el interior del colon. El doctor extraera cualquier p6lipo para prevenir que se desarrolle un cancer.	Usted recogera una pequena muestra de heces que sera examinada para ver si contiene sangre.
Preparaci6n necesaria antes de la prueba de detecci6n:	La noche antes del examen, se toma un medicamento que le limpiara el colon. Esto causara que tenga heces blandas, gas, hinchaz6n abdominal y que sienta la necesidad de ir al bano mas frecuentemente.	No requiere ningun tipo de preparaci6n.
I Dbnde se hace la prueba de detecci6n?	En la clinica del medico.	En casa.
ICuanto tarda hacer la prueba de detecci6n?	Menas de 1 hara. Despues de hacerse la prueba, necesitara el resto del dfa para recuperarse. Algunas personas necesitan varies dias para recuperarse completamente.	Menas de 5 minutes.
Requiere asistencia de algun familiar o amigo el dfa de la prueba:	Si. Se le dara un medicamento que lo ayudara a relajarse. Esto significa que necesitara que alguien lo lleve de vuelta a casa despues del examen.	No.
Lo que la prueba detecta:	P6lipos y cancer de colon.	Sangre en las heces, lo cual puede indicar que hay p6lipos o cancer de colon.
Lo que la prueba puede detectar ademas de cancer:	P6lipos que no son cancerosos.	El examen de heces puede detectar sangre aun cuando no hay problemas.
IOue tan seguido se debe hacer esta prueba de detecci6n?	Si no se encuentran p6lipos, cada 10 anos. Si se encuentran p6lipos, cada 3-5 anos.	Anualmente, si **nose encuentra** sangre.
I Tendre que ir a una cita de seguimiento despues de hacerme la prueba?	No.	Si, si se detecta sangre, usted necesitara una colonoscopia. Cada ano, aproximadamente 8 de cada 100 personas que se hacen esta prueba necesitan una colonoscopia.
IReduce el riesgo de muerte por cancer del colon?	Si, si usted se hace las pruebas de detecci6n a intervalos regulares.	Si, si se hace un examen anualmente.
Posibilidad de lesiones a raiz de la prueba de detecci6n:	De cada 1,000 colonoscopias, 3 personas tienen complicaciones que resultan en una hospitalizaci6n. En muy raras ocasiones, estas complicaciones pueden ser mortales.	No hay riesgo de lesiones a causa del Examen de Sangre en Heces.

l Cual prueba me conviene mas?

Guia para evaluar sus opciones:

Usted podrfa decidirse por una colonoscopfa porque...

- Si durante la prueba se detectan p6lipos, se extraen en el momento
- No se tiene que hacer cada ano
- No requiere tomar una muestra de sus heces

podrfa decidirse por un Examen de Sangre en Heces porque...

- No tiene riesgo de complicaciones
- Se hace en casa
- No le importa tener que hacerse la prueba anualmente
- Esta dispuesto a hacerse una colonoscopfa si el examen resulta positivo

lA cuantas personas le han salvado la vida las pruebas de detecci6n?

Si no se hacen pruebas, falleceran 3 de cada 100 personas

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Si se hacen pruebas, fallecera 1 de cada 100 personas

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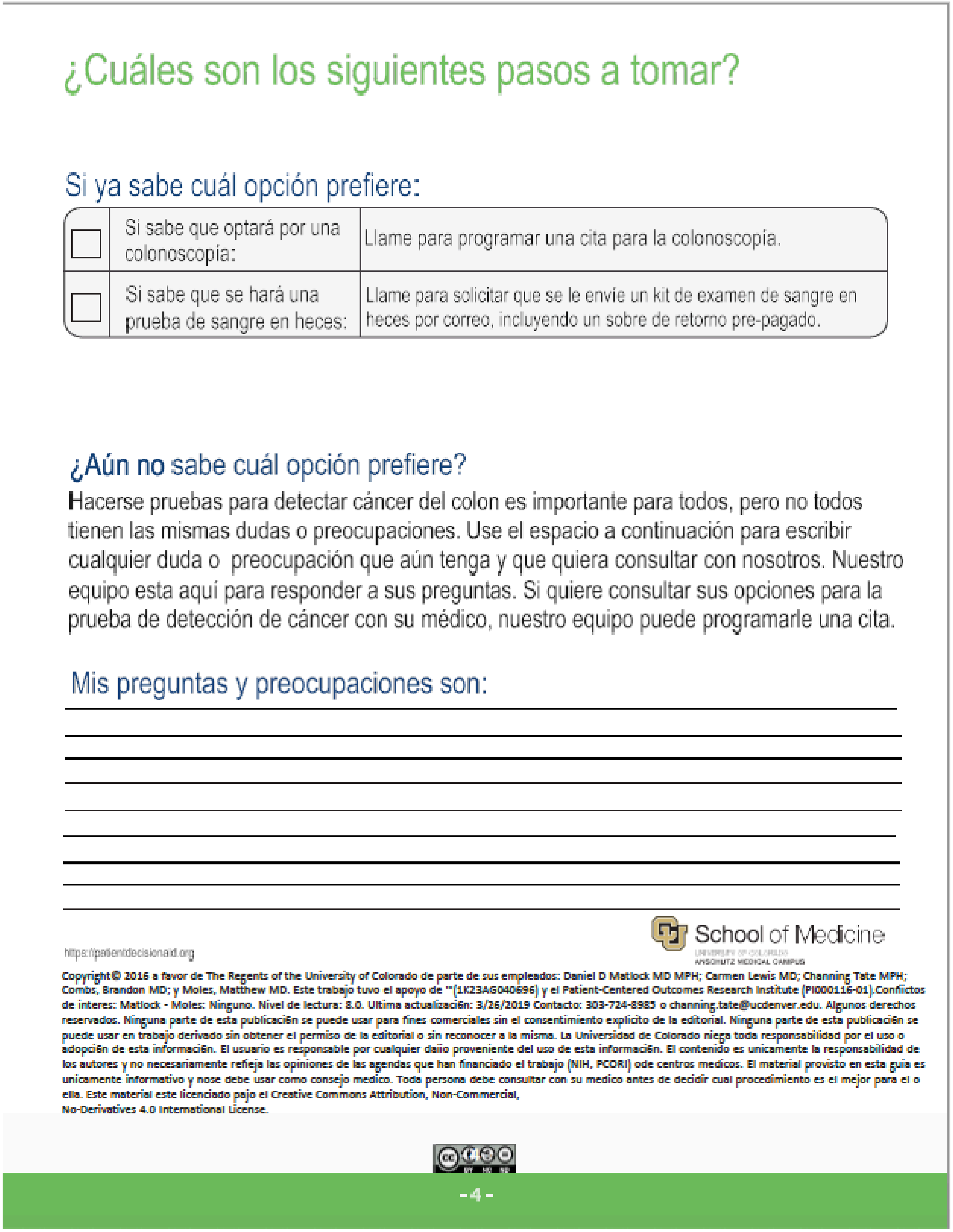
t Gente que vive Gente que fallece

Esto significa que:

- 3 de cada 100 personas que no se hacen una prueba de detecci6n se moriran de cancer del colon.
- **Con cualquier tipo de prueba de detecci6n,** la tasa de mortalidad se reduce a 1 de cada 100 personas.
- Las pruebas de detecci6n le salvan la vida a 2 personas.
- En otras palabras, cualquiera de las pruebas reduce su probabilidad de morirse de cancer del colon en aproximadamente 64%.



¿Cuáles son los siguientes pasos a tomar?

Si ya sabe cuál opción prefiere:

☐	Si sabe que optará por una colonoscopia:	Llame para programar una cita para la colonoscopia.
☐	Si sabe que se hará una prueba de sangre en heces:	Llame para solicitar que se le envíe un kit de examen de sangre en heces por correo, incluyendo un sobre de retorno pre-pagado.

¿Aún no sabe cuál opción prefiere?

Hacerse pruebas para detectar cáncer del colon es importante para todos, pero no todos tienen las mismas dudas o preocupaciones. Use el espacio a continuación para escribir cualquier duda o preocupación que aún tenga y que quiera consultar con nosotros. Nuestro equipo esta aquí para responder a sus preguntas. Si quiere consultar sus opciones para la prueba de detección de cáncer con su médico, nuestro equipo puede programarle una cita.

