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DISCREPANCIES BETWEEN PREFERRED AND ACTUAL UTILIZATION OF COLORECTAL CANCER SCREENING: A COMPREHENSIVE REVIEW OF DEMOGRAPHIC AND MULTIFACTORIAL DETERMINANTS

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ABSTRACT

Objectives: Preferences for colorectal cancer (CRC) screening methods vary significantly across socio-economic and demographic groups. This review describes and quantifies the notable discrepancy between patients' declared choices and actual participation in early detection strategies. It also identifies the underlying determinants driving this persistent intention-behavior gap.

Methods: A narrative synthesis of the literature (2012–2026) was conducted using the PubMed database. The analysis focused primarily on peer-reviewed studies, supplemented by a relevant preprint. This research examines patient inclinations regarding various CRC screening methods, real-world adherence rates, and the socio-demographic determinants shaping the actualization of preventive choices and long-term compliance.

Key Findings: While clinicians almost unanimously favor colonoscopy, the vast majority of patients prefer non-invasive alternatives. This discrepancy is driven primarily by test characteristics—such as bowel preparation requirements, testing frequency, and perceived capability to complete the diagnostic pathway—as well as logistical constraints, including disruption of daily routines and the time required. Regardless of declared preferences, the actual proportion of individuals undergoing clinical evaluation remains insufficient. Age, race and ethnicity, comorbid gastrointestinal diseases, a family history of CRC, and educational attainment act as primary demographic determinants dictating these modality selections. Healthcare system architecture also proves decisive. Specifically, active and patient-navigated frameworks exhibit greater participation than passive models.

Conclusion: Closing the CRC screening intention-behavior gap requires transitioning toward genuine shared decision-making. Improving compliance heavily relies on integrating highly tolerable diagnostic methods with supportive healthcare infrastructures, structured patient navigation, and an empathetic approach to clinical care.

KEYWORDS

Colorectal Cancer Screening, Diagnostic Adherence, Intention-Behavior Gap, Non-Invasive Diagnostics, Patient Preference, Socio-Demographic Determinants

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Introduction

Standing as the third most frequently detected malignancy and the second deadliest oncological condition globally, CRC poses a profound threat to public health. For decades, the disease burden was overwhelmingly concentrated within highly developed nations, fueled primarily by sedentary routines and Western dietary norms. Today, however, the epidemiological landscape is undergoing a notable transformation. Developing and transitioning economies are now reporting a concerning upward trajectory in CRC prevalence. This geographical spread is intrinsically linked to swift urban expansion, alongside a growing, population-level embrace of the dietary and behavioral paradigms once exclusive to industrialized societies (Matsuda et al., 2025).

The demographic profile of colorectal cancer is fracturing. Global data reveal a stark epidemiological contrast. While diagnostic rates among older patient cohorts (50–74 years) have either stabilized or declined, the situation for younger populations is rapidly deteriorating. Early-onset cases (<50 years) are surging. This trend appears most pronounced in highly developed nations—including South Korea, the United States, Australia, and New Zealand—contrasting with the low figures reported in countries like India and Uganda (Sung et al., 2025). Such dynamics underscore the urgent need to investigate early-onset pathology mechanisms and adapt preventive frameworks for evolving populations.

A patient's prognostic outlook is closely linked to early diagnosis, which plays a key role in clinical management and survival outcomes (Mo et al., 2022). To facilitate earlier intervention, the medical toolkit has

expanded well beyond traditional colonoscopy. Current methodologies incorporate advanced imaging—such as capsule endoscopy and computed tomography colonography (CTC)—alongside a new generation of molecular diagnostics. Prominent among these alternative approaches are novel blood assays, genetic stool testing, and M2-pyruvate kinase (M2-PK) testing (Pox, 2014). This clinical shift is deeply pragmatic. By bypassing many logistical and physical barriers linked to invasive procedures, these technologies hold the potential to substantially elevate overall participation.

