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Increasing Colorectal Cancer Screening Uptake Among Hispanic/ Latino Patients: A Quality Improvement Initiative

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Abstract

Background: In 2021, cancer (CRC) screening rates for Latino men (42%) and women (47.5%) remain well below the Health People 2020 target (70.5%). Extensive documentation of barriers for screening include language, insurance status, and other sociocultural barriers which contribute to delays in diagnosis and/or diagnosis at advanced stages of the disease, and worse health outcomes. Latinos need culturally and linguistically appropriate health promotion interventions aimed to increase CRC screening rates with any modality (FIT, Cologuard® or Colonoscopy).

Methods: The Donabedian Structure-Process-Outcome (S-P-O) Model for quality improvement was used to develop and target a provider-driven, language-concordant communication interventions for Hispanic patients who were eligible for CRC screening according to the USPS Task Force Guidelines in a primary care practice in Nashville, TN.

Results: Out of the 458 Latino patients who were eligible for screening between August 2021-November 2022, only 124 were seen for an annual preventative visit in which screening was ordered. Out of the 124 patients who had orders for CRC screening and received the targeted communication intervention, 85 (68.5%) completed the screening and 39 (31.5%) did not complete the screening. Of those who completed the screening, 47 were insured (55.3%) and 38 were uninsured (44.7%).

Conclusion: This study shows that with targeted, linguistically appropriate provider recommendation, Latino patients agree to recommended screening at rates that approach the national benchmark. However most eligible Latino patients are not receiving the recommended screening because they underutilize annual wellness visits during which this counseling/awareness typically takes place. This highlights the need for providers to provide

counseling and recommendation for routine cancer screening during any follow-up visits to

increase screening uptake in this population.

Introduction

Background & Problem Description

Hispanics are the largest minority in the US and one of the most underserved patient populations when accessing primary care and preventative medicine. Every 3 years, the American Cancer Society (ACS) reports on cancer occurrence, risk factors, and screening for Hispanic individuals in the United States using the most recent population-based data (Miller et al., 2021). For the year 2021, the ACS projected about 176,600 new cancer cases and 46,500 cancer deaths among Hispanic individuals in the continental United States and Hawaii (Miller et al., 2021). However, incidence varies substantially by nativity, Hispanic origin group, and duration of US residence, with rates in some groups approaching or surpassing those of NHWs, particularly among US-born Hispanic individuals (Miller et al., 2021). Hispanic men and women are less likely than Non-Hispanic Whites (NHWs) to be diagnosed with the four most common cancers, not because risk is lower in this population, but because uptake of recommended screening is low (Miller et al., 2021).The Healthy People 2020 benchmark was for 70.5% of adults aged 50 to 75 to be screened for colorectal cancer; yet only 42% of Latino men and 47.5% of Latino women were up to date with screening compared with 60% of non-Latino white men and women (Mojica et al., 2018). The disparity in CRC screening in Hispanic/Latino patients is associated with greater risk of diagnosis at advanced stages of the disease, and poorer outcomes or deaths (Mojica et al., 2018). Disparities in CRC outcomes are largely driven by socioeconomic inequalities that result in unequal access to screening and receipt of timely, high-quality treatment (American Cancer Society, 2020). Access to care is directly related to the stage at diagnosis, which is the strongest predictor of racial/ethnic survival disparities (ACS, 2020).

With early diagnosis and timely intervention, morbidity and mortality associated with colorectal cancer are largely preventable (Ohri et al., 2020).

Available Knowledge: Known Barriers to CRC Screening in Hispanic/Latinos

The BRFSS continues to provide meaningful data on screening rates in Hispanic/Latino patients in the US and US Territories (*Behavioral Risk Factors Surveillance*, 2020; CDC, 2022; López-Charneco et al., 2013; Sauer et al., 2018). Hispanic men and women are less likely than Non-Hispanic Whites (NHWs) to be diagnosed with the four most common cancers (prostate, breast, lung and bronchus, and CRC (Miller et al., 2021). However, incidence varies substantially by nativity, Hispanic origin group, and duration of US residence, with rates in some groups approaching or surpassing those of NHWs, particularly among US-born Hispanic individuals (Miller et al., 2021). For example, CRC death rates in Florida are nearly twice as high in Cuban men as in Mexican men (18.9 vs 10.2 per 100,000, respectively), whereas in Texas, cancer death rates in US-born Hispanic men were 61% (201.4 vs 124.8 per 100,000, respectively) (Miller et al., 2021). Still, with such low numbers in CRC screening rates in Latinos, urgent action to improve screening rates across this population are critical to maintaining health equity standards for public health (Mojica et al., 2018).

Types of Colorectal Cancer Screenings:

There are multiple screening modalities available for all the patients depending on their needs and resources; fecal occult blood test (FOBT) every year (the guaiac based fecal test or the fecal immunochemical "FIT" test), sigmoidoscopy every 5 years (with high-sensitivity FOBT every 3 years), or colonoscopy every 10 years. However, in 2014, the FDA approved the first multi-targeted stool DNA for general CRC screening called Cologuard® (Issa & Noureddine, 2017) becoming the next best choice for screening apart from a screening colonoscopy.

Screening colonoscopy continues to be the gold standard in prevention and pathologic testing for colorectal cancer (Doubeni et al., 2016). However, the other modalities are less invasive and less expensive depending on the patient population and resources available for them. Colon and rectal cancer are preventable with screening and can be treated successfully when found at early stages (ACS, 2022).

The low screening rates among Latinos may in part explain why colorectal cancer mortality rates for Latino men have not decreased as they have for white men (Espinoza & Derrington, 2021). Reasons for low screening rates are well documented in research, these reasons range from socioeconomic to cultural to health system barriers, insurance status, and cultural beliefs (Espinoza & Derrington, 2021). Targeted, culturally sensitive, linguistically appropriate interventions are needed to improve cancer screening rates among minority populations (Mojica et al., 2018).

However, there is little information on effective interventions for increasing CRC screening rates among Latino men (Mojica et al., 2018). In 2018, Mojica et al. published a systematic review of the literature on interventions promoting colorectal cancer screening among Latino men with 7 articles describing characteristics and interventions specific Latinos by incorporating community health workers (CHWs), gender specific interventions, face to face interactions, and incorporating a framework. The authors found that their strategies were effective at increasing CRC screening among Latino men. The study recommended additional research in Latino men's health, specifically to further develop and test theoretically grounded interventions that promote colorectal cancer screening with larger samples of men and across diverse geographic areas in the United States (Mojica et al., 2018). The need to further investigate health care models and programs to improve access to Hispanic/Latinos is of extreme

importance primary care providers who can facilitate and optimize the prevention of colon cancer and/or early detection.

Cultural/Linguistic Barriers

A major theme found in the literature for Hispanic/Latino patients contributing to not performing their CRC screening is simply lack of knowledge of the importance of colon cancer screening (Byrd et al., 2018). A qualitative, exploratory study in El Paso, Texas, by Byrd et al., (2018) with bilingual facilitators and preference for stool-based testing collection method to better understand barriers in the Hispanic population. The study concluded that there was a lack of knowledge regarding CRC screening, which resulted as the major barrier to CRC screening for the Hispanic patients, however, a positive end-result from the study was that a community-based CRC screening program was subsequently developed from their findings (Byrd et al., 2018). A major contributor to this lack of knowledge is the lack of one-on-one interaction with the patient (in person or over the phone) by either a nurse, the medical provider, community health worker, or health educator/navigator (Mojica et al., 2018).

A large observational study by Heintzman et al., (2022) evaluated CRC screening among Latino patients (English and Spanish preferring), compared with that among non-Hispanic White patients over a multi-year period using an EHR data set spanning hundreds of community health centers (CHCs) across multiple states (Heintzman et al., 2022). Their study (N=204,243) found that Spanish-preferring Latinos had higher odds of any CRC screening and stool-based testing than non-Hispanic Whites. However, English and Spanish-preferring Latinos had lower odds of having ever had a referral for endoscopy in the study period than non-Hispanic Whites (Heintzman et al., 2022).