Mis preguntas y preocupaciones son:

https://patientdecisionaid.org

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Appendix K: English Stages of Change Instrument and Scoring Algorithm

1. Do you engage in any regular health screening such as yearly physical exam, mammograms, diabetes, blood pressure check, blood work for high cholesterol, osteoporosis, prostate cancer, testicular cancer, sexually transmitted infections, or annual skin checks?
   - A. Yes. (Next question is #24)
   - B. No. (Next question skips to #25)
2. For how long have you been engaging in regular health screening? **(End Questionnaire after answering)**
   - A. 6 months or less.
   - B. More than 6 months, but less than 1 year (12 months).
   - C. More than 1 year, but less than 2 years.
   - D. More than 2 years, but less than 3 years.
   - E. More than 3 years, but less than 4 years.
   - F. More than 4 years, but less than 5 years.
   - G. More than 5 years.
3. Do you plan to begin engaging in regular health screening on a regular basis within the next 6 months?
   - A. Yes. (Next question is #26)
   - B. No. **(End Questionnaire here**)
4. Do you plan to begin engaging in regular health screening on a consistent basis within the next 1 month?
   - A. Yes. **(End Questionnaire here)**
   - B. No. **(End Questionnaire here)**

Key for English Stages of Change and Scoring Algorithm:

Precontemplation: If question #23 is No, and question #25 is No.

Contemplation: If questions #23 is No, and question #25 is Yes, and question #26 is No.

Preparation: If question #23 is No, and question #25 is Yes, and question #26 is Yes.

Action: If question #23 is Yes, and question #24 is A.

Maintenance: If question #23 is Yes, and question #24 is B through G.

Appendix L: Spanish Stages of Change Instrument and Scoring Algorithm

1. ¿Realiza alguna evaluación de salud periódica, como un examen físico anual, mamografías, diabetes, control de la presión arterial, análisis de sangre para detectar colesterol alto, osteoporosis, cáncer de próstata, cáncer testicular, infecciones de transmisión sexual o controles cutáneos anuales?
   A. Sí. (La siguiente pregunta es la #24)
   B. No. (La siguiente pregunta pasa a la #25)
2. ¿Durante cuánto tiempo ha estado participando en exámenes de salud regulares? **(Finalice el cuestionario después de responder)**
   A. 6 meses o menos.
   B. Más de 6 meses, pero menos de 1 año (12 meses).
   C. Más de 1 año, pero menos de 2 años.
   D. Más de 2 años, pero menos de 3 años.
   E. Más de 3 años, pero menos de 4 años.
   F. Más de 4 años, pero menos de 5 años.
   G. Más de 5 años.
3. ¿Planea comenzar a participar en exámenes de salud regulares de manera regular dentro de los próximos 6 meses?
   A. Sí. (La siguiente pregunta es la #26)
   B. No. **(Finalice el cuestionario aquí)**
4. ¿Planea comenzar a participar en exámenes de salud regulares de manera constante en el próximo mes?
   A. Sí. **(Finalizar el cuestionario aquí)**
   B. No. **(Finalizar el cuestionario aquí)**

Clave para las etapas de cambio en español y el algoritmo de puntuación:

Precontemplación: Sí la pregunta #23 es No, y la pregunta #25 es No.

Contemplación: Sí la pregunta #23 es No, y la pregunta #25 es Sí, y la pregunta #26 es No.

Preparación: Sí la pregunta #23 es No, la pregunta #25 es Sí, y la pregunta #26 es Sí.

Acción: Sí la pregunta #23 es Sí, y la pregunta #24 es A.

Mantenimiento: Sí la pregunta #23 es Sí, y la pregunta #24 es B a G.

Appendix M: English CRC Screening Questionnaire

1. Do you identify as Latino or Hispanic? (Hard stop when the participant answers “No.”).
   A. Yes.
   B. No.
2. Are you aged between 45 and 75 years? (Hard stop when the participant answers “No.”).
   A. Yes.
   B. No.
3. To your knowledge, are you currently up to date on colorectal cancer screening? (Hard stop when the participant answers “Yes.”).
   A. Yes.
   B. No.
   C. I don’t know.
4. Please type or write your age below.
   __________.
5. What is your primary language spoken?
   A. English.
   B. Spanish.
6. Which gender do you identify as?
   A. Male.
   B. Female.
   C. Prefer not to answer.
7. What is the last grade you finished?
   __________.
8. Do you currently have health insurance?
   A. Yes.
   B. Yes, but I have a high deductible.
   C. No.
9. Are you currently employed?

A. Yes.

B. No.

10. How much money do you make each year?

A. Under $20,000.

B. Between $20,001 and $35,000.

C. Between $35,001 and $50,000.

D. Between $50,001 and $65,000.

E. Over $65,000.

F. Prefer not to answer.

11. Have you ever had a test for colorectal cancer? (If answer is “Yes,” then questionnaire moves to question 12.).

A. Yes.

B. No.

C. I don’t know.

12. Please mark the colorectal cancer tests you have had in the past. (Option for multiple boxes to be checked).

A. I submitted a stool (poop) sample.

  a. Fecal Occult Blood Test (FOBT).

  b. Fecal Immunochemical Test (FIT).

  c. Cologuard® (FIT-DNA).

B. I was put to sleep and had a test.

  a. Flexible Sigmoidoscopy.

  b. Flexible Colonoscopy.

  c. I don’t know.

C. Other: (Please type or write your answer below).

____.

D. I don’t know.

13. At what age do doctors usually recommend people start getting regular tests for colon cancer?
    A. 40.
    B. 45.
    C. 50.
    D. 60.
14. You may not know the exact number, but please take your best guess. Out of every 100 people, about how many will **get** colon cancer some time in their lives? Please mark the number that you think is closest to the correct answer.
    A. 2.
    B. 4.
    C. 14.
    D. 24.
    E. 43.
15. Does having a colon cancer test result that is **not** normal always mean that a person has colon cancer?
    A. Yes.
    B. No.
16. How often do serious problems, such as bleeding or a tear in the colon, happen as a result of a colonoscopy?
    A. Usually.
    B. Sometimes.
    C. Rarely.
    D. Never.
17. For a person with an average risk for colon cancer, which test do doctors recommend be done <u>every year to every three years</u>?
    A. Stool (Poop)-Based Test.
    B. Colonoscopy
    C. Sigmoidoscopy.
    D. CT Scan.

18. For a person with an average risk for colon cancer, which test do doctors recommend be done <u>every 10 years</u>?
    - A. Stool (Poop)-Based Test.
    - B. Colonoscopy.
    - C. Sigmoidoscopy.
    - D. CT Scan.
19. How does regular testing for colon cancer change the chances that a person will die from colon cancer?
    - A. <u>Increases</u> the chance of dying from colon cancer.
    - B. <u>Decreases</u> the chance of dying from colon cancer.
    - C. <u>Does not change</u> the chance of dying from colon cancer.
20. Which colon cancer test is least likely to **miss** a cancer?
    - A. Stool (Poop)-Based Test.
    - B. Colonoscopy.
    - C. Sigmoidoscopy.
    - D. CT Scan.
21. If the results of a colon cancer test are normal, is it possible that a person could still have colon cancer?
    - A. Yes.
    - B. No.
22. You may not know the exact number, but please take your best guess. Out of every 100 people, about how many will **die** of colon cancer? Please mark the number that you think is closest to the correct answer.
    - A. 3.
    - B. 8.
    - C. 15.
    - D. 24.
    - E. 30.

Appendix N: Spanish CRC Screening Questionnaire

Cuestionarios previos a la intervención de detección de cáncer colorrectal (CRC)

1. ¿Te identificas como latino o hispano? (Parada brusca cuando el participante responde "No").
    - A. Sí.
    - B. No.
2. ¿Tienes entre 45 y 75 años? (Parada brusca cuando el participante responde "No").
    - A. Sí.
    - B. No.
3. Hasta donde usted sabe, ¿está actualizado actualmente en las pruebas de detección del cáncer colorrectal? (Deténgase cuando el participante responda "Sí").
    - A. Sí.
    - B. No.
    - C. No sé.
4. Escriba su edad a continuación.

