

BMJ Open Quality Improving colorectal cancer screening disparities among Somali-speaking patients in an Internal Medicine Residency Clinic

Rebecca Yao ¹, Daniel Sykora,¹ Emily M Olson,² David Sanborn,³ Carina Himes,⁴ Ahmed Shafii Mohamed,⁵ John Matulis⁵

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¹Department of Internal Medicine, Mayo Clinic Rochester, Rochester, Minnesota, USA

²Department of Medicine, Division of Pulmonary and Critical Care, Northwestern University Feinberg School of Medicine, Chicago, Illinois, USA

³Division of Pulmonary Medicine and Critical Care, Mayo Clinic Rochester, Rochester, Minnesota, USA

⁴Department of Anesthesiology, Montefiore Medical Center, New York, New York, USA

⁵Division of Community Internal Medicine, Mayo Clinic Rochester, Rochester, Minnesota, USA

Correspondence to

Dr John Matulis;
Matulis.John@mayo.edu

ABSTRACT

Colorectal cancer (CRC) is the third-most lethal cancer in the USA, and early detection through screening is crucial for improving outcomes. However, significant disparities in access and utilisation of CRC screening exist among patients with limited English proficiency. Our Quality Improvement (QI) team developed and implemented a video, featuring a Somali-speaking physician, created with input from internal medicine (IM) residents, patient education experts and community leaders to increase the rate of CRC screening uptake within a Somali-speaking population receiving primary care within an IM Residency Clinic. The baseline proportion of average-risk Somali-speaking patients who had successfully been screened for CRC was 46.3% (63/134). The proportion of patients agreeable to undergo CRC screening was assessed monthly from the beginning of video implementation (June 2022 to December 2022). We found that this intervention corresponded with a significant increase in willingness to undergo CRC screening from 36.4% to 100% during the early stages of intervention. At the end of our measurement timeframe, the proportion of the original population fully screened for CRC was 50.7% (68/134). Implementation of the video intervention was also assessed and determined to be minimally disruptive to the clinic flow.

INTRODUCTION

Problem description

Colorectal cancer (CRC) is the third leading cause of cancer-related deaths, yet nearly 30% of adults in the USA do not undergo age-appropriate screening.¹ Screening rates among patients with limited English proficiency (LEP) are even lower, often leading to late-stage diagnosis and increased mortality.² Within the Mayo Clinic Rochester Internal Medicine Residency Primary Care Clinic ('clinic'), which serves a panel of roughly 13 000 total patients, the Somali-speaking population represents both the largest proportion of non-native English-speaking patients within the practice, yet also the lowest CRC screening uptake percentage (figure 1).

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Patient populations in the USA with limited English proficiency have disproportionately lower rates of colorectal cancer (CRC) screening compared with English-proficient patients, which can be associated with time, cost, cultural and language barriers and limited understanding of preventive health.

WHAT THIS STUDY ADDS

⇒ Our Quality Improvement team designed and implemented an educational video for Somali-speaking patients after thorough stakeholder analysis and community engagement, with a script written based on culturally relevant principles, delivered by a Somali-speaking physician to inform and persuade patients to undergo CRC screening.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Collaboration with community leaders and stakeholders successfully increased the willingness to undergo CRC screening in our Somali-speaking population. Broader implementation of such interventions will ideally help to decrease the screening disparity seen in limited English-proficient populations.

The clinic is staffed by roughly 150 resident physicians in total, divided evenly across their first, second and third years of residency. First-year residents rotate through a structured Quality Improvement (QI) curriculum in their ambulatory rotation, thus creating a longitudinal team of rotating residents with continuity from faculty members, further enhanced by robust leadership support that has prioritised equity and CRC initiatives as central to our institutional mission. This committed environment, in tandem with the multicultural patient demographic, presented a prime opportunity for a potent and meaningful intervention to enhance CRC screening rates among our Somali-speaking patients.