In the past decade, the implementation of the Affordable Care Act resulted in improved access to health services for Hispanics, but challenges remain because of limited cultural sensitivity, health literacy, and a shortage of Hispanic health care providers, therefore, acculturation barriers and underinsured or uninsured status remain as major obstacles to health care access (Velasco-Mondragon et al., 2016). Cultural barriers are rooted in the patient's beliefs and knowledge of disease, prevention, and treatment (Carrillo et al., 2011). Literature calls for service providers in new and growing communities and rural communities to have cultural sensitivity training, but few interventions have been published that suggest that quality improvement in the form of bilingual providers or use of interpreter services are being implemented (Larson et al., 2017).

Hispanic/Latino patients are more likely to respond to cancer screenings or preventative care if they feel like they connect with a Spanish-speaking staff and/or if the recommendation comes from a language or culturally concordant provider (Calo et al., 2015). Lack of availability of interpreter services and language concordance of signage limits the access for this population (Calo et al., 2015). In 2015, a qualitative study in North Carolina by Calo et al. evaluated the experiences of Latinos with limited English proficiency (LEP) in which patients' registration and interactions with the clinic's front office staff were a big focus. The study found recurring themes among the 20 interviewed participants in which lack of Spanish language services in the front office negatively affected care coordination and satisfaction with healthcare visits (Calo et al., 2015). Inconsistent registration of multiple surnames was a main finding, which created errors and delayed care (Calo et al., 2015).

A cross-sectional cohort study by Moreno et al. (2010) found that of their Spanish-speaking patients, those who needed and always used interpreters reported better experiences

with their care (Moreno & Morales, 2010). This study included language communication, interpreters, translated material, signage, and cross-cultural communication skills as items measured as a multi-item measurement of doctor communication, office staff helpfulness, and satisfaction with care by interpreter use during their visit (Moreno & Morales, 2010). Of the patients in the study, 95% of participants were born outside the US, 81% were females, and survey response rates ranged from 45% to 85% across sites, totaling 1,590 Spanish-speaking Latino adults. The study concluded that an increased attention to the need for effective interpreter services is warranted in areas with rapidly growing Spanish-speaking populations (Moreno & Morales, 2010).

Understanding these complex barriers that these vulnerable communities face daily when they try to meet basic human rights is essential to community-based practice and research grounded in social justice (Calva et al., 2020). Lastly, a case and commentary peer-reviewed article in 2021, addressed how clinicians should respond to language barriers that exacerbate inequity given that these patients already experience lower quality of care, and suffer worse health outcomes (Espinoza & Derrington, 2021). They urged health care organizations responsibly staffing and provide clinicians available interpreting services and to advocate for systems-level changes that make language skills an aspect of diversity rather than a barrier to quality health care (Espinoza & Derrington, 2021).

Insurance/Economic Barriers

Approximately 80% of adult undocumented immigrants are in the labor force, most are in low-income fields that rarely offer health insurance, such as farming, building maintenance, and food preparation (Sommers, 2013). Recent census and labor force background show the gap in the U.S. health insurance system for the Hispanic patients. According to the 2019 U.S. Census

Bureau population estimate, there are 60.5 million Hispanics living in the United States and have

the highest uninsured rates of any racial or ethnic group within the United States (Health and

Human Services, 2021). In the same year, the Census Bureau also reported that 50.1% of

Hispanics had private insurance coverage, as compared to 74.7% for non-Hispanic whites (HHS,

2021). Meanwhile, the CDC reported that Hispanics continued to maintain the highest crude

percentage under their category for "not having a usual place of health care" (CDC, 2018). The

cumulative effects of these systematic limitations on not being able to apply for medical

insurance for undocumented immigrants, combined with low household incomes, are major

barriers to health care access, particularly in Latino immigrants (Sommers, 2013).

In the past decade, 30% reported not having health insurance before the implementation

of the Affordable Care Act (ACA) in 2014, compared to 11% for non-Hispanic Whites (NHWs)

(Velasco-Mondragon et al., 2016). Some options for uninsured patients to access health care are

in the Federally Qualified Health Centers (FQHC). These centers are supported by federal grants

from the Health Resources and Services Administration (HRSA) and favorable payment policies

under Medicaid; FQHCs are required to provide both urgent and preventive care to all comers,

regardless of immigration status or the ability to pay (Sommers, 2013). Unfortunately, there are

not enough community health centers to serve the entire population. Public health programs

provide some services in the inequity gap to immigrants; however, these programs are narrowly

targeted and administered by states and localities that are often subject to intense immigration-

related politics (Sommers, 2013). In some states, the DACA (dreamers) and/or Temporary

Protection Status (TPS) recipients are still ineligible for Medicaid or marketplace under the

Affordable Care Act (Castañeda & Melo, 2014), the recipients of these programs, automatically

become part of the statistics of uninsured individuals with the only option to become insured through their employer.

Numerous qualitative studies provide data that show the financial instability, and lack of information about existing services preventative screenings or even seeking health care services because they have to work to support their families; "We are put off to one side"; "If I can't work, I can't survive"; and "Without documents, you are no one" (Calva et al., 2020; Larson et al., 2017). Others, fear of being asked if they are documented or if they are in the US illegally, "you have to work a week to go a day to the doctor; you lose a complete day, and they don't treat you well. There are long waits and you have fear when you're not legal" (Ransford et al., 2010).

Adding to qualitative studies, a segway example towards closing the gap to this inequity is what the Eastern Virginia Medical School (EVMS) did prior to the pandemic by establishing and maintaining the Clínica Comunitaria Esperanza, a culturally and linguistically competent student-run free clinic serving uninsured Hispanics in the Hampton Roads area in efforts to counteract the existing health care barriers: language, lack of knowledge, and lack of a community health center (Davids et al., 2020). EVMS students worked to bridge the health care gap between existing needs and services. However, for projects like the EVMS clinic to be sustainable and to overcome barriers to care, it is important that Hispanics in the community be leaders for change (Davids et al., 2020). Health providers must strive for comprehensive partnerships with community stakeholders to improve health care through outreach, goal setting, prioritization, program implementation, and outcome tracking (Davids et al., 2020). Lastly, a large longitudinal study from 2000 through 2016 in New York City (NYC) consisting of a multifaceted citywide public health campaign by the NYC Department of Health and Mental Hygiene (DOHMH) and a coalition of stakeholders "New York citywide Colon Cancer control

coalition (C5)" who's aim was to decrease CRC incidence and mortality in that diverse urban

population with increasing colonoscopy screening. They assessed annual percent change in NYC

CRC incidence, stage and mortality rates through 2016; the linear regression tested associations

between CRC mortality rates and risk factors (Brown et al., 2021). Their findings were

staggering with a 2.8% in CRC incidence rate reduction yearly and a mortality rate decreased by

2.9% yearly in any race/ethnicity (Brown et al., 2021). However, the only downside was that

they found an increase in incidence & mortality rate for Blacks than in Whites and concluded by

stating how higher CRC burden among the Black population demonstrate more interventions are

needed to improve equity (Brown et al., 2021).

Gender Differences

A multi-center epidemiologic cross-sectional ancillary study by Castañeda (2019) with

the goal to assess the role of acculturation in the prevalence and development of disease,

presented evidence where Hispanic females were more likely to have a physician visit the

previous year (83%) than males (75%) ($p < .01$), while more than half were insured (60% of

females and 61% of males), and more than half of females (57%) had a mammogram the

previous year (Castañeda et al., 2019). The analysis presented shows that women are more likely

to screen for cancers than males, this could be contributed to the fact that females visit health

care providers more often than males and are aware of breast cancer screening therefore have a

greater awareness for cancer screenings in general (Castañeda et al., 2019).

However, there are also marked differences in cancer death rates between Hispanic origin

groups. For example, CRC death rates in Florida are nearly twice as high in Cuban men as in

Mexican men (18.9 vs 10.2 per 100,000, respectively, during 2008-2012) (Miller et al., 2021).

The impact of acculturation on cancer rates is also substantial. In Texas, cancer death rates in

US-born Hispanic men were 61% higher than those in foreign-born Hispanic men (201.4 vs

124.8 per 100,000, respectively, during 2008-2012) and were only slightly lower than those in

NHW men (210.1 per 100,000), largely driven by differences in lung cancer death rates (Miller

et al., 2021). Overall, the probability of being diagnosed with invasive cancer is slightly higher

for men (40.5%) than for women (38.9%) (Siegel et al., 2021), but the death rate is higher in men

than females according to the latest 2021 cancer static, in which deaths for *colon* and *rectal*

cancers were combined because a large number of deaths from rectal cancer continue to be

misclassified as colon alone (Siegel et al., 2021, Table 1).