    __________.
5. ¿Cuál es su idioma principal?
    - A. Inglés.
    - B. Español.
6. ¿Con qué género te identificas?
    - A. Masculino.
    - B. Femenino.
    - C. Prefiero no responder.
7. ¿Cuál es el último grado que terminó?

    __________.
8. ¿Tiene seguro médico?
    - A. Sí.
    - B. Sí, pero tengo un deducible alto.
    - C. No.

9. ¿Está trabajando actualmente?
    A. Sí.
    B. No.
10. ¿Cuánto dinero gana cada año?
    A. Menos de $20,000.
    B. Entre $20,001 y $35,000.
    C. Entre $35,001 y $50,000.
    D. Entre $50,001 y $65,000.
    E. Más de $65,000.
    F. Prefiero no responder.
11. ¿Alguna vez le hicieron una prueba de cáncer colorrectal? (Si la respuesta es "Sí", el cuestionario pasa a la pregunta 12.).
    A. Sí.
    B. No.
    C. No sé.
12. Marque las pruebas de cáncer colorrectal que se le hayan realizado en el pasado. (Opción para marcar varias casillas).
    A. Envié una muestra de heces (popo).
        a. Prueba de sangre oculta en heces (FOBT).
        b. Prueba inmunoquímica fecal (FIT).
        c. Cologuard® (FIT-DNA).
    B. Me pusieron a dormir y me hicieron una prueba.
        a. Sigmoidoscopia flexible.
        b. Colonoscopia flexible.
        c. No sé.
    C. Otro: (Por favor escriba su respuesta a continuación).
    ____.
    D. No sé.

13. ¿A qué edad suelen recomendar los médicos que las personas comiencen a hacerse pruebas periódicas para detectar el cáncer de colon?
    A. 40.
    B. 45.
    C. 50.
    D. 60.
14. Es posible que no sepa el número exacto, pero adivine lo mejor que pueda. De cada 100 personas, ¿aproximadamente cuántas contraerán cáncer de colon en algún momento de su vida? Marque el número que crea que se acerca más a la respuesta correcta.
    A. 2.
    B. 4.
    C. 14.
    D. 24.
    E. 43.
15. ¿Tener un resultado de prueba de cáncer de colon que no es normal siempre significa que una persona tiene cáncer de colon?
    A. Sí.
    B. No.
16. ¿Con qué frecuencia ocurren problemas graves, como sangrado o desgarro en el colon, como resultado de una colonoscopia?
    A. Generalmente.
    B. Algunas veces.
    C. Casi nunca.
    D. Nunca.
17. Para una persona con un riesgo promedio de cáncer de colon, ¿qué prueba recomiendan los médicos que se realice cada año o cada tres años?
    A. Prueba basada en heces (popo).
    B. Colonoscopia.
    C. Sigmoidoscopia.
    D. Tomografía computarizada (CT escanear).

18. Para una persona con un riesgo promedio de cáncer de colon, ¿qué prueba recomiendan los médicos que se realice cada 10 años?
    - A. Prueba basada en heces (popo).
    - B. Colonoscopia.
    - C. Sigmoidoscopia.
    - D. Tomografía computarizada (CT escanear).
19. ¿Cómo cambian las probabilidades de que una persona muera de cáncer de colon con las pruebas regulares para el cáncer de colon?
    - A. Aumenta la posibilidad de morir de cáncer de colon.
    - B. Disminuye la posibilidad de morir de cáncer de colon.
    - C. No cambia la posibilidad de morir de cáncer de colon.
20. ¿Qué prueba de cáncer de colon tiene menos probabilidades de no detectar un cáncer?
    - A. Prueba basada en heces (popo).
    - B. Colonoscopia.
    - C. Sigmoidoscopia.
    - D. Tomografía computarizada (CT escanear).
21. Si los resultados de una prueba de cáncer de colon son normales, ¿es posible que una persona aún pueda tener cáncer de colon?
    - A. Sí.
    - B. No.
22. Es posible que no sepa el número exacto, pero adivine lo mejor que pueda. De cada 100 personas, ¿aproximadamente cuántas morirán de cáncer de colon? Marque el número que crea que se acerca más a la respuesta correcta.
    - A. 3.
    - B. 8.
    - C. 15.
    - D. 24.
    - E. 30.

Appendix O: English Informed Consent Form

COLORECTAL CANCER SCREENING IN THE LATINO POPULATION AT A FAMILY MEDICINE CLINIC: A QUALITY IMPROVEMENT PROJECT

PRINCIPAL INVESTIGATOR

Michael S. Vinson
University of Arkansas Eleanor Mann School of Nursing
606 N. Razorback Rd.
1-479-575-3904
mvinson@uark.edu

FACULTY ADVISOR

Dr. Hope Ballentine
University of Arkansas Eleanor Mann School of Nursing
606 N. Razorback Rd.
1-479-575-5770
hopeb@uark.edu

PURPOSE OF PROJECT

You are being asked to take part in a DNP project. Before you decide to participate in this project, it is important that you understand why the project is being done and what it will involve. Please read the following information carefully. Please ask the principal investigator if there is anything that is not clear or if you need more information.

The purpose of this project is to increase colorectal cancer (CRC) screening in the Latino population by offering an at-home stool collection kit in addition to a colonoscopy.

This project's aim is to increase participation of CRC screening in Latino patients.

PROJECT PROCEDURES

You will be asked to take two initial questionnaires to measure baseline understanding and knowledge of CRC and CRC screening and gauge readiness for health behavior change. Each questionnaire will be delivered in English or Spanish based on your language preference.

The first questionnaire is divided into three sections. Section one will ask three qualifying questions to ensure you are eligible to be screened for CRC for this study. Section two will ask nine sociodemographic questions about your age, primary language spoken, gender, education, health insurance, employment, income, and history of CRC screening. Section three will consist of 10 questions and ask you about CRC and CRC screening. Time spent on this questionnaire is estimated to take between five and 10 minutes.

The second questionnaire is four questions and will plot readiness for behavior change. It will take approximately one or two minutes to complete.

Following the two questionnaires, you will be asked to watch an educational video in English or Spanish depending on your preferred language that reviews CRC and the benefits and risks of CRC screening. The video will take approximately six minutes and 30 seconds to finish. After completion of the video, you will be given an English-Spanish patient decision aid that illustrates the benefits and risks of at-home stool testing and colonoscopy screening methods. Questions or concerns you have about CRC and CRC screening are encouraged during this process.

Following review of the patient decision aid, you will receive the same two questionnaires completed earlier, and will take approximately five to 10 minutes to finish. These will gather information about your understanding of CRC and CRC screening and measure motivation for change after the study intervention.

If you choose to screen using the FIT, you will be given a kit in this clinic to take home and mail back when it is completed. If you choose to screen using the FIT-DNA, you will be given an order requisition form in this clinic to request a kit and mail back once you have sealed and completed the test. If you choose to screen with a colonoscopy, your healthcare provider will place a referral in your chart, and you will receive a call from an employee at the gastrointestinal (GI) clinic to schedule your screening test at your convenience.

In addition to the questionnaire data gathered during the clinic visit, data will also be collected through chart review after one month from clinic visit to determine if screening has been completed or scheduled.

RISKS

The risks of participation of this study are small but include unintentional disclosure of your health information. All risks for disclosure of personal and health information will be reduced through the confidentiality procedures outlined below.

BENEFITS

The benefits to participating in this study include increased understanding of CRC and several methods to CRC screening, potential detection of CRC, and positive preventive health behavior change. These provide substantial net benefit in reducing mortality caused by CRC and increase life-years.

CONFIDENTIALITY

Your responses to the surveys will be anonymous. Please do not write any identifying information on your surveys.

To assure patient confidentiality, it is requested that data is de-identified when provided to the principal investigator. The principal investigator will keep data in a computer that is password protected. Notes, interview transcriptions, and any other identifying participant information will be secured in a locked file cabinet in the personal possession of the principal investigator.

Participant data will be kept confidential to the extent allowed by law and University policy. The researcher is legally obligated to report specific incidents which include, but may not be limited to, incidents of abuse and suicide risk.

CONTACT INFORMATION

If you have questions at any time about this project, or you experience adverse effects as the result of participating in this project, you may contact the principal investigator, whose contact information is provided on the first page. If you have questions regarding your rights as a study participant, or if problems arise which you do not feel you can discuss with the Principal Investigator, please contact the University of Arkansas Institutional Review Board at 1-479-575-2208.