Despite a broader array of diagnostic choices, optimizing real-world screening programs requires navigating healthcare infrastructure, health literacy, and systemic access. To overcome these obstacles, recognition of patient inclination is essential. Public sentiment toward CRC early detection methods is rarely uniform and varies according to demographic, personal, and economic factors. Non-invasive methods, such as fecal immunochemical test (FIT) and multi-target stool DNA (mt-sDNA) assays, tend to attract older or screening-naïve individuals (Heidenreich et al., 2022; Makaroff et al., 2023). However, conventional colonoscopy is frequently selected as a primary option, especially among younger adults and patients familiar with endoscopic procedures (Shaukat et al., 2026).

These behavioral patterns reveal a striking paradox in preventive oncology. A person's stated intent to screen rarely guarantees their actual attendance. Even when individuals indicated they intended to undergo testing, overall completion rates frequently remain inadequate (Wolf et al., 2016). Risk-stratified models expose this attrition distinctly. Patients readily engage with initial non-invasive testing, yet compliance collapses as soon as they receive a high-risk flag requiring an invasive follow-up (Chen et al., 2018; Chen et al., 2020). Addressing this disconnect requires balancing the patient's desire for a comfortable, low-effort procedure with the clinical necessity of high diagnostic precision and full procedural follow-through.

Since demographic variables strongly shape medical choices (Chen et al., 2018; Makaroff et al., 2023; Ola et al., 2024; Shaukat et al., 2026), customized public health interventions are essential. Therefore, the primary objective of this review is to systematically evaluate how population diversity influences CRC screening preferences and to identify the specific hurdles preventing declared intentions from becoming actual clinical actions. By dissecting the disconnect between intended choices and real-world compliance, this synthesis aims to provide practical frameworks for refining public health strategies, boosting program adherence, and effectively reducing the global morbidity and mortality linked to this malignancy.

Methodology

Research Design

Investigating the multifactorial determinants shaping CRC screening preferences and the ongoing intention-behavior gap requires a robust analytical framework; therefore, this review relies on a systematic narrative synthesis. The study synthesizes both qualitative and quantitative evidence to draw insights from a wide range of methodological approaches. Evaluated literature encompasses discrete choice experiments, longitudinal multi-payer database records, conjoint analyses, randomized controlled trials, systematic meta-analyses, and cross-sectional surveys. Integrating these diverse designs captures the nuanced relationship between patient choices, demographic backgrounds, and the actual structure of healthcare systems.

Information Sources and Search Strategy

A comprehensive literature search of the PubMed database was executed, covering the period from 2012 to 2026. The goal was to encompass peer-reviewed literature and preprint advance publication capturing current epidemiological trends in CRC early detection determinants. The search strategy paired terms related to CRC screening with concepts like patient preference, screening adherence, and the intention-behavior gap. Cross-referencing these primary terms with keywords focusing on demographic determinants and CRC screening tools ensured a highly specific retrieval yield.

Selection Criteria

Maintaining high internal validity required the application of strict inclusion criteria. Studies were included if they focused on adult populations eligible for routine CRC screening. They also needed to provide concrete empirical data regarding preference distributions, actual uptake, or completion rates, alongside an assessment of the structural, socio-economic, or demographic elements influencing those outcomes. Any research that solely measured diagnostic accuracy without addressing patient behavior or adherence was excluded from the synthesis. Publications investigating strictly symptomatic patients rather than preventive care were also removed from this review.

Data Extraction and Synthesis

Data were systematically compiled into a unified standardized matrix. This facilitated the consistent tracking of study characteristics, participant demographics, and essential statistical values like Relative Risks (RRs), Odds Ratios (ORs), and probability values (p-values). The extracted data were then organized into four distinct thematic categories. These covered patient preferences and the variables influencing their choices, the ways socio-demographic factors stratify them, the tangible impact of different healthcare architectures, and a direct quantification of the intention-behavior gap. Grouping the literature in this manner provides a structural framework to evaluate the real-world barriers to preventive care.