Rationale

Considering the latest national CRC screening uptake for Hispanics (53.4%) compared to

70.4% for NHWs in 2020, (CDC), the project leader assessed this need in the primary care clinic

in Antioch TN to educate about the CRC prevention and screenings in Hispanic/Latinos. This

quality improvement project was designed to increase the uptake of CRC screening among the

Hispanic/Latino patients in the project leader's practice setting by implementing culturally

sensitive, language appropriate provider recommendations during the patient's annual exam;

followed by targeted patient outreach by the Spanish speaking medical assistant (MA). The

project leader assumes that Latino patients are more likely to receive one of the three measurable

screening modalities (FIT, Cologuard® or Colonoscopy), and are also more likely to be referred

to endoscopy/follow-up when stool testing is abnormal if the appropriate recommendations are

given, and if the patients are outreached by a Spanish speaking clinician or patient

navigator/staff.

Theoretical Model

This quality improvement project followed Donabedian's (2005) three components approach (structure, process, outcome) also known as the S-P-O Model for evaluating underpins measurement for improvement (Donabedian, 2005). In ***structural measures*** the consumers are given a sense of a health care provider's capacity, systems, and processes to provide high-quality care (AHRQ, 2015). The project leader (the primary care provider) structured a 1-2 minute session within the annual exam timeframe to speak directly with his Spanish speaking patients using nonbranded educational tools (colon cancer brochures with pictures and bullet point facts from the CDC) and discusses with his patients the importance of his recommendations for completing the CRC screening while carrying open-ended but concise conversations in Spanish with the patients about the cancer screening as high-quality care. ***Process measures****,* on the other hand, reflect the way the organization's systems and processes work to deliver the desired outcome (Donabedian, 2005). Process measures can inform consumers about medical care they may expect to receive for a given condition or disease, and can contribute toward improving health outcomes (ARHQ, 2015). Following the project leader's CRC recommendations, the staff follows up with patient outreach with two-three reminder phone calls from the Spanish speaking medical assistant (MA) within a 2–3-week span from when the patients had their annual physical exam. These phone calls were primarily designed for those patients who opted for the FIT test. The take home FIT test is a great option for self-pay patients because the fee for testing is included in their annual exam fee with no additional costs and it is an in-house test. Finally, ***outcome measures*** reflect the impact on the patients and demonstrate the end-result of the quality improvement work and whether these measures achieved the aim(s) set (Donabedian, 2005). An example of outcome measures is capturing the uptake of CRC screening among this patient population, with the goal of detecting and treating colon and rectal cancers on time.

According to Donabedian framework, *outcome measures* remain the 'ultimate validators' of the effectiveness and quality of healthcare but can sometimes be difficult to define and have time lags (Donabedian, 2005). The project leader enhanced the quality of care performed in his clinic by measuring the uptake percentage of the CRC screening rate in Hispanics with this QI project but also but meeting his employer's quality metric goal for his regional market of Tennessee. *Figure 5* illustrates the theoretical framework for this study by utilizing the SPO Model to support the implementation of the strategies.

Because of the known barriers for this patient population and its language driven interventions, a nursing theory was incorporated to foster advancement in the process of acculturation and health promotion. In Madeleine Leininger's **Transcultural Nursing Theory** nurses have the responsibility to understand the role of culture in the patient's health (Leininger, 2002). Culturally based care knowledge was the major missing area in nursing in the mid-20th century and still is in some places in the world (Leininger, 2002). Transcultural nursing's goal is to provide culture specific and universal nursing care practices for the health and well-being of people or to help them face unfavorable human conditions, illness or death in culturally meaningful ways (Murphy, 2006). The combination of the Transcultural Nursing Theory along with the SPO model reinforced the framework of the project by adding value and offering more meaningful and efficacious nursing care services to people's cultural values in the health-illness context. *Figure 6* illustrates the Transcultural Nursing Theory overarching the interventions for this study.

Specific Aims

The purpose of this quality improvement project was to implement a bundle of process improvements to increase the uptake of CRC screening among Hispanic/Latino patients in

Middle Tennessee. Project implementation was guided by Donabedian's SPO model which offered a logical framework to articulate how changes in the structure and processes of care, could influence care outcomes, specifically the rates of screening uptake by Hispanic patients in the project leader's primary care practice.

Methods

Context of Clinical Setting

Ascension Medical Group (AMG)- Antioch is located in Southeast Nashville, which is geographically between the Davison County and Rutherford County lines, allowing the clinic to serve both rural and urban patient populations. Of the total number of patients for the clinic, approximately 46% were Hispanic/Latinos. Of the project leader's practice, approximately 72% were Hispanic/Latino and/or Spanish speakers. The rest of the project leader's patient panel were diverse from different racial/ethnic backgrounds including White, African (English & Non-English speakers), Middle Eastern (English & Non-English speakers), Eastern European, and Southeast Asian (English & Non-English speakers). The target population for this study was Hispanic/Latino patients seen in primary care under the project leader's panel. *Inclusion* criteria consisted of patients both females and males, ages 45-75, eligible for colorectal cancer (CRC) screening under the current USPSTF guidelines. *Exclusion* criteria included all ethnicities or races that were not Hispanic or Latino, or patients who were colorectal cancer survivors or who were undergoing treatment for any type of cancer, including colorectal cancer.

Ascension is a national non-profit, Catholic organization whose mission is the commitment of service of the poor and vulnerable population with dedication and integrity (Ascension, 2022). The clinic includes front desk personnel, medical assistants, a phlebotomist and a manager on site, referral specialist, and three medical providers (two nurse practitioners

and one supervising physician). The clinic staff is largely composed of diverse backgrounds. The

MAs are all from a Hispanic background and speak fluent English and Spanish. The front desk

has three female employees with also diverse background: African American, Caucasian, and

Hispanic. The three providers also have different racial and ethnic backgrounds; one nurse

practitioner (NP) is from East Africa and can speak over three languages (Oromo, Swahili, and

English). The supervising physician is British and speaks both English and proficient Spanish.

The third NP who is the project leader is of Mexican descent. He provides care to his Hispanic

patients in both language and cultural concordance. This clinic is well equipped with other

departments in the same building, such as full-service radiology on site, rehab/physical therapy,

and two specialties rotating weekly (cardiology) and biweekly (neurosurgery).

The entire primary care practice is a busy clinic but well-staffed with a strong,

experienced team. The size of this practice with its diverse population, the staff backgrounds,

and the collegial work truly shaped the ideal setting for the educational interventions of this

study. The project leader, who is one of the primary care NPs is measured by the organization's

quality team once a month to review each individual provider's performance as part of his work.

These quality meetings promote accountability and optimization of quality of care by keeping

track of the 4 main quality measures for the primary care providers: A1C under control,

hypertension under control, colorectal/breast cancer screenings, and STATIN therapy for patients

with cardiovascular disease. Considering the specific and relevant elements of the daily practice

and the need of this population for CRC screening, the project leader designed this quality

improvement research project with strategic interventions based on the existing barriers. These

provider-based interventions were designed to optimize the uptake of CRC screening rates in

Hispanic/Latino patients in his practice and to leverage sensitive language concordant provider with his Spanish speaking in Middle TN.

The project leader structured a 1–2-minute session during the patient's annual exam to speak with his Spanish-speaking patients using nonbranded educational materials such as colon cancer brochures with pictures and cancer facts in bullet points from the CDC (2020) and discussed with his patients the importance of his recommendations for completing the CRC screening while carrying open-ended but concise conversations in Spanish with his patients. The picture in the brochures allowed the provider to pinpoint the risk for patients to not screen for cancer, even if they do not have symptoms. Emphasizing on the risk for cancer or developing cancer even if asymptomatic in the presence of microscopic bleeding in the stools, early stages of precancerous polyps or early stages of cancer (phase I & II) in which most patients are unaware of such pathophysiologic changes already occurring in their bodies (Schult et al., 2021). This allowed the project leader to encourage his patients to choose one option for screening before the provider left the room and entering the screening orders while still allowing his patients to ask questions or to mention any concerns or if they preferred to discuss the screening with their relatives before deciding on the type of screening.