VOLUNTARY PARTICIPATION

Your participation in this project is voluntary. It is your decision whether or not to take part in this project. If you decide to take part in this project, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this project will not affect the relationship you have, if any, with the principal investigator. If you withdraw from the project before data collection is completed, your data will be returned to you or destroyed.

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this project.

Participant's signature _______________________________ Date __________

Investigator's signature ______________________________ Date __________

Appendix P: Spanish Informed Consent Form

EVALUACIÓN DE CÁNCER COLORECTAL EN LA POBLACIÓN LATINA EN UNA CLÍNICA DE MEDICINA FAMILIAR: UN PROYECTO DE MEJORAMIENTO DE LA CALIDAD

INVESTIGADOR PRINCIPAL

Michael S. Vinson
Universidad de Arkansas Eleanor Mann School of Nursing
606 N. Razorback Rd.
1-479-575-3904

CONSEJERO DE LA FACULTAD

Dr. Hope Ballentine
Universidad de Arkansas Eleanor Mann School of Nursing
606 N. Razorback Rd.
1-479-575-5770

PROPÓSITO DEL PROYECTO

Se le pide que participe en un proyecto del DNP. Antes de que decida participar en este proyecto, es importante que comprenda por qué se está realizando el proyecto y qué implicará. Por favor lea la siguiente información cuidadosamente. Pregúntele al investigador principal si hay algo que no esté claro o si necesita más información.

El propósito de este proyecto es aumentar las pruebas de detección del cáncer colorrectal (CCR) en la población latina al ofrecer un kit de recolección de heces en el hogar además de una colonoscopia.

El objetivo de este proyecto es aumentar la participación de la detección de CCR en pacientes latinos.

PROCEDIMIENTOS DEL PROYECTO

Se le pedirá que tome dos cuestionarios iniciales para medir la comprensión y el conocimiento sobre el CRC y la detección del CRC y evaluar la preparación para el cambio de comportamiento de salud. Cada cuestionario se entregará en inglés o español según su preferencia de idioma.

El primer cuestionario se divide en tres secciones. La sección uno hará tres preguntas de calificación para asegurarse de que sea elegible para ser evaluado para el estudio de CRC. La sección dos hará nueve preguntas sociodemográficas sobre su edad, idioma principal hablado, género, educación, seguro médico, empleo, ingresos e historial de detección de CRC. La sección tres constará de 10 preguntas y le preguntará acerca de las pruebas de detección de CRC. Se estima que el tiempo dedicado a este cuestionario es de entre cinco y diez minutos.

El segundo cuestionario consta de cuatro preguntas y trazará la preparación para el cambio de comportamiento. Tardará aproximadamente uno o dos minutos en completar.

Después de los dos cuestionarios, se le pedirá que vea un video educativo en inglés o español según su idioma preferido que revise el CCR y los beneficios y riesgos de la detección del CCR. El video tardará aproximadamente seis minutos y 30 segundos en terminar. Después de completar el video, se le proporcionará una ayuda para la decisión del paciente en inglés y español que ilustra los beneficios y riesgos de las pruebas de heces en el hogar y los métodos de detección de colonoscopia. Durante este proceso, se alientan las preguntas o inquietudes que tenga sobre el CRC y la detección del CRC.

Después de la revisión de la ayuda para la toma de decisiones del paciente, recibirá los mismos dos cuestionarios completados anteriormente y tardará aproximadamente de cinco a 10 minutos en completarlos. Estos recopilarán información sobre su comprensión de la detección del CCR y el CCR y medirán la motivación para el cambio después de la intervención del estudio.

Si opta por la detección mediante el FIT, se le entregará un kit en esta clínica para que lo lleve a casa y lo devuelva por correo cuando lo complete. Si elige realizar la prueba con el FIT-DNA, se le entregará un formulario de solicitud de pedido en esta clínica para solicitar un kit y devolverlo por correo una vez que haya sellado y completado la prueba. Si elige realizar una prueba de detección con una colonoscopia, su proveedor de atención médica colocará una referencia en su expediente y recibirá una llamada de un empleado de la clínica gastrointestinal (GI) para programar su prueba de detección a su conveniencia.

Además de los datos del cuestionario recopilados durante la visita a la clínica, también se recopilarán datos a través de la revisión de la historia clínica después de un mes desde la visita a la clínica para determinar si se ha completado o programado la detección.

RIESGOS

Los riesgos de participar en este estudio son pequeños pero incluyen la divulgación involuntaria de su información médica. Todos los riesgos de divulgación de información personal y de salud se reducirán mediante los procedimientos de confidencialidad que se describen a continuación.

BENEFICIOS

Los beneficios de participar en este estudio incluyen una mayor comprensión del CCR y varios métodos para la detección del CCR, la posible detección del CCR y un cambio positivo en el comportamiento de salud preventiva. Estos proporcionan un beneficio neto sustancial en la reducción de la mortalidad causada por el CCR y aumentan los años de vida.

CONFIDENCIALIDAD

Sus respuestas a las encuestas serán anónimas. No escriba ninguna información de identificación en sus encuestas.

Para garantizar la confidencialidad del paciente, se solicita que los datos anulen la identificación cuando se proporcionen al investigador principal. El investigador principal mantendrá los datos en una computadora protegida con contraseña. Las notas, las transcripciones de las entrevistas y cualquier otra información que identifique al participante se guardarán en un archivador con llave en posesión personal del investigador principal.

Los datos de los participantes se mantendrán confidenciales en la medida permitida por la ley y la política de la Universidad. El investigador tiene la obligación legal de informar incidentes específicos que incluyen, entre otros, incidentes de abuso y riesgo de suicidio.

INFORMACIÓN DE CONTACTO

Si tiene preguntas en cualquier momento sobre este proyecto, o experimenta efectos adversos como resultado de su participación en este proyecto, puede comunicarse con el investigador principal, cuya información de contacto se proporciona en la primera página. Si tiene preguntas sobre sus derechos como participante del estudio, o si surgen problemas que no cree que pueda discutir con el investigador principal, comuníquese con la Junta de Revisión Institucional de la Universidad de Arkansas al 1-479-575-2208.

PARTICIPACIÓN VOLUNTARIA

Su participación en este proyecto es voluntaria. Es su decisión participar o no en este proyecto. Si decide participar en este proyecto, se le pedirá que firme un formulario de consentimiento. Después de firmar el formulario de consentimiento, aún puede retirarse en cualquier momento y sin dar una razón. Retirarse de este proyecto no afectará la relación que tenga, si la tiene, con el investigador principal. Si se retira del proyecto antes de que se complete la recopilación de datos, sus datos le serán devueltos o destruidos.

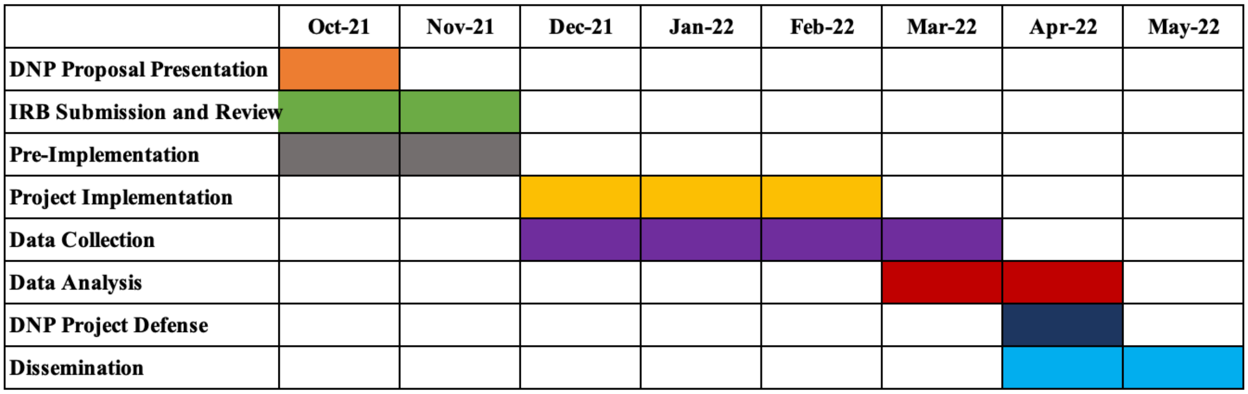
CONSENTO

He leído y entiendo la información proporcionada y he tenido la oportunidad de hacer preguntas. Entiendo que mi participación es voluntaria y que soy libre de retirarme en cualquier momento, sin dar una razón y sin costo alguno. Entiendo que recibiré una copia de este formulario de consentimiento. Acepto voluntariamente participar en este proyecto.