Methodological limitations

A review of this magnitude inherently carries specific constraints. Evaluated literature exhibits substantial methodological diversity. Terminology such as “adherence” or “preference” therefore lacks uniformity across individual studies, and synthesis of these constructs should be approached with caution. Health infrastructure metrics also remain strongly linked to local political and economic realities. Projecting outcomes from a unified European registry onto a decentralized, privately funded network creates considerable analytical obstacles. Additionally, the rapid evolution of diagnostic tools exposes a temporal vulnerability. Patient inclinations documented prior to the broad implementation of advanced diagnostic methods risk rapid obsolescence.

Results

1. Divergent Perspectives on Diagnostic Modality Attributes and Selection Drivers

Results derived from a quantitative preference analysis assessing four CRC detection pathways highlight a profound divergence between medical priorities and patient inclinations. Clinicians aligned almost exclusively behind colonoscopy (96.8%). By contrast, the selection patterns among the participants at average risk (IAR) appeared substantially more divided. Within these respondents, multi-target stool DNA (mt-sDNA) emerged as the predominant choice (38.8%), followed by colonoscopy (32.5%), and the fecal immunochemical test (FIT) (19.2%). The methylated septin 9 (mSEPT9) blood assay garnered the least traction, capturing a mere 9.4% of all selections.

Both clinicians and patients cited diagnostic accuracy and the procedural nature of the exam as the primary motivations behind their choices. Yet, the IAR group uniquely valued the testing interval. Furthermore, preference distributions were highly sensitive to prior medical experience. Individuals with no CRC screening background heavily favored non-invasive methods, whereas those with a history of endoscopic procedures exhibited a clear statistical pivot toward invasive options ($p < 0.001$) (Heidenreich et al., 2022).

Makaroff et al. (2023) explored the attributes governing patient decision-making by presenting 1,000 screening-naïve adults with five diverse CRC modalities. Age significantly modulated their choices (adjusted $p = 0.019$). Triennial FIT–fecal DNA emerged as the leading option across both the 40–49 (34.6%) and ≥ 50 (37.3%) demographic groups, consistently surpassing alternative methods like virtual colonoscopy, video capsule endoscopy, and standard colonoscopy. When researchers restricted participants to tier-1 guidelines, the collective preference for non-invasive testing became even more pronounced: annual FIT was selected over decennial colonoscopy by 68.9% of the younger cohort and 77.4% of older participants ($p = 0.004$).

Across both age groups, the fundamental nature of the procedure—specifically, the test type—constituted the paramount decision-making attribute, holding 46.3% and 53.7% of the relative importance in the younger and older cohorts, respectively. The anticipated reduction in CRC risk was the second most critical factor (21.7%–27.1%). Considerations such as the potential for severe complications, testing frequency, dietary restrictions, and pre-procedure bowel preparation had a negligible impact (under 10% each). However, qualitative feedback underscored the severe influence of personal and systemic barriers. Practical simplicity, including minimal commute requirements and avoiding interference with daily schedules, was pointed to as the dominant motivator (42.1%). Additional major deterrents encompassed the fear of adverse medical events (23.8%), the physical intrusiveness and resulting psychological discomfort (16.7%), and strict economic constraints tied to healthcare coverage or personal funding (15.4%).

Further analysis outlined the clinical and demographic factors shaping patient preferences. Within the 40–49 age bracket, having multiple comorbid conditions significantly diminished the likelihood of choosing FIT, prompting a shift toward colonoscopy among patients with complex medical profiles. Among adults aged 50 and older, those who explicitly reported a plan to undergo CRC evaluations were statistically less likely to select FIT. Demographic stratification also indicated a sex-based divergence: men demonstrated a comparatively higher willingness for colonoscopy, whereas women more consistently prioritized stool-based

assays. The analysis also built a distinct profile of the individual most likely to declare an intention to screen. These participants were predominantly male, employed or enrolled in higher education, and possessed higher household incomes. They also maintained active health insurance, reported recent gastrointestinal symptomatology, and acknowledged a higher personal risk of CRC (Makaroff et al., 2023).