The goal of these interventions was to be convincing while educating the Hispanic patients of preventative medicine, nonetheless, allowing the patients to choose for themselves by giving them the three options for screening. During this structured time in the exam room, the provider also shared with his patients the morbidity and mortality facts in Latinos with CRC and the low CRCs screening rates nationwide of 53.4% compared to non-Hispanic Whites > 70.4% (ACS, 2022). The take home FIT test was a great option for self-pay patients because the fee for testing was included in their annual exam fee with no additional costs and it was an in-house test.

For those patients who opted for the take home FIT test, the project leader developed a series of two-three reminder phone calls from the Spanish speaking MA within a 2–3-week span from when the patients had their annual physical exam. The project leader created a "text macro" which is a prefilled text on the EHR (Athenahealth[©]) to record and track how many patients answered the 2-3 phone calls; tracking the patients that are pending, and how many patients returned the FIT test to the clinic after these interventions were performed by the MA. If the patient complied and returned the FIT test, the provider would get the result. If the patient failed to comply with returning the FIT test, the provider would also get the result and was marked as "incomplete." An example of outcome measures is capturing the uptake of CRC screening among this patient population, with the goal of detecting and treating colon and rectal cancers on time.

Interventions

The importance of developing the previously explained interventions for the Hispanic patients was not only to increase the uptake of the CRC screening among this population but to also replicate these interventions with the other primary care providers struggling to meet the quality metrics with colorectal cancer screenings. Apart from the provider-based interventions in the exam room, the project leader gathered important information and briefly gave ideas during the daily or weekly huddles in the clinic with the staff before starting the day along with the clinic manager who led the huddles every morning. Regular revisions by the project leader and weekly huddles safeguarded adherence to each component of the study. The project leader would come in early every morning to glance at his schedule, print it and mark down the patients who were scheduled for an annual exam or the patients who were eligible for an annual exam and were due for CRC screening. The provider would then notify of these potential screenings with

his MA. The project leader equipped the three exam rooms with the Cologuard® brochures in English and Spanish, with the unbranded handouts in color with pictures & important cancer facts (English & Spanish) and stocked the rooms with 4-5 FIT test ready give to the patients during the annual exam. These interventions have a very low cost, with the potential for a very large impact in the Hispanic community in Middle TN. Each clinical site has the possibility of implementing and replicating these interventions if deemed necessary for their practice.

Study of Interventions

To achieve the measurement of the interventions, a full team was formed which included 3 stakeholders: Matt O'Dell the quality metrics director and Cindy Smith second in lead for the quality metrics department, Alex Sebion the population health director, and Christopher Pollreis the clinic manager. The team also included the EHR Athena rep Winona Lowery, and 2 of the University professors, Dr. Elizabeth Morse the main project advisor, and Dr. David Phillippi the statistician. The full team met in multiple occasions via zoom during the year 2022 to discuss the interventions, impact of the interventions, and to evaluate new ideas that may arise or to trouble shoot potential IT issues when retrieving the data that could create unwanted challenges as the study progressed. The project leader and project advisor elicited open-ended feedback to gather suggestions from this transdisciplinary team to strengthen the implementation of the project, thus making it robust.

These sources of data and data collection did not require specific instruments or equipment aside from educational material. This project did not require extra engagement from the patients beyond their preventative annual visit with the medical provider and the patient returning the FIT test after they were outreached with 2 reminder phone calls by the MA. The aim of these interventions was to meet the quality metrics of >50.9%, a standard for Ascension

Medical Group of TN. The time measuring these interventions was during a 16-month from

August 2021 through October 2022. The final data was retrieved and disclosed in January 2023

from the EHR by the stakeholders (quality metrics director and population health director) to the

project leader through an encrypted Google Spreadsheet accessed within the intranet of

Ascension. The project leader did not have direct access to the dataset during the 16-month

period when the interventions were undertaken. This data included the final screening

percentages for CRC: Colonoscopy, Fecal-DNA Cologuard® or the FIT test. Of those results

(pending or completed), the data was broken down into the following categories: gender,

insurance status, language, completed and incomplete screenings.

Results

The sample data was collected for a period of 16 months, from August 2021 through

November 2022, in the non-profit clinic of Ascension Medical Group in Antioch, Southeast

Nashville. The retrospective chart review was retrieved by the stakeholder director of quality

metrics in which the *inclusion criteria* consisted of patients of Hispanic/Latino origin, both

females and males, ages 45-75 and eligible for colorectal cancer (CRC) screening under the

current USPSTF guidelines and insurance status (both insured and self-pay). Additional factors

of inclusion for the data retrieval were those who had pending CRC screening orders regardless

of the modality, and those who were due for a CRC screening but did not have an order placed.

Exclusion criteria: any non-Hispanic or Latino patient, e.g., African American, Caucasian, and

Asian among other ethnicities/races, patients who were colorectal cancer survivors or who were

undergoing treatment for any type of cancer, including colorectal cancer were removed from this

sample. The total raw data retrieval revealed 641 patients in the ages 45-75, of which 458 were

of Hispanic/Latino origin. Of the 458 Latinos, 246 of the patients were females (53.7%) and 212 were males (46.3), and the mean age was 54.

It is important to note that not all the remaining Hispanic patients during this 16-month period were seen for their annual preventative physical exam, therefore, the focus of these results is only those 124 patients who received a CRC order during their annual preventive visit, see *table 1*. To achieve the targeted population sample of 124, the 458 visits were filtered by using the following ICD-10 codes Z12.10, Z12.11, Z12.12 along with the inclusion criteria previously mentioned to filter the visits containing CRC orders during the preventative annual visit. Of the 458 visits involving screening eligible patients, only 141 received CRC orders from which 17 CRC orders were marked as duplicates due to using different surnames upon registration, multiple visits, and/or expired CRC orders from patients who did not return within their time frame given for order completion. These 17 CRC orders were removed from the total order numbers, leaving 124 CRC orders as the final and main sample for this study, see *figure 1*. One of the subgroup categories omitted for the results due to not having an impact on uptake in CRC screenings was the language barrier given that all the Hispanic/Latino patients who were seeing during this QI project over the 16-month period had access to screening with the Hispanic and Spanish-speaking provider and Spanish-speaking staff.

Results by Insurance Status

Table 1 & figure 1 display the 124 participants who received orders the CRC screening and divides those visits by insurance and gender providing a summarized view of the stratified results with percentages and quantity of patients. The total number of combined orders that were completed (satisfied quality metric) were 85 (68.5%), whereas 31.5% ($n = 39$) orders were not completed (not satisfied). For the 73 *insured patients*, 64.4% ($n = 47$) completed the screening,

compared to 74.5% (*n* = 38) of the 51 *self-pay patients* who also completed the screening. With

only a variation of 9 patients between insured and uninsured, the uninsured patients had a higher

compliance for screening with a 74.5% rate despite not having insurance compared to 64.4% rate

for insured patients, see figure 1 for a breakdown of screening uptake by gender and insurance.

Results by Gender

Of the 124 participants, 51 were females and 73 were males. 70.6% (*n* = 36) females

completed the CRC orders, and 67.1% (n = 49) males completed the CRC orders regardless of

insurance status. Figure 1 further breaks down these findings by gender in combination with

insurance status to better understand what contributing factors make or break the engagement of

Latino men and Latino women when deciding to complete the screening after having the

educational conversation with the Spanish-speaking provider. Of the 51 females, 30 were insured

and 19 of them (63.3%) completed the screening, whereas 21 females were self-pay and 17

(81%) completed the screening. This shows that despite not having insurance, 81% of uninsured

women completed their CRC screening. Regarding Latino men, of the 73 males, 43 were insured

and 28 of them (65.1%) completed the screening, whereas 30 males were self-pay and 21 (70%)

completed the screening. The results for Latino men were similar to those of the Latino females

where 70% of men complied with screening despite not having insurance compared to 65.1% of

insured men.