Firma del participante ______________________________ Fecha __________

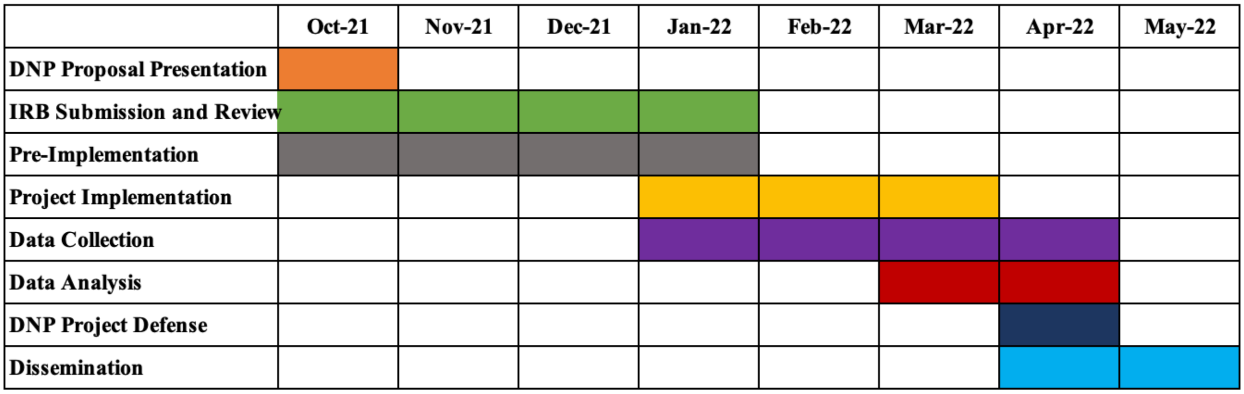
Firma del investigador _____________________________ Fecha ___________

Appendix Q: Gantt Charts



	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22
DNP Proposal Presentation	■							
IRB Submission and Review	■	■						
Pre-Implementation	■	■						
Project Implementation			■	■	■			
Data Collection			■	■	■	■		
Data Analysis						■	■	
DNP Project Defense							■	
Dissemination							■	■

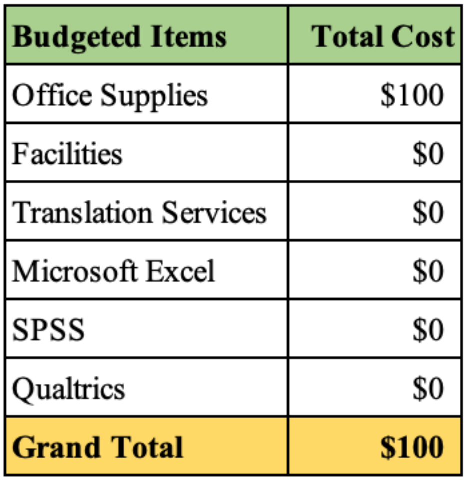
Initial Gantt Chart



	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22
DNP Proposal Presentation	■							
IRB Submission and Review	■	■	■	■				
Pre-Implementation	■	■	■	■				
Project Implementation				■	■	■		
Data Collection				■	■	■	■	
Data Analysis						■	■	
DNP Project Defense							■	
Dissemination							■	■

Final Gantt Chart

Appendix R: Project Budget Table



Budgeted Items	**Total Cost**
Office Supplies	$100
Facilities	$0
Translation Services	$0
Microsoft Excel	$0
SPSS	$0
Qualtrics	$0
Grand Total	**$100**

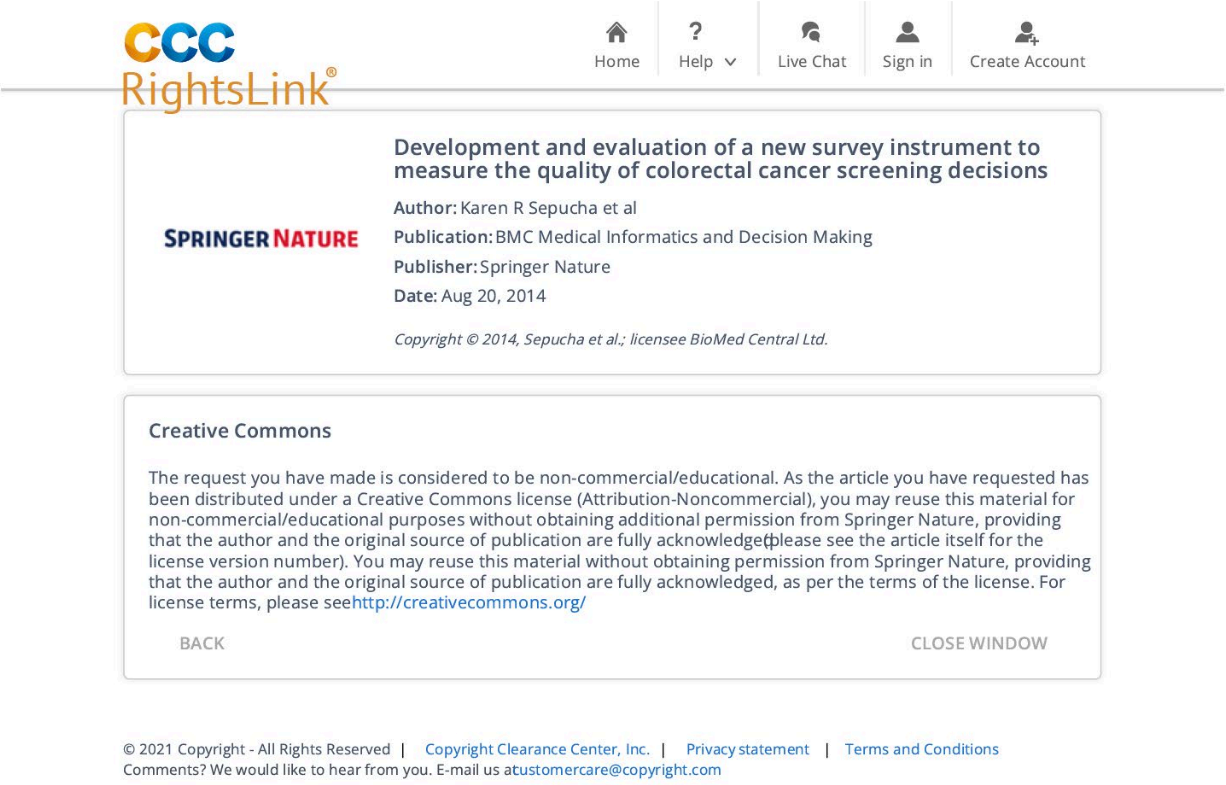
Appendix S: PDSA Cycles

PDSA Discussion Board Worksheet		
OBJECTIVE: Double number of participants by January 28th, 2022.		
Change Idea: Increase the number of participants in project.		
	Person Responsible	Due Date
Plan: Meet with Dr. Hurtado and Lois to detail why patients are not willing to participate and form plan to increase number.	Principal Investigator (PI), Dr. Hurtado, Lois Brinkley	1/24/22
Do: Conduct meeting with Dr. Hurtado and Lois. Evaluate current method of recruitment.	PI, Dr. Hurtado, Lois Brinkley	1/24/22
Study: Dr. Hurtado was not explaining the project thoroughly to the patients that met eligibility requirements. Less effort was put into communication with patients felt would not complete CRC screening for my project.	PI, Dr. Hurtado, Lois Brinkley	1/24/22
Act: Continue to write on eligible patients to remind Dr. Hurtado of screening. Have Dr. Hurtado take a different approach to asking patients to be a part of	PI, Dr. Hurtado	1/24/22