2. Socio-Demographic Determinants and Evolving Trends in Screening Selection

To evaluate how individual patient profiles and cultural backgrounds shape diagnostic choices, Shaukat et al. (2026) executed a comprehensive assessment of 1,014 adults across a various healthcare settings. Traditional colonoscopy emerged as the dominant preference for the plurality of respondents (45.5%), with the blood-based screening assays ranking second (29.9%). General inclinations varied significantly across demographic groups. Age impacted test selection ($p = 0.0429$); participants under 70 years favored colonoscopy (47.5%), whereas those aged 70 and older showed a greater affinity for blood- (31.9%) and stool-based (20.2%) tests.

Racial and ethnic backgrounds markedly influenced these inclinations ($p < 0.001$). Colonoscopy maintained its status as the preferred modality among White (54.6%), Black (44.6%), and Hispanic (35.9%) individuals. Asian and South Asian respondents diverged from this pattern, distinctly opting for blood-based evaluations (37.2% and 24.4%, respectively).

Underlying multivariable factors driving these clinical selections were further revealed. A record of previous endoscopic examination served as the primary predictor for choosing colonoscopy ($OR = 6.83$, $p < 0.001$). Additional factors promoting the invasive route included—in descending order of influence—identifying as a non-smoker ($OR = 2.04$, $p = 0.028$), being younger than 70 years ($OR = 1.72$, $p = 0.003$), and the absence of previous fecal assays ($OR = 1.56$, $p < 0.001$).

A preference for blood-based diagnostics was most pronounced among subjects with no prior colonoscopy history ($OR = 1.76$, $p = 0.002$), followed by non-smokers ($OR = 1.73$, $p = 0.048$), and participants lacking university-level education ($OR = 1.46$, $p = 0.038$). Regarding stool-based evaluations, adults over 80 years of age demonstrated the highest overall selection probability ($OR = 3.34$, $p < 0.001$) (Shaukat et al., 2026).

An extensive population-based analysis spanning the 2017–2023 period investigated shifting patterns in screening selection among insured Americans. Endoscopic examination maintained its status as the predominant diagnostic choice, experiencing a marginal increase from 53.0% to 58.7%. The broader landscape was characterized by a pronounced reconfiguration of stool-based testing. The adoption of mt-sDNA assays expanded more than eightfold to 20.4%. This effectively displaced traditional fecal-based tests (FIT/FOBT), which saw their proportion decline from 44.0% to exactly 20.4%. These shifts were most evident within the 45–49 demographic, a cohort where colonoscopy rates climbed to 61.6% and mt-sDNA usage emerged from zero to nearly a quarter of all tests. Concurrently, the reliance on FIT/FOBT among these younger adults saw a sharp decline, dropping to 14.1% from an initial 50.8% by the study's conclusion (Greene et al., 2025).

3. Impact of Healthcare Architecture and Delivery Models on Screening Participation

A cross-sectional analysis of 29 European nations illustrated how national healthcare architecture influences the uptake of CRC screening interventions. Patient involvement followed a distinct systemic hierarchy. Countries featuring fully operational, broadly deployed fecal-test initiatives or those offering procedural flexibility through colonoscopy recorded the highest participation rates, reaching peaks of approximately 75% in Denmark and Luxembourg. Conversely, systems lacking coordinated outreach, or relying heavily on isolated, localized initiatives, saw significantly diminished uptake. These rates peaked at only 34.2% in Latvia and plummeted to just 6.3% in Bulgaria. A consistent set of socio-behavioral determinants negatively impacted adherence across these diverse systems. Unpartnered status, restricted educational attainment, residence in rural settings, and highly populous households were all associated with reduced clinical follow-through. The least likely to undergo screening were also individuals in the younger eligible cohorts, alongside those with infrequent medical interactions or suboptimal health behaviors (Ola et al., 2024).