Results by Screening Modality

Figure 4 illustrates the uptake and percentages of each modality for CRC screenings.

Figure 4 further stratifies the results by gender preferences. Colonoscopy was the least chosen by

Hispanic patients with only a 7.1% of the patients completing the colonoscopies. Whereas 43.5%

of patients performed the Cologuard® fecal-DNA test from home, and the modality with the

highest preference by this population was the fecal FIT test with a 49.4%.

In total there were 13 orders for **colonoscopies** but only 6 (46.2%) were completed. Of

the 7 incomplete (unsatisfied) colonoscopies, 2 were males and 5 were females. All the patients

who received a screening colonoscopy order were insured. For **Cologuard**®, there were 54 total

orders and 37 (68.5%) of those orders were completed. Of the 17 incomplete Cologuard® tests

13 were males and 4 females, but only one patient was self-pay, all others were insured. For the

patients who received the **FIT tests**, there were 57 total orders of which 42 (73.7%) were

satisfied. Making the FIT test as the preferred method for screening in this sample. However, it is

important to note that only 7 out of the 42 (16.6%) patients were insured, all others were self-pay

and the FIT test did not have an additional cost outside the wellness exam. Of the 15 incomplete

FIT tests only 3 patients had insurance all others were self-pay. Also, 9 males did not complete

the FIT test and 6 females did not complete the FIT test. In summary: the colonoscopy group had

a 46.2% completion rate, the Cologuard® group had a 68.5% completion rate and the FIT test

group had a 73.7% completion rate.

The final uptake of CRC screening for Hispanic/Latinos was obtained by combining the

results from the previously mentioned categories into figure 3 as a run chart by grouping

intervals of 2 months from August 2021 through November 2022. This run chart shows a linear

incline for the CRC uptake in Hispanics once the provider-driven interventions were

implemented at the end of Spring 2022. The uptake of screenings improved from its baseline in

August-September 2021 compared to the uptake of screenings a year later in August-September

2022 while the provider maintained the same amount of patients seen each day ranging from 14-

18 patients daily in his primary care clinic. The run chart also shows how the continuous incline

for the uptake of CRC screening in Hispanic/Latinos gets affected in the last bimonthly interval for the months of October-November 2022.

<div align="center">**Discussion**</div>

Summary and Strengths

The key findings of this quality improvement initiative to improve CRC screening uptake among Hispanic/Latinos in Middle Tennessee found that in the care of a Spanish-speaking provider, 68.5% of the eligible patients who received a targeted communication intervention completed (satisfied) CRC screening. This rate approaches the 2020 USPS Task Force benchmark of 70.5%. Patient encounters were all conducted by a native-Spanish speaker with non-native English proficiency, and the high uptake of CRC screening among patients who engaged with the provider for annual physical supports the importance of language concordant, culturally sensitive care (Calo et al., 2015; Davids et al., 2020; Oh et al., 2020).

The preferred modality for screening for this patient group was the take-home fecal tests (FIT) with almost half of the patients (49.4%) opting for the FIT test, followed by 43.5% choosing DNA-Cologuard® test, and only 7.1% chose the colonoscopy for their screening, see figure 4. It is important to note that over 41% of the participants were self-pay and 74.5% completed the screening despite not having insurance compared to 64.4% for insured patients completing the screening, see figure 1 for a breakdown of screening uptake by gender and insurance. The majority of self-pay patients selected the FIT test which was included in their annual visit cost and/or financial assistance provided by the primary care clinic for all the self-pay patients as an "in-house" test, see figure 1 and the results section for modality breakdown with insurance and gender differences. The convenience and cost-effectiveness of the FIT tests likely drove the patients' preference because even when the medical provider explained to the

patients about the superior accuracy and sensitivity of the Cologuard® test, the patients still chose the FIT over the Cologuard® (Exact sciences, 2023).

      A key finding of this QI project was that in a 16-month period, where 458 eligible Hispanic patients engaged with the provider/project leader face to face, yet only 27% of all eligible Hispanics patients received a CRC order during their assigned wellness exam. The underutilization of the annual wellness visit is very clear and the need for medical providers to promote routine cancer screenings during any type of visit is a key to engage this patient population. In 2022, the Pew Research Center published important findings about Hispanic Americans' experiences with health care, where approximately 68% of Latinos said they currently have a person they think of as their primary care provider, but they usually see when they are sick (Funk & Lopez, 2022). This a strong statement that is recognized in literature, providing proof to the researcher's assumptions drawn from private discussions with his patients (participants) who shared their feelings about approaching their health care provider only when they need to be seen for chronic conditions or when they are sick because of language barrier and lack of medical insurance/financial constraints. This finding highlights the importance of provider-driven health promotion during all visit types and the importance of continuity of care and relationship with providers who represent the population to develop the trust required to shift cultural norms and accept preventive recommended preventive health measures.

      Additionally, because this clinic was a brand-new location for the medical organization, most of the patients in the panel of the project leader were new to the clinic. This created inflation in the denominator (total number of Hispanic patients qualifying for CRC screening) yet the initial reason(s) for their visits were primarily for follow up on chronic conditions or sick visits, not for preventative care necessarily. This resulted in a small sample size.

Limitations

Leveraging clinical informatics prior to running data analysis to obtain the correct results took two-three weeks extra for the project leader to correct and merge health care information from the database due to inconsistent chart registrations with multiple surnames, creating duplicate charts resulting in multiple medical records. Unfortunately, this is a common finding in literature contributing to delayed care (Calo et al., 2015; Moreno & Morales, 2010). Data limitations can affect the reporting of cancer incidence and mortality in Hispanic individuals because they have only been available for the past 3 decades (Miller et al., 2021; Siegel et al., 2021). Uniform coding of ethnicity in the Surveillance, Epidemiology, and End Results (SEER) registries is necessary because it pulls medical records and/or through a match to a Spanish surname, if the surnames are a problem, the mortality data reported by SEER provided by CDC's National Center for Health Statistics can be affected by wrong entry of clinical informatics for this patient population (CDC, 2022; Miller et al., 2021; Siegel et al., 2021).

A possible limitation for the study could be related to lack of navigation to some of the patients with non-Spanish-speaking staff. This only occurred when the Spanish speaking front desk or MA were off work or off duty. In this case, patient communication with front-desk staff may have played a significant role in the patient's experiences and compliance with returning the FIT test to the clinic. This is a disparity that can affect health outcomes and patient-provider communications (Tulimiero et al., 2020). This was a common feedback from patients to the provider and the Spanish-speaking MAs when they made the reminder phone calls; some patients presented to the front desk and did not know how to explain the reason for them to show up without an appointment, returning fecal samples, etc. because of lack of navigation with a Spanish-speaking staff, some patients simply did not return their specimen.

Historically, research focuses only on interactions with health care providers and ignores important barriers in the quality of care for Latinos with LEP (Calo et al., 2015). Whereas other studies show that bilingual patient portal adaptation has considerable potential to promote health care engagement within Spanish-speaking safety-net populations; nevertheless, lack of provider engagement in the process could undermine the effort (Ochoa et al., 2017). As part of the provider's effort to better serve this community, and despite only having a 52% average portal adaptation rate in this clinic, he offered to send messages in Spanish to improve communication with the participants. The services and experiences were improved with this implementation, but unfortunately the Spanish-messaging were not only and specifically applied for the CRC screening participants but for general health care questions which did not have an impact in the results of this QI project.

The newly established clinic came to an end. The administration announced the permanent closure of this clinic at the end of November 2022, just 2 months prior to the end of the 16-month period of the interventions for this study. Thereafter, the financial and material/lab resources were limited, which negatively affected the patient's compliance to keep their preventative appointments. The patients were notified of the permanent closure via mailed letters and/or phone calls by the front desk. The run chart in *figure 3* shows a decline in CRC uptake for the last 2 months of the study after having a slow but consistent bimonthly incline of CRC screening uptake compared to when the study began in August 2021.

Conclusion

Although cancer risk in US Hispanic individuals overall is generally low for the most common cancers compared with the risk in NHW individuals, death rates among Hispanic descendants approach or surpass those in NHWs, which results in a growing cancer burden given

that the majority of Hispanic population growth is now driven by birth rather than immigration

(Miller et al., 2021).