PDSA Discussion Board Worksheet		
OBJECTIVE: Find solution to increase number of participants due to clinic closure by February 1st, 2022.		
Change Idea: Increase the number of participants in project.		
	Person Responsible	Due Date
Plan: Meet with Dr. Hurtado Lois to work through clinic closing from staff illness.	Principal Investigator (PI), Dr. Hurtado, Lois Brinkley	1/31/22
Do: Conduct meeting with Dr. Hurtado and Lois to examine solutions for participant recruitment after return from illness.	PI, Dr. Hurtado, Lois Brinkley	1/31/22
Study: A plan was prepared and developed to call Medicare patients who are due for their annual wellness visits who meet the project requirements. Lois will create a list of potential participants who met the requirements and try to schedule them for next week.	PI, Dr. Hurtado, Lois Brinkley	2/4/22
Act: Keep a rolling list of Medicare patients who need their annual wellness visit, need CRC screening completed, and schedule them for a visit to the clinic.	PI, Lois Brinkley	2/4/22

PDSA Discussion Board Worksheet		
OBJECTIVE: Reduce number of minutes to complete individual implemention of project to reflect goal by February 11th, 2022.		
Change Idea: Shorten amount of time it takes to implement project to align with process meausre goal of 25 minutes.		
	Person Responsible	Due Date
Plan: Find area that will allow for reduction in total number of minutes spent with participant during implementation phase of project.	Principal Investigator (PI)	2/7/22
Do: Create run chart of process measure to track number of minutes. Eliminate online questionnaire practice and move to paper format only.	PI	2/6/22
Study: The first couple participants of the project notably elasped the goal of 25 minutes for implementation. A run chart was created to track and monitor progress of implementation time. Some participants were struggling with the online format of the questionnaires, so a switch to paper was trialed resulting in a decrease in implemenation time. Prior median was 29.5 minutes, now 23 minutes.	PI	2/11/22
Act: Retain use of paper questionnaires to cut length of implementation throughout project.	PI	2/11/22

Appendix T: CRC Screening Questionnaire Copyright Clearance



Development and evaluation of a new survey instrument to measure the quality of colorectal cancer screening decisions

Author: Karen R Sepucha et al

Publication: BMC Medical Informatics and Decision Making

Publisher: Springer Nature

Date: Aug 20, 2014

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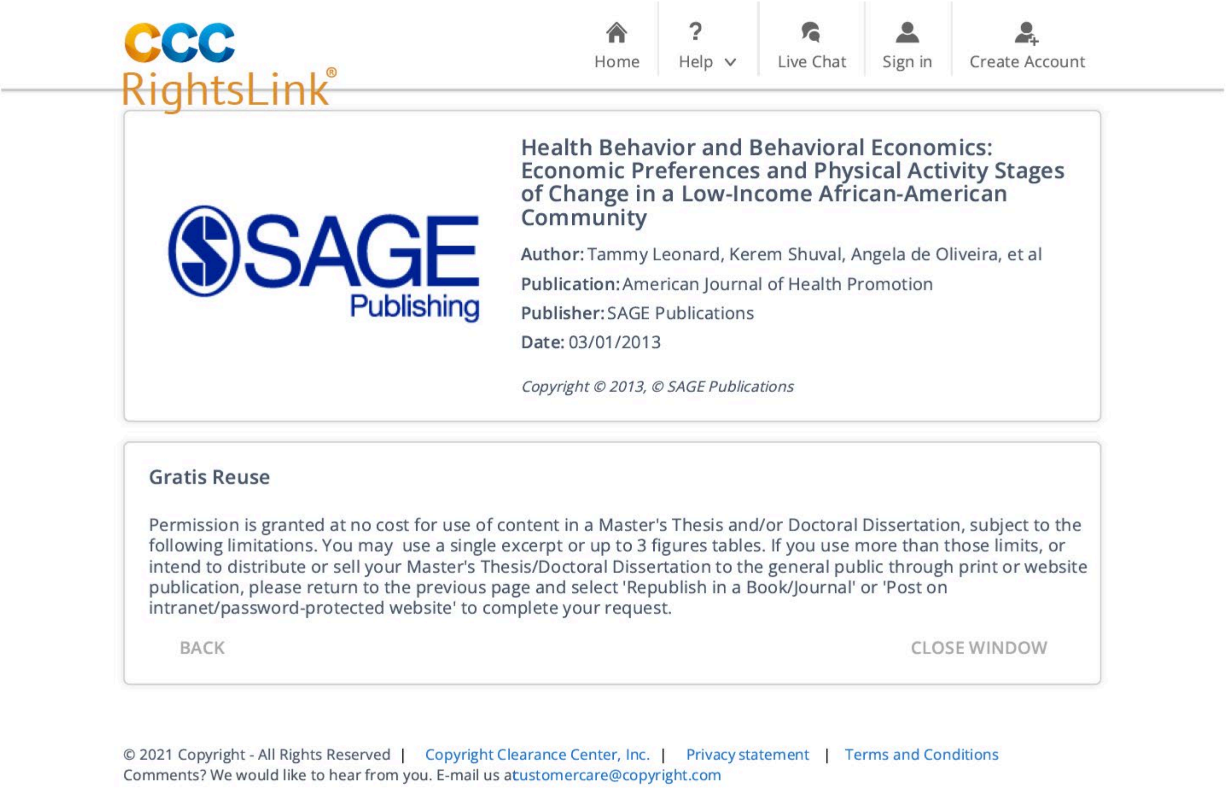
Comments? We would like to hear from you. E-mail us atustomercare@copyright.com

Appendix U: Stages of Change Instrument Copyright Clearance



Health Behavior and Behavioral Economics: Economic Preferences and Physical Activity Stages of Change in a Low-Income African-American Community

Author: Tammy Leonard, Kerem Shuval, Angela de Oliveira, et al

Publication: American Journal of Health Promotion

Publisher: SAGE Publications

Date: 03/01/2013

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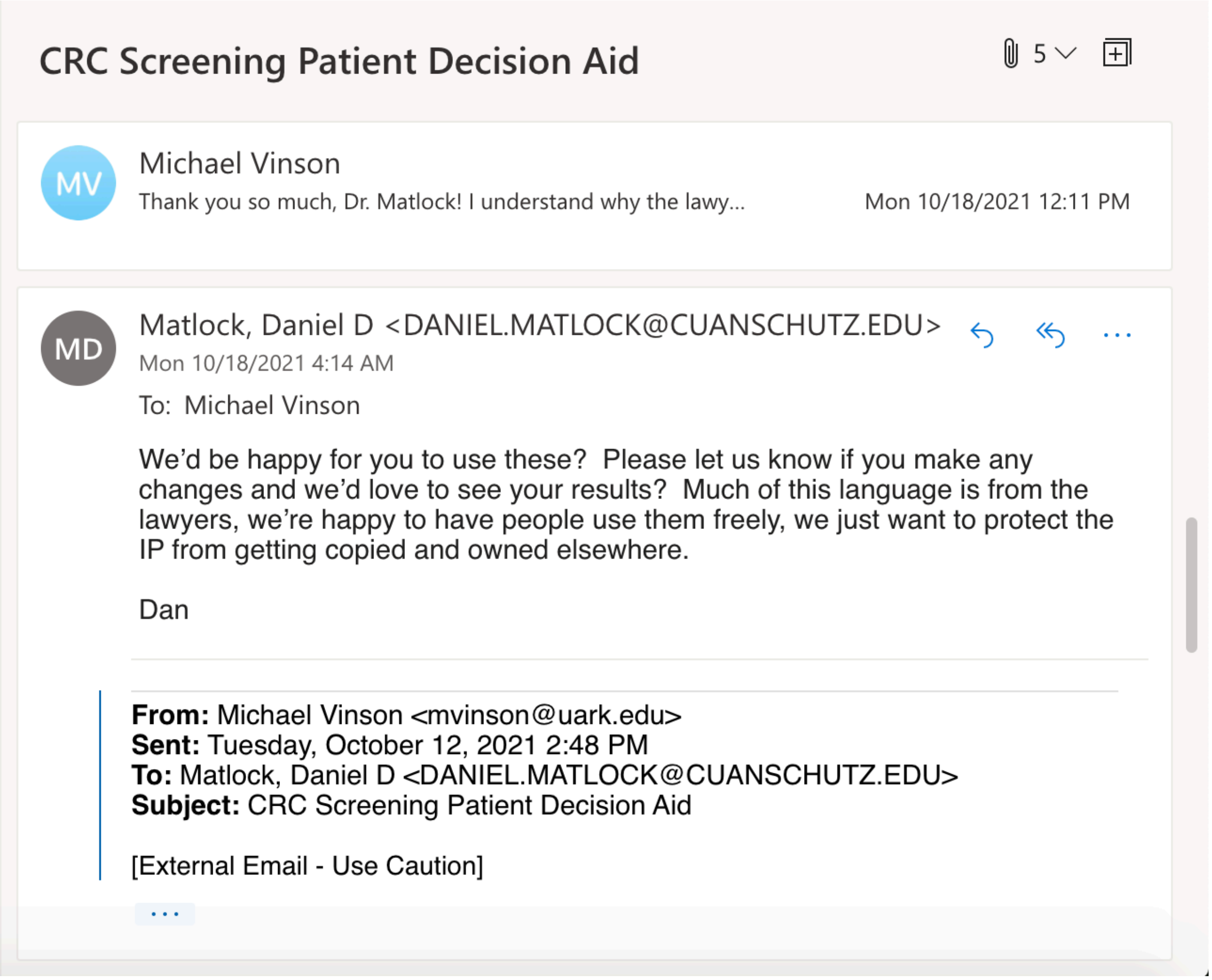
Comments? We would like to hear from you. E-mail us atustomercare@copyright.com