Transitioning from macro-level national architectures to specific organizational delivery models provides deeper insight into these behavioral trends. In the study, engagement rates across various CRC screening methods were evaluated by monitoring nearly 20,000 individuals. The investigation measured compliance across three distinct pathways: colonoscopy, FIT, and a risk-stratified model. Involvement fluctuated substantially based on the assigned intervention. Completion of FIT reached a high of 94.0%, whereas follow-through in the primary colonoscopy group was notably lower at 42.5%. The hybrid, risk-adapted strategy yielded a moderate overall uptake of 85.2%. Results within this particular framework

nonetheless diverged sharply based on patient risk categorization. While 94.0% of subjects with a lower risk profile completed their assigned FIT, the execution rate among those identified as high-risk (and subsequently referred for invasive examination) dropped to just 49.2% (Chen et al., 2020).

The socio-clinical impediments noted in this trial aligned closely with established patterns in urban Chinese populations (Chen et al., 2018). This particular investigation, however, stood out by identifying former smoking habits and antecedent intestinal evaluations as additional, highly significant predictors of test completion (Chen et al., 2020).

4. Quantifying the Intention-Behavior Gap and Barriers to Diagnostic Follow-Through

Among 453 adults with health coverage but no history of CRC screening, there exists a severe discrepancy between their stated intentions and practical execution. Even with an explicit commitment to undergo testing within a twelve-month timeframe, the aggregate completion rate reached only 22.3%. Individuals favoring home-based fecal assays demonstrated a notably lower likelihood of fulfilling this test (16.6%) compared to proponents of colonoscopy (29.9%). Interestingly, subjective attitudes toward colonoscopy, rather than an accurate understanding of the procedure, drove the inclination for stool-based options (Wolf et al., 2016).

The transition from risk identification to diagnostic evaluation is marked by a severe drop-off, leaving only 15.3% of the high-risk cohort to adhere to colonoscopy recommendations in the studied Chinese population. Regional engagement proved highly inconsistent, with figures fluctuating between 9.7% and 25.2 % depending on the province. Between 2012–2013 and 2013–2014, uptake increased from 12.9% to 17%. A patient's medical background heavily dictated the probability of fulfilling the referral. The highest likelihood of attendance occurred among participants diagnosed with chronic intestinal conditions, earlier identified polyps, positive findings in prior stool assays, or those with documented familial ties to the malignancy. Demographic variables also influenced engagement; completion levels peaked among adults aged 50–69 and those possessing at least a high school diploma (Chen et al., 2018).

To investigate the discrepancy between intended diagnostic routes and actual procedural follow-through, researchers tracked a cohort of 1,224 individuals who were not adherent to CRC screening guidelines. Initial preferences were split among colonoscopy (41.1%), fecal testing (FOBT) (35%), sigmoidoscopy (12.7%), and barium enema (5.7%), yet true procedural concordance was achieved in only half of all cases. When a subject's clinical outcome deviated from their initial choice, colonoscopy emerged as the most frequent alternative, constituting 52% of such interventions. Opting for more invasive modalities (colonoscopy or sigmoidoscopy) was predominantly motivated by professional guidance, a clear recognition of the procedure's preventive benefits, and heightened malignancy-related apprehension. These choices were further reinforced by the patient's overall willingness to undergo screening and their confidence in completing the examination. By contrast, the selection of a fecal test was primarily linked to their perceived capability in successfully fulfilling that particular assay (Hawley et al., 2012).

Shifting the focus toward radiological screening tools, an aggregated review showed CTC as the preferred option in 16 of 23 studies, whereas only 3 favored standard colonoscopy. Symptomatic patients appear neutral regarding the choice of procedure; however, individuals enrolled in preventive programs consistently lean toward CTC due to its reduced burden. This inclination becomes especially pronounced when the medical protocol incorporates less intensive pre-procedure regimens, markedly enhancing its appeal (Lin et al., 2012).