The global aim of this quality improvement project was to increase the uptake of CRC

screenings in Hispanics by leveraging the influence of linguistically and culturally concordant

care using provider recommendation. Although the uptake of CRC screening among patients

who were scheduled for routine annual physicals was very high, underutilization of preventive

visits by this population limits access to recommended cancer screenings. Future QI initiatives

must consider the importance of peppering sick visits with the promotion and recommendation

of cancer screening and consideration for ordering the screenings outside of annual preventative

visits. In 2022, the Pew Research Center published important findings about Hispanic

Americans' experiences with health care, where approximately 68% of Latinos said they

currently have a person they think of as their primary care provider, but they usually see when

they are sick (Funk & Lopez, 2022). This a strong statement that is recognized in literature,

providing proof to the researcher's assumptions drawn from private discussions with his patients

(participants) who shared their feelings about approaching their health care provider only when

they need to be seen for chronic conditions or when they are sick because of language barrier and

lack of medical insurance/financial constraints.

Important suggestions drawn from the execution of this study are to create targeted

measures to narrow down racial and ethnic disparities. A targeted measure can be ordering CRC

screenings outside of a patient's annual exam. This can be done through a patient navigator,

medical assistant, or the quality metrics team, instead of only ordering and discussing the CRC

screening during a preventative visit. Latinos require continuity of care and are more likely to

engage in screenings with community centers and language and culture concordance (Byrd et al.,

2018; 2018; Calo et al., 2015; Calva et al., 2020). Currently, healthcare professionals worldwide deliver care for increasing numbers of culturally and linguistically diverse patients (Kaihlanen et al., 2019). Increased clinician education regarding socio-cultural barriers, cultural patient communication, and increasing awareness of one's own cultural features can promote effective communication between patients and healthcare providers (Kaihlanen et al., 2019; Kwame & Petrucka, 2021; Scanlon et al., 2021). Patient-centered communication is fundamental to ensuring optimal health outcomes (Kwame & Petrucka, 2021).

Tennessee is growing more diverse, with new data showing the state's Hispanic and multi-racial populations are expanding at a faster rate than other racial and ethnic groups (Tamburin, 2022). The Hispanic population grew by 3.8% from 2020 to 2021, according to U.S. Census figures, compared to 0.6% growth of the non-Hispanic white population in the same timeframe (U.S. Census Bureau, 2021). Even though this study was relatively small and was not large enough to be conducive toward making a standardization of interventions for CRC screenings in Hispanic patients in Middle TN, the limitations, strengths, and results provide valuable information for patients, health care providers, researchers, and even policymakers. Further suggestions for future studies should include and continue to evaluate suboptimal screening rates and continuously assess inequities to be able to understand contributors to disparities for this rapidly growing population (Viramontes et al., 2020).

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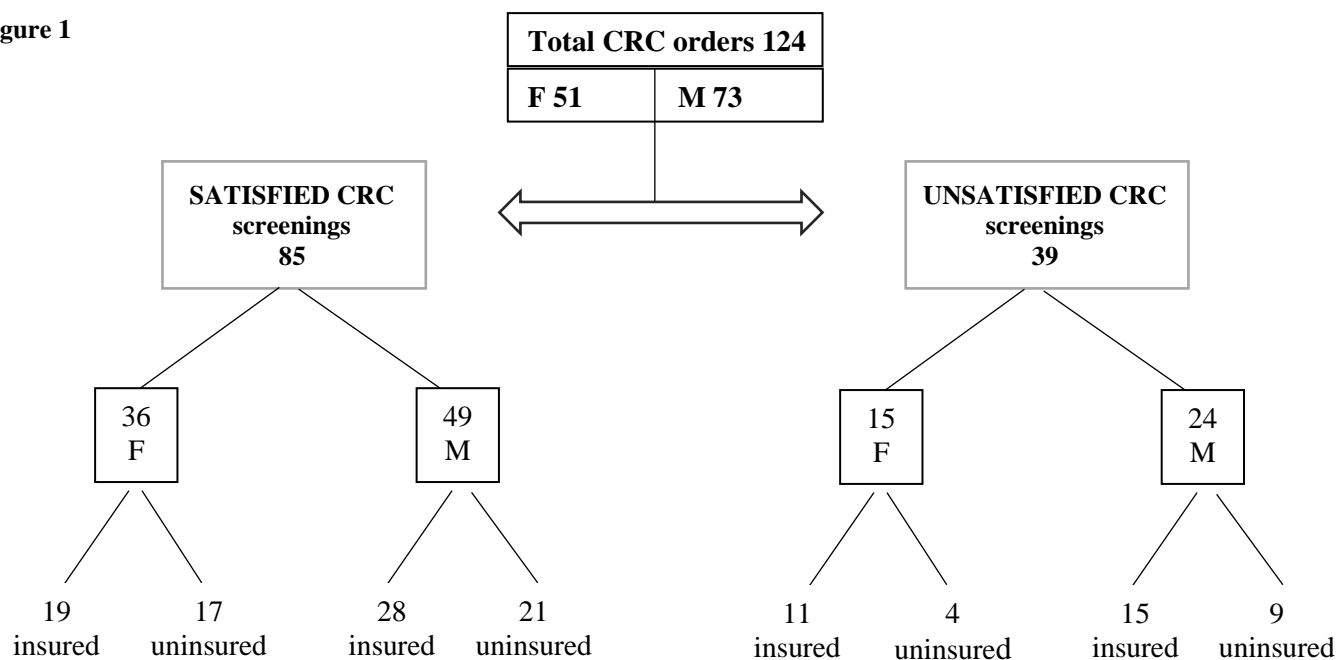
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Figures

Figure 1

Total CRC orders 124	
F 51	**M 73**

SATISFIED CRC screenings 85

UNSATISFIED CRC screenings 39

36 F — 19 insured / 17 uninsured
49 M — 28 insured / 21 uninsured
15 F — 11 insured / 4 uninsured
24 M — 15 insured / 9 uninsured

Results with Insurance	# (%)	Results for Self-Pay	# (%)
Total patients with insurance (accessed screening)	73 (58.9%)	Total self-pay patients (accessed screening)	51 (41.1%)
Completed the CRC screening	47 (64.4%)	Completed the CRC screening	38 (74.5%)
Did not complete the CRC order	26 (35.6%)	Did not complete the CRC order	13 (25.5%)
Results by Gender / Insured	**# (%)**	**Results by Gender / Self-Pay**	**# (%)**
Total females with insurance (accessed screening)	30	Total self-pay females (accessed screening)	21
Females satisfied the screening	19 (63.3%)	Females satisfied the screening	17 (81%)
Total males with insurance (accessed screening)	43	Total self-pay males (accessed screening)	30
Males satisfied the screening	28 (65.1%)	Males satisfied the screening	21 (70%)