Appendix V: Multilingual CRC Screening Patient Decision Aid Written Permission



CRC Screening Patient Decision Aid

Michael Vinson
Thank you so much, Dr. Matlock! I understand why the lawy... Mon 10/18/2021 12:11 PM

Matlock, Daniel D <DANIEL.MATLOCK@CUANSCHUTZ.EDU>
Mon 10/18/2021 4:14 AM
To: Michael Vinson

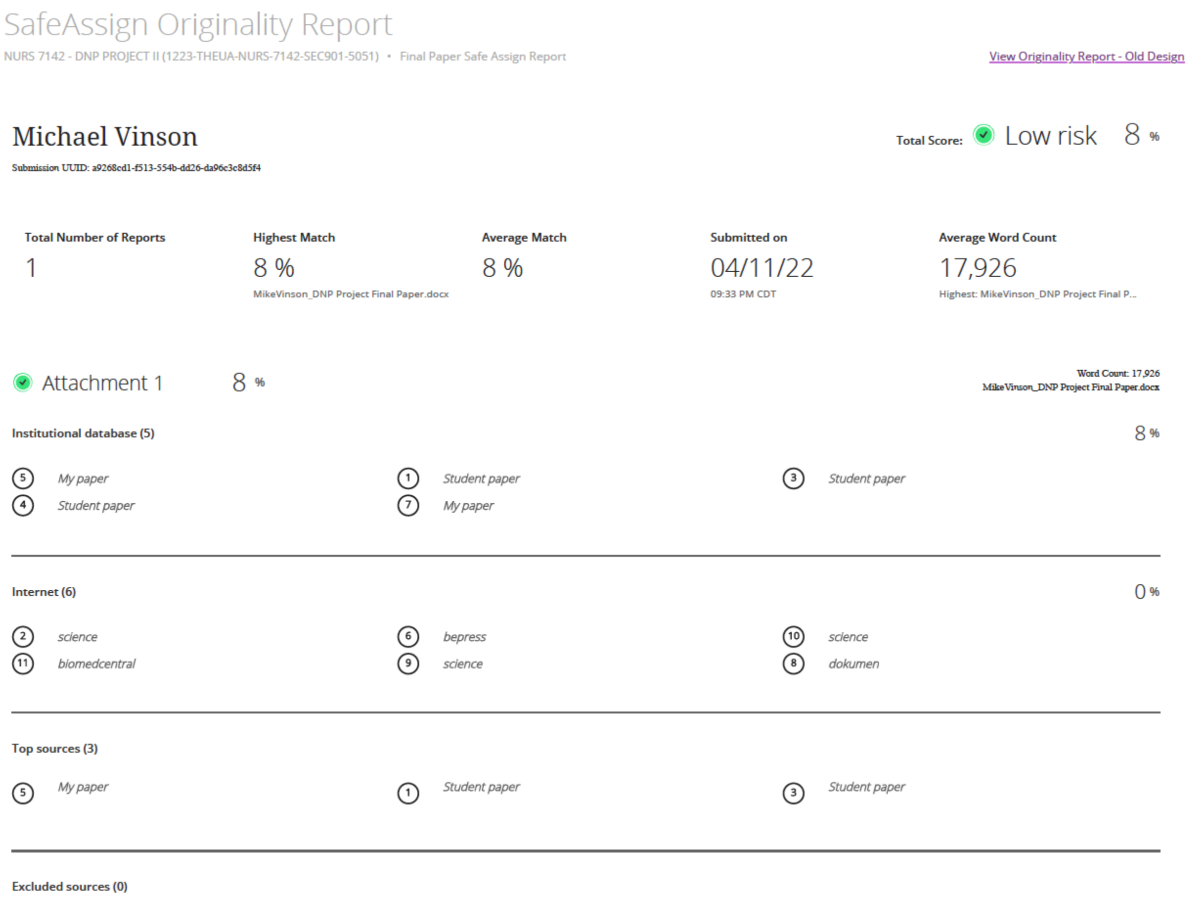
We'd be happy for you to use these? Please let us know if you make any changes and we'd love to see your results? Much of this language is from the lawyers, we're happy to have people use them freely, we just want to protect the IP from getting copied and owned elsewhere.

Dan

From: Michael Vinson <mvinson@uark.edu>
Sent: Tuesday, October 12, 2021 2:48 PM
To: Matlock, Daniel D <DANIEL.MATLOCK@CUANSCHUTZ.EDU>
Subject: CRC Screening Patient Decision Aid

[External Email - Use Caution]

Appendix W: SafeAssign Plagiarism Report



SafeAssign Originality Report

NURS 7142 - DNP PROJECT II (1223-THEUA-NURS-7142-SEC901-5051) • Final Paper Safe Assign Report

View Originality Report - Old Design

Michael Vinson

Submission UUID: a9268cd1-f513-554b-dd26-da96c3c8d5f4

Total Score: ✓ Low risk 8 %

Total Number of Reports	Highest Match	Average Match	Submitted on	Average Word Count
1	8 % MikeVinson_DNP Project Final Paper.docx	8 %	04/11/22 09:33 PM CDT	17,926 Highest: MikeVinson_DNP Project Final P...