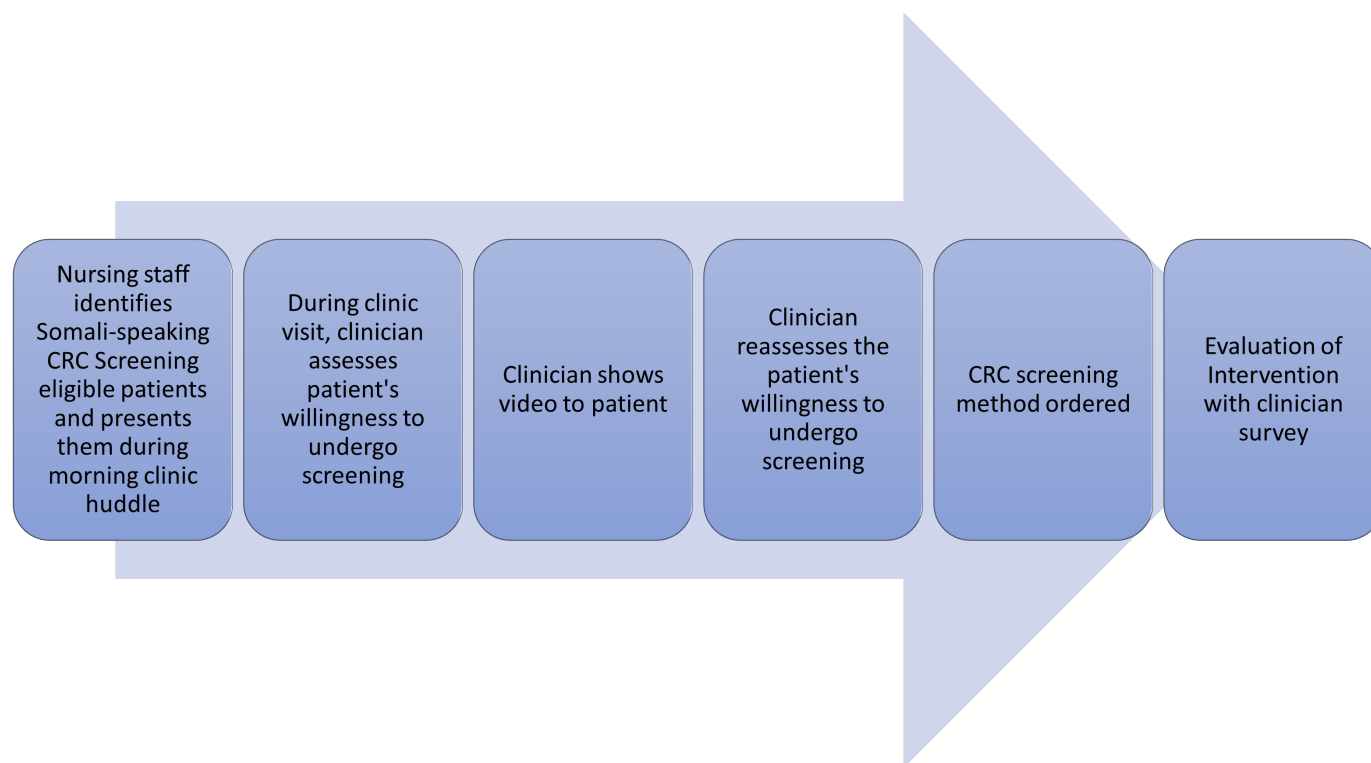


Figure 1 Diagram of the described intervention within the clinic workflow. CRC, colorectal cancer.

Available knowledge

In the USA, the majority of CRC deaths are attributable to non-screening.³ Within Minnesota, where the largest Somali diaspora in the country resides, only 34.3% of age-appropriate Somali-speaking patients have undergone screening for CRC, the lowest percentage of any non-English speaking patient population.⁴ Research has highlighted several barriers to CRC screening in the Somali population, including lack of knowledge, emotional barriers, acculturation, accountability and fatalistic beliefs.⁵ Intervention strategies, such as culturally adapted education videos, have shown promise in improving CRC screening rates.

Rationale

We hypothesised that providing culturally and linguistically appropriate education could help overcome several of the identified barriers to CRC screening in our Somali-speaking population. Nakajima *et al* demonstrated the potential effectiveness of this approach by conducting workshops for Somali men using a culturally adapted CRC education video.⁶ After showing a 25 min video discussing cancer screening from a religious perspective, educating on CRC screening and dispelling myths, this team found the proportion of those who had a positive change in understanding the nature and benefits of CRC screening increased significantly, with 85% of participants stating they would undertake screening in the next year.