Beyond theoretical appeal, real-world compliance data further clarify the link between perceived test attractiveness and screening uptake. When directly comparing just CTC and colonoscopy, the radiological alternative achieved a superior attendance rate of 28.8%, compared to 20.8% for the endoscopic option. CTC demonstrated a superior capacity for attenuating procedural rejection ($RR = 0.92$; $p = 0.012$), even though the observed variation in total engagement lacked sufficient mathematical weight to be significant ($RR = 1.26$; $p = 0.070$) (Zhu et al., 2020).

Discussion

This analysis highlights the demographic factors shaping preferences for CRC screening options and their implications for actual participation in early detection programs. A notable inconsistency defines modern preventive oncology. While the rapid expansion of non-invasive tools has indeed broadened public options and captured initial interest, actual follow-through remains suboptimal. The path from deciding to get tested to actually undergoing the procedure is far from linear. Achieving medical concordance is often hindered by a provider-patient mismatch, diverse demographic disparities, systemic healthcare flaws, and the logistical challenges associated with performing the complex procedures needed for appropriate care.

Routine practice may not consistently meet patient expectations. Medical professionals typically operate within frameworks designed to maximize analytical yield, prioritizing interventions that combine both diagnostic insight and therapeutic capability. In light of this focus, clinicians almost unanimously recommend colonoscopy as the method of choice.

Average-risk individuals approach the situation from a slightly different perspective. The public inclination is highly fragmented and deeply contextual. In the general population, lifestyle preservation and logistical convenience often carry as much weight in decision-making as diagnostic accuracy. Given access to non-invasive modalities—particularly mt-sDNA assays and annual FIT—many people choose these alternatives over traditional endoscopic examination. However, colonoscopy still retains a dominant position among specific cohorts who value definitive, one-step risk reduction and longer intervals between procedures.

This misalignment between clinical priorities and patient realities remains a major hurdle for public health; it inadvertently creates a dynamic where medical guidelines overshadow patient readiness, suppressing participation. Healthcare professionals naturally recommend the best care possible, opting for the most accurate test available. Yet, this strict clinical focus can easily eclipse a person's real-world everyday struggles.

While the fundamental nature of the test drives initial choice, qualitative evidence points to procedural logistics as another significant barrier. Factors strongly influencing these decisions include time requirements and changes to daily routines. Fear of clinical complications, testing frequency, dietary rules, and procedural embarrassment are related to participation, but they rank below basic convenience. Financial hurdles also remain secondary concerns. Even rigorous pre-procedure preparation rarely causes outright refusal on its own. Yet, making this step less demanding—particularly through the implementation of reduced cathartic regimens for CTC—markedly increases the appeal of alternatives like radiological imaging. Aligning medical recommendations with these challenges is therefore essential to keep hesitant individuals engaged in the screening process.

Moving beyond practical constraints, some patients simply refuse colonoscopy due to deep-seated personal beliefs or psychological aversion. Insisting on endoscopy in these cases often triggers complete clinical avoidance. To prevent this withdrawal, rigid medical protocols should yield to more adaptable strategies. Offering non-invasive modalities helps sustain compliance, following the principle that the best test is the one that gets done. This flexibility not only drives up screening uptake but also strengthens institutional trust. While diagnostic accuracy is paramount, the physical and emotional toll of a procedure often dictates the final outcome. Consequently, shared decision-making should be an integral part of the process rather than a theoretical concept.

Preferences for specific CRC screening methods are further influenced by a range of demographic factors. Among these, patient age is one of the main determinants. Younger cohorts tend to demonstrate a higher acceptance of endoscopic procedures. Such an observation may be explained by their overall physical capacity and the convenience of extended screening intervals. In contrast, older individuals typically prefer less invasive modalities such as blood- or stool-based tests. This approach appears to be entirely logical from a geriatric perspective. As age progresses, aspects like comorbidities, sedation, and the rigors of procedural preparation take center stage, often outweighing the therapeutic benefits of colonoscopy.