Fig. 1 Breaks down the result subgroups (gender and insurance status) into percentages matching table 1.
Satisfied = completed screening / Unsatisfied = did not complete the screening
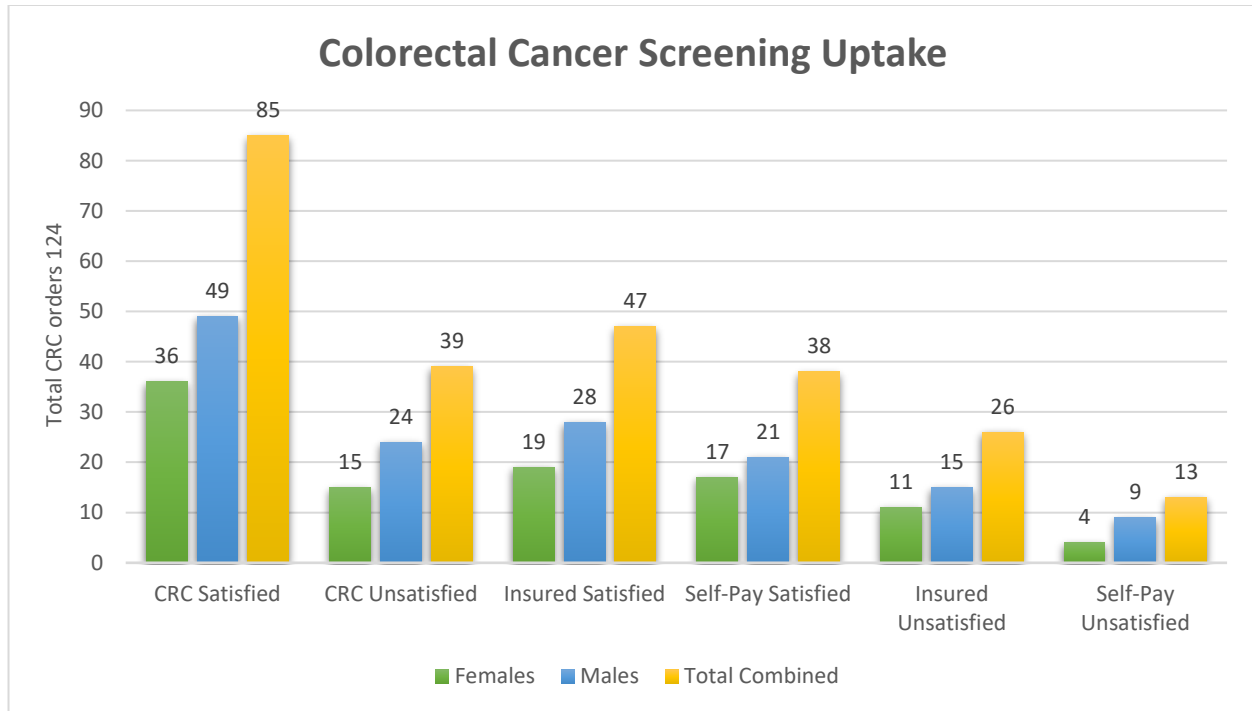
Figure 2

Fig. 2 displays the uptake of results from table 1, a comparison by gender and insurance status.

Figure 3 RUN CHART
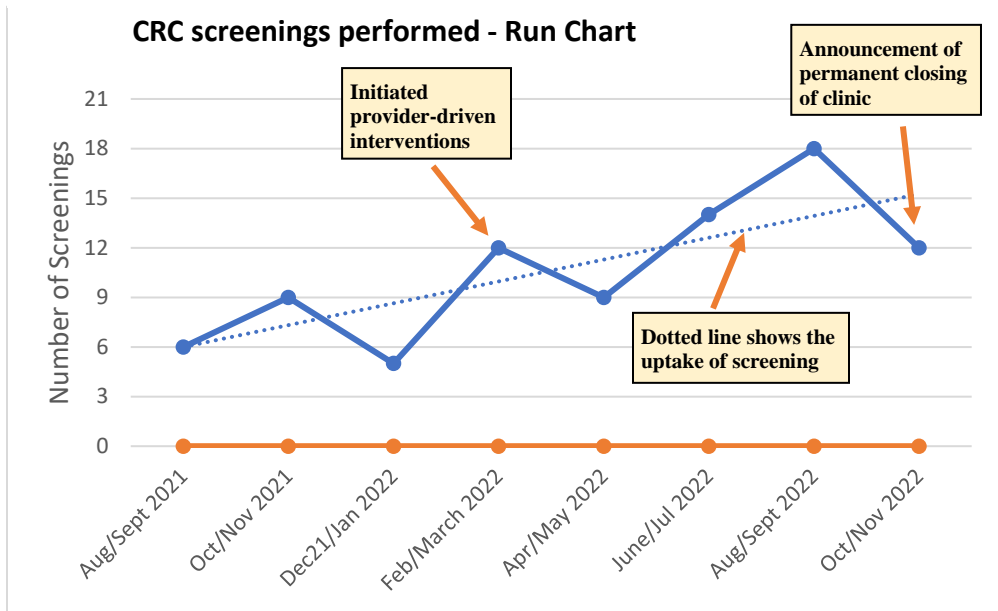
Fig. 3 displays the uptake of results as a run chart grouping intervals of 2 months

Figure 4 - Screenings by Modality

FIT	#	%
Total FIT orders	57	
Total FIT completed	42	73.7%
FIT females	19	45.2%
FIT males	23	54.8%
Only 7 patients were insured		16.6%
All others were self-pay		
9M unsatisfied 6F unsatisfied		

Cologuard®	#	%
Total Cologuard® orders	54	
Total FIT completed	37	68.5%
Cologuard® females	14	37.8%
Cologuard® males	23	62.2%
Only 3 males were self-pay		
All females were insured		

Colonoscopy	#	%
Total colonoscopy orders	13	
Total colonoscopy completed	6	46.2%
Colonoscopy females	3	50%
Colonoscopy males	3	50%
2M unsatisfied, 5F unsatisfied	7	
Everyone in this group was insured	13	

Fig. 4 Breaks down the CRC orders by screening modality

Screening Modality

	Colonoscopy	Cologuard	FIT/Fecal
Completed Orders	6	37	42
Total Orders	13	54	57

Fig. 4 The percentages displayed above refers to the total percentage when modalities are combined. This percentage does not represent the completion rate for each modality based on orders for each modality. The completion rates are as follows:
Colonoscopy completion rate 46.2%
Cologuard® completion rate 68.5%
FIT tests completion rate 73.7%

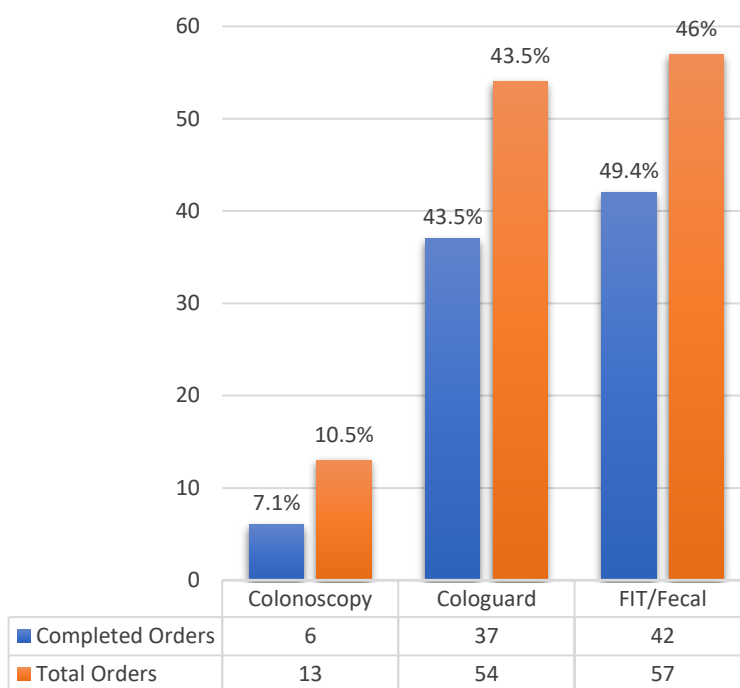**Figure 5 Donabedian's Quality Improvement Framework (S-P-O) Model**

Structures of Care

- Spanish speaking provider and MA.
- Nonbranded educational tools in Spanish.
- Sliding scale for Cologuard or free FIT in office.
- Extended clinic hours available 7a-5p or 8a-6p.

Processes of Care

- Provider delivers education & clinical recommendation about CRC in Spanish.
- The MA completes patient outreach with 2 phone calls and coordination of returning the FIT within 3 weeks.

Outcomes of Care

- Increase uptake of CRC screening in the Hispanic/Latino population in addition to engagement and satisfaction with care.
- Meeting quality metrics.
- Health promotion: Main goal is achieved; CRC prevention & treatment on time.