Specific aims

This project aimed to increase the percentage of Somali-speaking patients seen in the clinic meeting CRC screening

guidelines by 5% (from 46.3% to 51.3%) within 6 months of project initiation. We aimed to achieve this through the development and implementation of a culturally adapted educational video during clinic visits, with the goal of targeting the reluctance and aversion to obtaining CRC screening in our Somali-speaking clinic patients, thereby reducing the disparity in screening between this population and our English-speaking patient population. The purpose of this report is to share our approach, its implementation and its impact on CRC screening rates among this population in our clinic.

METHODS

Baseline measurements

The baseline measurements for CRC screening disparities were collected retrospectively by reviewing the CRC screening status of all clinic patients (n=4678) between the ages of 50 and 75 years, as per the previous US Preventive Services Task Force (USPSTF) guidelines.¹ Notably, given that USPSTF CRC screening guidelines had only recently changed to include patients aged 45–49 years in May 2021, and with the delay in mandated insurance coverage for the newly included age group, baseline measurements excluded patients between the ages 45 and 49, as there had been insufficient time to compare screening uptake equally. However, during video implementation, all eligible patients including this younger age group were included in the intervention group to ensure appropriate guideline-directed care. Thus, data assessing screening rates in the intervention group included all patients aged 45–75 while comparison data are standardised to the

Table 1 Baseline proportion of patients meeting colorectal cancer screening guidelines

Language	% screened (n)	Total patients
English	75.1	4124
Non-English	60.2	512
Somali	46.3	134
Spanish	46.9	81
Arabic	67.1	73
Vietnamese	69.6	56
Cambodian (Khmer)	77.5	40
Chinese (Mandarin)	79.3	29

Somali is the most frequently spoken, non-english language in the Mayo Clinic Internal Medicine Residency Clinic and the group of patients with the lowest CRC screening rate

patient subset aged 50–75.). With a subgroup analysis by primary language, we found that the highest rate of CRC screening completion was 75.1% among English-speaking patients. Somali-speaking patients represented the lowest CRC screening uptake rate at 46.3% (62/134). There was a statistically significant difference in CRC screening uptake between patients identifying English versus non-English as their primary language ($p < 0.01$) (table 1).

The overall improvement measure was defined as the percentage of eligible patients identifying Somali as their primary language in our clinic meeting USPSTF guideline-directed CRC screening. However, this outcome measure inherently comprises multiple steps by several stakeholders, such as the patient attending a healthcare appointment, the clinician addressing CRC screening, the patient assenting to undergo screening and the patient following through with the chosen study (stool-based test or colonoscopy). A random sample and detailed narrative chart review of 28 eligible Somali-speaking patients who had not met CRC screening guidelines at baseline demonstrated that 12 of these cases (43%) were due to patient-initiated factors (eg, hesitancy, refusal), 10 (36%) were due to the lack of initiation from the physician and 6 (21%) were due to failure to complete an ordered screening study successfully.

With the clinic's limited sample size and thus the understanding that more time may be needed to observe a significant change in the primary outcome measure, we defined an intermediate outcome measure during the early stages of intervention, measuring the percentage of Somali-speaking clinic patients agreeable to obtaining CRC screening pre intervention and post intervention. We did not establish a control group during this intervention, in part due to the pre-existing small sample size, and prior understanding that our Somali-speaking patients have higher than average appointment no-show rates. To not deny the opportunity to have the education and tools to undergo screening, the preintervention data served as a point of comparison for the postintervention data, allowing us to assess the effect of the intervention.

Design

Before creating the intervention, we conducted an extensive background exploration of the quality gap including stakeholder interviews with Mayo Clinic Somali interpreters and local non-Mayo Clinic community health workers who regularly work with our Somali-speaking population. We further performed a retrospective review of clinic notes and clinician interviews to further understand system and clinic process barriers to screening. Since the major reason for the lack of uptake was traced to patient-initiated factors (43%, as noted above), the intervention was designed to primarily target patient reluctance or aversion, which we will henceforth refer to broadly as 'patient hesitancy'. It was also felt that incorporating an intervention in the clinic setting would also address the second major issue of lack of physician initiation during a visit.