✓ Attachment 1 8 %

Word Count: 17,926
MikeVinson_DNP Project Final Paper.docx

Institutional database (5) 8 %

⑤ *My paper* ① *Student paper* ③ *Student paper*
④ *Student paper* ⑦ *My paper*

Internet (6) 0 %

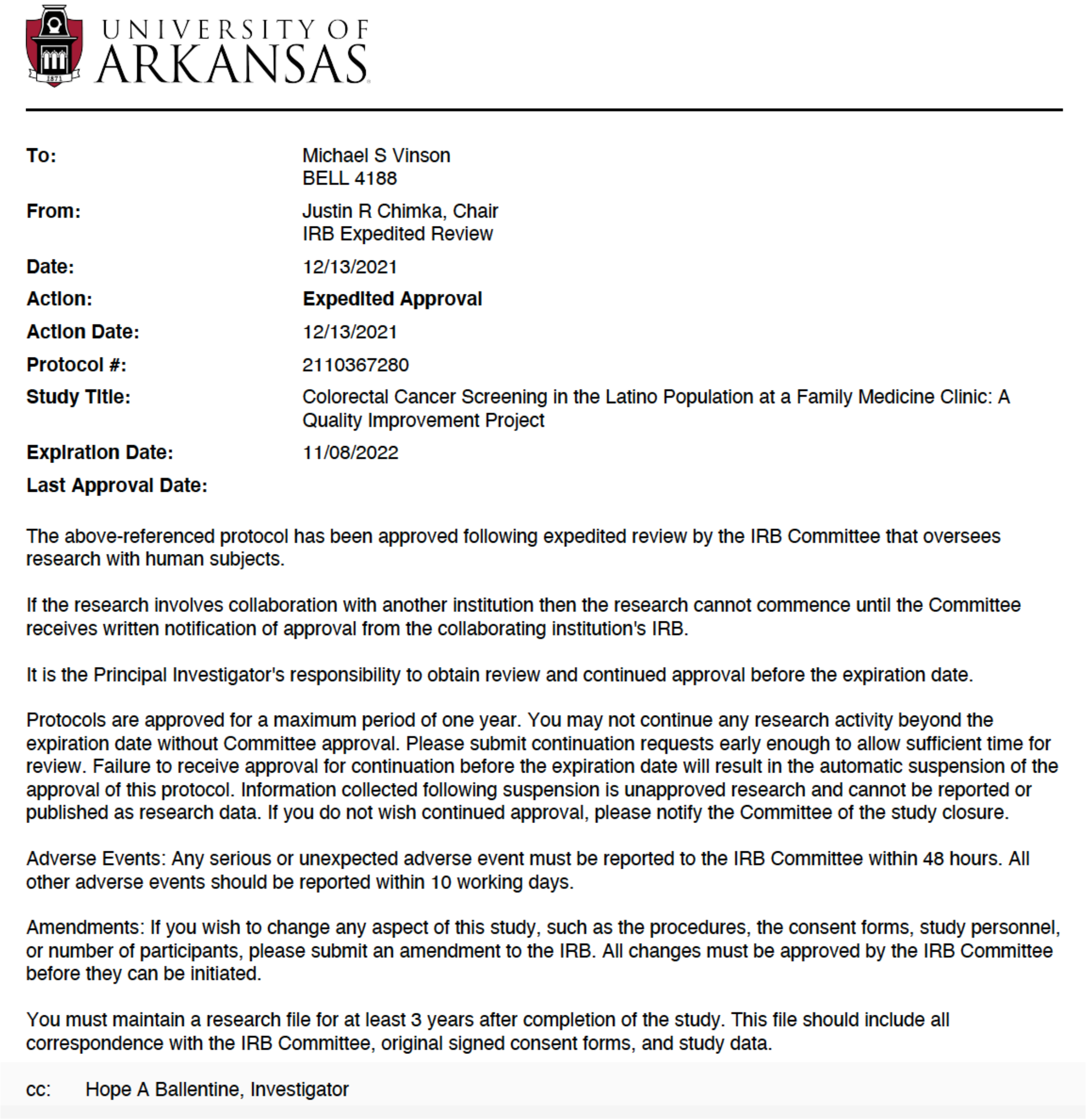
② *science* ⑥ *bepress* ⑩ *science*
⑪ *biomedcentral* ⑨ *science* ⑧ *dokumen*

Top sources (3)

⑤ *My paper* ① *Student paper* ③ *Student paper*

Excluded sources (0)

Appendix X: University of Arkansas IRB Approval Letter



UNIVERSITY OF
ARKANSAS

To: Michael S Vinson
BELL 4188

From: Justin R Chimka, Chair
IRB Expedited Review

Date: 12/13/2021

Action: **Expedited Approval**

Action Date: 12/13/2021

Protocol #: 2110367280

Study Title: Colorectal Cancer Screening in the Latino Population at a Family Medicine Clinic: A Quality Improvement Project

Expiration Date: 11/08/2022

Last Approval Date:

The above-referenced protocol has been approved following expedited review by the IRB Committee that oversees research with human subjects.

If the research involves collaboration with another institution then the research cannot commence until the Committee receives written notification of approval from the collaborating institution's IRB.

It is the Principal Investigator's responsibility to obtain review and continued approval before the expiration date.

Protocols are approved for a maximum period of one year. You may not continue any research activity beyond the expiration date without Committee approval. Please submit continuation requests early enough to allow sufficient time for review. Failure to receive approval for continuation before the expiration date will result in the automatic suspension of the approval of this protocol. Information collected following suspension is unapproved research and cannot be reported or published as research data. If you do not wish continued approval, please notify the Committee of the study closure.

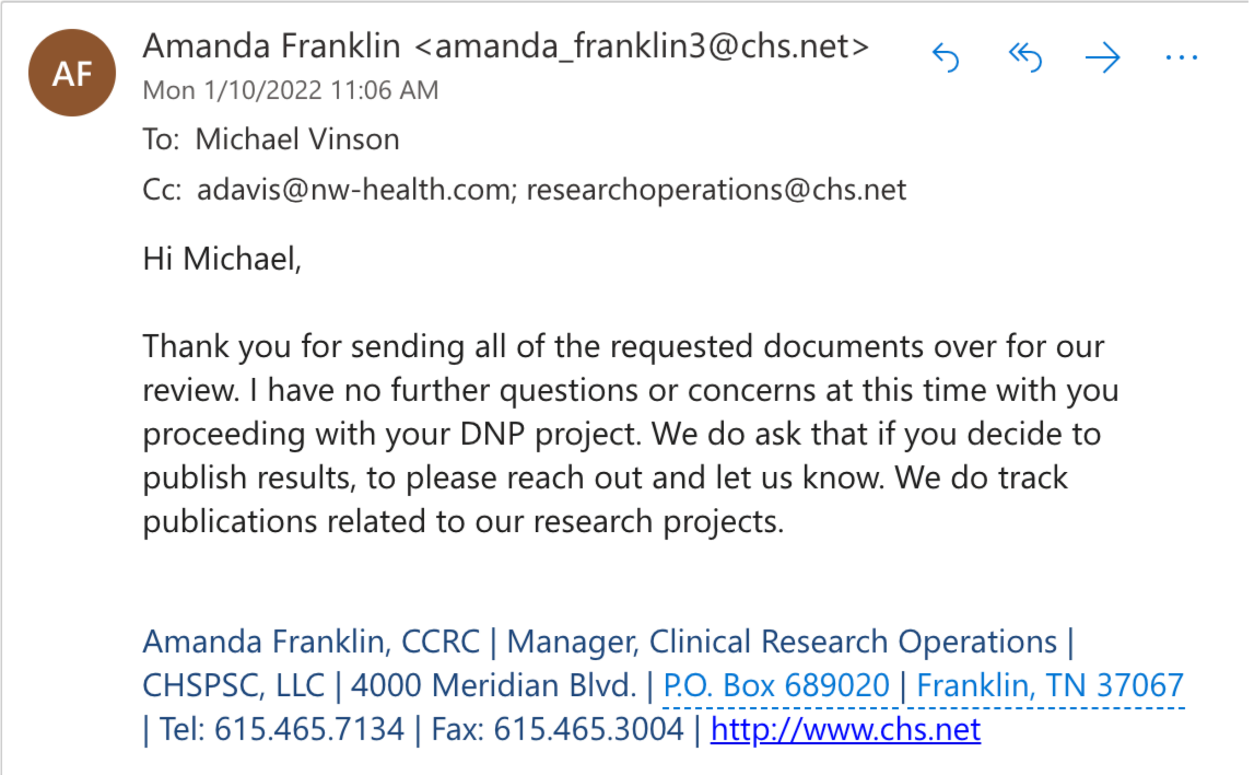
Adverse Events: Any serious or unexpected adverse event must be reported to the IRB Committee within 48 hours. All other adverse events should be reported within 10 working days.

Amendments: If you wish to change any aspect of this study, such as the procedures, the consent forms, study personnel, or number of participants, please submit an amendment to the IRB. All changes must be approved by the IRB Committee before they can be initiated.

You must maintain a research file for at least 3 years after completion of the study. This file should include all correspondence with the IRB Committee, original signed consent forms, and study data.

cc: Hope A Ballentine, Investigator

Appendix Y: Project Site IRB Approval Letter



Amanda Franklin <amanda_franklin3@chs.net>
Mon 1/10/2022 11:06 AM
To: Michael Vinson
Cc: adavis@nw-health.com; researchoperations@chs.net

Hi Michael,

Thank you for sending all of the requested documents over for our review. I have no further questions or concerns at this time with you proceeding with your DNP project. We do ask that if you decide to publish results, to please reach out and let us know. We do track publications related to our research projects.

Amanda Franklin, CCRC | Manager, Clinical Research Operations | CHSPSC, LLC | 4000 Meridian Blvd. | P.O. Box 689020 | Franklin, TN 37067 | Tel: 615.465.7134 | Fax: 615.465.3004 | http://www.chs.net