Transcultural Nursing Theory

This nursing theory by Madeleine Leininger shows what it takes to achieve the outcome we want. Knowing and understanding different cultures concerning health-illness caring practices, beliefs, and values to provide meaningful and efficacious nursing care services to people's cultural values health-illness context.
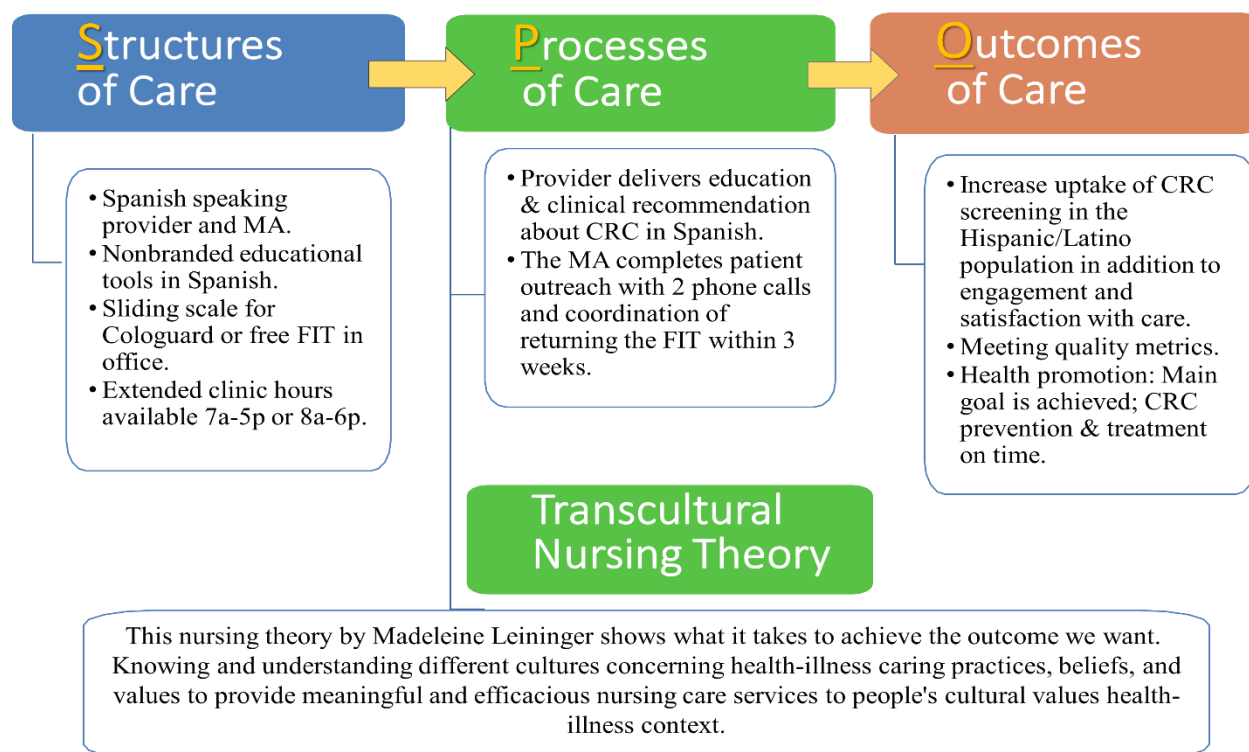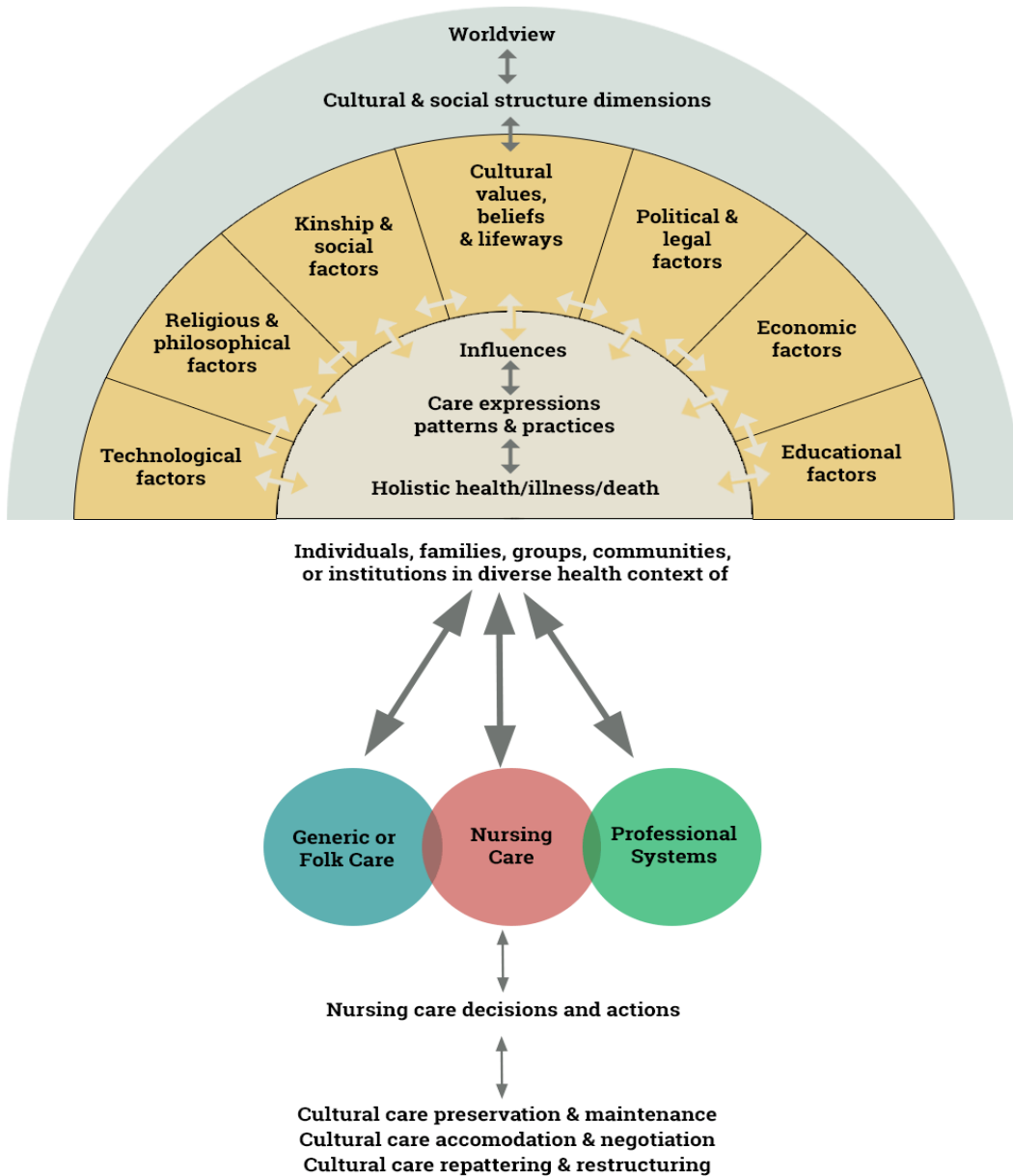
Figure 6 Transcultural Nursing Theory by Madeleine Leininger

Madeleine Leininger's Transcultural Nursing
The Sunrise Enabler to
Discover Culture Care Sunrise Model

Worldview

Cultural & social structure dimensions

Cultural values, beliefs & lifeways

Kinship & social factors

Political & legal factors

Religious & philosophical factors

Economic factors

Influences

Technological factors

Care expressions patterns & practices

Educational factors

Holistic health/illness/death

Individuals, families, groups, communities, or institutions in diverse health context of

Generic or Folk Care

Nursing Care

Professional Systems

Nursing care decisions and actions

Cultural care preservation & maintenance
Cultural care accomodation & negotiation
Cultural care repattering & restructuring

Tables

Table 1 CRC Data Set of Orders

Table 1 CRC orders set data	Comments	Number of patients 124	% By CRC orders from total sample 124
Total CRC orders			
Female		51	41.1%
Male		73	58.9%
Satisfied orders	= Completed screening	85	68.5%
Unsatisfied orders	= Needs Data	39	31.5%
Insured satisfied		47	64.4%
Self-pay satisfied		38	74.5%
Insured unsatisfied		26	35.6%
Self-pay unsatisfied		13	25.5%
Satisfied females		**36**	**70.6%**
Satisfied females insured		19	63.3%
Satisfied females self-pay		17	81%
Unsatisfied females		15	29.4%
Satisfied males		**49**	**67.1%**
Satisfied males insured		28	65.1%
Satisfied males self-pay		21	70%
Unsatisfied males		24	32.9%

Satisfied = Order was completed and satisfied the quality metric for the clinic
Unsatisfied = Order not completed and did not satisfy the quality metric of the clinic.