Patient hesitancy was found to be related to individual subjective feelings, cultural/religious reasons and lack of familiarity with the concept of screening or with the process of CRC screening. Stakeholder interviews revealed that patients often felt anxiety or fear of pain surrounding the CRC screening. Complex feelings of a desire to maintain privacy and avoid shame were also discovered. Common cultural and religious reasons for hesitancy included fatalistic beliefs and modesty.

Discussions with Somali community members also uncovered the cultural emphasis on spoken word over written text, and that many Somali-speaking individuals are illiterate. Thus, a video format was ultimately selected for the intervention. This approach eliminated the need for literacy and in-person interpreters, and further, a video format could allow for wider dissemination of the intervention and easier implementation into the appointment workflow.

Based on stakeholder conversations, a script (see online supplemental materials) was written with the following principles: (1) ensuring a baseline understanding of screening methods, (2) dispelling misconceptions and myths and (3) emphasising cultural values (eg, the importance of social/community responsibility). It was subsequently translated with the assistance of the Mayo Clinic Somali interpreters and delivered by a Somali-speaking physician (ASM).

In evaluating the counterbalance of the disruptiveness of the intervention, we consistently measured provider feedback based on a Likert scale incorporated within the postintervention survey. We additionally worked with staff in our institution's patient education and information technology departments to ensure that the video could be easily accessed on any institutional computer.

Strategy

Plan–do–study–act (PDSA) 1

Our first PDSA cycle in this project was producing and implementing the tool to address patient hesitancy in proceeding with CRC screening.

The plan step involved identifying the best strategy for educating and persuading the Somali-speaking patient population. Discussions with community members and leaders were critical in identifying key patient-related factors to the disparity. This led our team to develop a 3 min long video in the Somali language (see online supplemental materials) that provided the patient with key information about the options for CRC screening and used principles from behavioural science to motivate them to make this positive change in their health behaviours.

In the do step, the video was shown for CRC screening eligible Somali-speaking patients attending an appointment in our clinic. At the beginning of each week, the investigator team would screen the clinic calendar for eligible patients (typically an average of one patient per week) and contact the physician seeing the patient to explain the video demonstration process. During a given visit, the physician would assess the patient's willingness to undergo CRC screening and subsequently display the video prior to the resident staffing the patient with the supervising physician. After the patient viewed the video, the physician would reassess whether the patient was agreeable to screening, on which a CRC screening method would be ordered if so (figure 1).

The study step involved evaluating the impact of the video on the patient's decision. The primary outcome measure studied was the proportion of CRC screening eligible Somali-speaking patients for whom screening was ordered. The secondary outcome was evaluated via a survey for their clinician to demonstrate the difference in preintervention and postintervention willingness to undergo screening.

The act step further elucidated that though patient reluctance to proceed with ordering or scheduling a screening test declined significantly with the video intervention, actual completion rates of the screening remained low.

Plan-do-study-act (PDSA) 2

Our second PDSA cycle focused on the sustainability of the initiative past its initial implementation.

The plan step involved the introduction of systematic reminders within the electronic health record (EHR). Nursing colleagues would additionally print an EHR report each morning that would identify any resident physicians who had appointments with Somali-speaking patients within the appropriate age group for CRC screening. The do step consisted of the practical application of this plan wherein every morning, nursing staff would discuss eligible patients for the intervention during the morning clinic huddle with the rest of the healthcare team. In the study phase, we monitored the reminders and confirmed that all patients were successfully being captured by this system. In the act step, based on positive feedback from our nursing colleagues and resident physicians, we identified this strategy as a reliable method of sustaining the intervention past the initial project led solely by the QI team.

RESULTS

The video was presented to 38 patients in 6 months. During our initial intermediary measurement 3 months after the intervention was first implemented, 36.4% (4/11) were willing to undergo CRC screening pre intervention. After watching the video, 100% (11/11) of patients agreed to undergo screening and had a screening test ordered during that visit. During the entirety of the 6-month intervention period, the video was presented to 38 patients, 32 of whom agreed to and were ordered a test and 6 of whom declined (figure 2).

The baseline proportion of successfully screened Somali-speaking patients aged 50–75 before the beginning of this quality improvement project was 46% (62/134). After 6 months, the proportion of the baseline group who were successfully screened increased to 50.7%

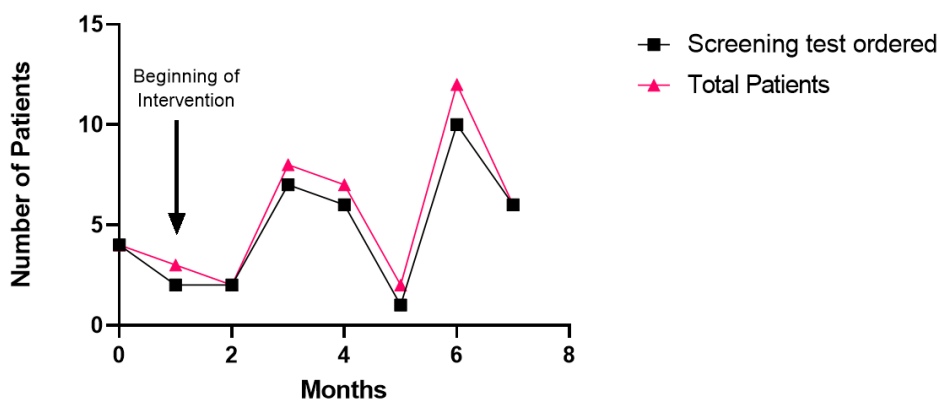


Figure 2 Run chart demonstrating the number of patients who agreed to having a screening test ordered out of the total number of eligible patients exposed to the intervention (May–December 2022).

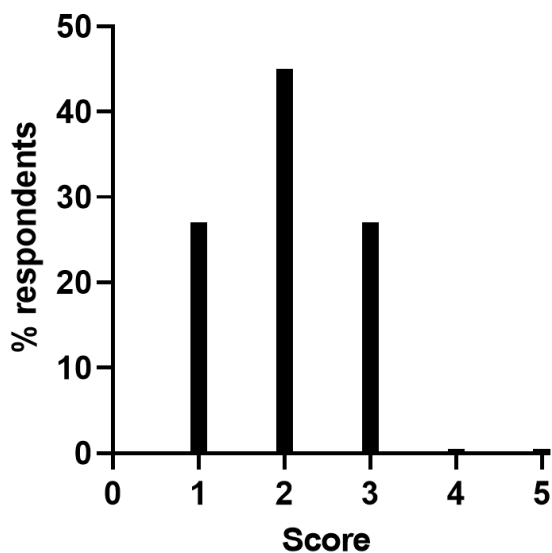


Figure 3 Survey responses from resident physicians on how disruptive the video intervention was to the clinic visit.

(68/134), representing an absolute percentage increase of 4.4%.

Feedback from the surveys was largely positive, with video demonstration not seen as largely disruptive to clinic workflow. The postintervention physician survey with a Likert scoring system (figure 3) with a scale of 1–5 (1 being the least disruptive) demonstrated 27% scoring a 1, 45% scoring a 2 and 27% scoring a 3. No survey respondents answered that the intervention was a 4 or 5.

DISCUSSION

Many barriers to successful completion of CRC screening exist at baseline, which are exacerbated by language and cultural differences in Somali-speaking patients. In this quality improvement project, we found that targeted audiovisual education could help mitigate patient reluctance to undergo screening.

The primary learning in this project was the value of robust stakeholder engagement in selecting effective interventions for the targeted patient population. Were it not for these detailed and open discussions with Somali community leaders, it is likely that key information involving cultural values and the prevalence of illiteracy would have been missed resulting in less effective patient educational interventions.

Second, we found that though a video-based intervention could be very effective in shared decision-making during a clinic visit, it was not enough to ensure successful follow through with a CRC screening test. This is most notably demonstrated in the difference between ordered CRC testing after intervention (32/38) and the actual number of completed testing within our period of measurement (6/38). Further analysis of the reasons for the lack of screening completion and targeted improvement initiatives are a few of this project's next steps in its

future PDSA cycles. One factor that accounts for some of the difference in the number of patients shown the video compared with the overall completed testing is that the additional age group of 45–49 was not accounted for in baseline measures but was included in the intervention. Nonetheless, our overall measurement did not achieve our target of a 5% increase in the absolute percentage value of screened patients in this population, reaching 4.4% at the end of our measurement period.

Sustainability was ingrained in the project's design, most notably in its collaborative approach. The QI team was composed of resident physicians from the primary care clinic, reinforcing continuity of efforts and an understanding of the patient population. The direct involvement of residents facilitated the consistent implementation and optimisation of the intervention. Furthermore, with the collaboration with the patient education department within the hospital enterprise, the video was accessible across various departments, supporting a broader dissemination of the intervention throughout the institution. Additionally, the integration of the process into the preclinic huddle ensured its consistent application and reinforced the project's embedment into the clinic's workflow.

With abundant successful rates of increasing patient willingness to undergo screening, yet without the same drastic increase reflected in the rates of fully screened individuals, ongoing work has focused on repeating the PDSA cycle to address the barriers to completing a screening test successfully, including the language barrier complicating the completion of stool-based testing and obstacles to scheduling and attending a colonoscopy.

Limitations

One of the major limitations of our study was our sample size. Though Somali-speaking patients represent our largest non-English-speaking demographic, the number of eligible patients presenting for an office visit during our intervention period was small. Broader dissemination of our intervention to other primary care clinics in our institution would allow us to better evaluate success.

Another barrier we faced in this project was resource limitation, due to the inherent difficulty of creating an intervention in a relatively uncommon language. We did not have sufficient access to a Somali-speaking professional to allow for the iterative changes to the intervention (eg, refiling the video based on findings during our study phase).

CONCLUSION

Disparities in CRC screening in LEP patients remain an unresolved health equity concern. This quality improvement project showcased how a linguistically and culturally informed video-based educational intervention created with the engagement of community leaders can enhance the willingness of Somali-speaking patients to undergo CRC screening. Despite not achieving the initially set

target of a 5% increase in the absolute percentage value of screened patients in this population, it marks a significant stride in mitigating health disparities among LEP patients. Future directions for the project include targeting other intermediate barriers to successful screening, including no-show rates, initiating cancer screening conversations in clinic and return of testing kits/following up on colonoscopy appointments.

Importantly, while the focus was on Somali-speaking patients, the intervention's structure is adaptable to other LEP populations. The same model can be applied to create culturally and linguistically appropriate resources for different patient groups and for various screening efforts, underscoring the project's scalability and impact. The intervention's generalisability is also notable. While this study took place in a specific region, the barriers faced by Somali-speaking patients are not unique to this area. Consequently, the intervention's success here suggests a potential for similar positive outcomes among Somali-speaking populations across the country.

In conclusion, this project is a testament to the utility of culturally sensitive and linguistically appropriate interventions in addressing health disparities in LEP populations and signifies an ongoing commitment to health equity, with promising potential for further scalability and broader implementation.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants. The Mayo Clinic Institutional Review Board (IRB) acknowledges that based on the responses submitted for this new activity through the Mayo Clinic Quality Improvement Wizard tool, and in accordance with the Code of Federal Regulations, 45 CFR 46.102, the above noted activity does not require IRB review. Participants gave informed consent to participate in the study before taking part.

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Data availability statement All data relevant to the study are included in the article or uploaded as online supplemental information.

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ORCID iD

Rebecca Yao <http://orcid.org/0000-0001-7768-9545>

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Title: Improving Colorectal Cancer Screening Disparities Among Somali-Speaking Patients in an Internal Medicine Residency Clinic**Supplementary Materials:**

Script (English):

Benefit of early detection

A lot of people sometimes think, "I feel fine, and I don't have any symptoms, why do I need a test?"

Most people who are diagnosed with colorectal cancer will not know they are developing it until it is too late for treatments to be effective. Screening tests can detect cancers early when it is easier to treat and will have less of an impact on the things you like to do on a day-to-day basis.

Anticipated regret

Another reason that is sometimes brought up is, "If I'm going to get cancer, I'm going to get cancer and there is no treatment for cancer"

Without getting screened, you might find out too late that you have cancer. Patients who get tested and diagnosed earlier have a much better chance of curing the cancer. A late diagnosis can be much more physically and mentally painful as the cancer could be difficult to cure.

Social Responsibility

Developing colorectal cancer can have a significant physical and emotional impact on your life. However, it is not just you who would suffer. Typically, your family and community suffer with you, especially if they depend on you for their wellbeing and livelihood. Catching the cancer with screening early can help minimize the impact on you and your family and community.