Acceptance of endoscopic examinations, particularly colonoscopy, is also influenced by ethnic and racial background. White respondents demonstrate the highest relative willingness to undergo endoscopy, although this only just exceeds the majority threshold. This inclination gradually decreases among Black and Hispanic populations, reaching its lowest level in Asian and South Asian communities, who pivot toward blood-based testing options. Translating these findings into practice highlights the value of an adaptable medical approach. By keeping these demographic variations in mind and ensuring that non-invasive alternatives remain readily accessible, healthcare providers can maintain the clinical flexibility needed to sustain overall compliance.

Differences in CRC screening preferences are further influenced by sex and educational attainment. Men show a greater acceptance of colonoscopy, whereas women prefer stool-based tests. Individuals with limited formal education tend to favor blood-based options, while those with higher academic backgrounds demonstrate a more pronounced inclination to utilize fecal-based tests or endoscopic methods.

Aggregated demographic and clinical data reveal a distinct profile of individuals most likely to undergo CRC screening. Completion rates are highest among those aged 50–69 with tertiary education. This group typically resides in urban areas with proactive medical outreach and is more likely to be employed and benefit from stable health insurance. From a clinical standpoint, they are often non-smokers with a family history of CRC or other gastroenterological conditions. They also demonstrate high test-specific perceived capability to complete it.

For most patients, a blood draw is a routine, passive procedure that fits seamlessly into general medical practice. Home fecal sampling, however, shifts the operational burden onto the individual. It requires a proactive, sometimes uncomfortable interaction with biological material and the confidence to execute multi-step instructions independently. A lack of self-efficacy in successfully fulfilling that particular test often leads participants to reject this method. The selection of stool-based tests is predominantly driven by this perceived competence rather than the diagnostic superiority of the tool itself.

Invasive procedures face a different challenge—the fear of the unfamiliar. Reluctance to undergo colonoscopy is highest before the first attempt. Individuals with prior experience are more likely to repeat it. Similarly, patients with underlying gastrointestinal conditions or a family history of CRC exhibit a markedly higher acceptance of invasive approaches. Awareness of the broader disease context helps reduce these psychological barriers. This pattern underscores the limitations of risk-stratified models. Although such frameworks demonstrate high efficacy in generating initial engagement through non-invasive stool testing, adherence declines once individuals are classified into elevated-risk categories and referred for further evaluation.

The integration of alternative CRC detection methods, such as mt-sDNA assays and CTC, may offer a balance between high diagnostic sensitivity and minimal lifestyle disruption. When given a choice, most participants favor these lower-burden options. Optimizing primary care workflows and aligning reimbursement structures with these preferences may provide a pathway to improve initial screening uptake.

However, these non-invasive tools represent only a partial solution. Positive results often necessitate endoscopic procedures perceived as uncomfortable or inconvenient. Overcoming this clinical friction appears key to ensure the completion of the diagnostic process and successfully close the intention-behavior gap. Simply offering a broad array of testing options may be insufficient. Public health initiatives should prioritize targeted campaigns that explicitly demystify clinical apprehensions. Beyond large-scale initiatives, the interpersonal influence of healthcare providers remains pivotal. Their direct recommendations strongly influence population attitudes. The transition to colonoscopy cannot be viewed as an isolated hurdle. Instead, it should be treated as an integrated clinical step requiring continuous support. By implementing structured patient navigation, medical systems may actively guide vulnerable populations through this psychologically challenging final stage.

While psychological and demographic factors strongly shape screening inclination, they are closely embedded within broader macro-level frameworks in which patients reside. Actual diagnostic coverage is largely determined by national healthcare infrastructures. Countries with well-established screening programs demonstrate markedly higher participation rates than those lacking such initiatives. Conversely, when preventive diagnostics rely primarily on patient initiative, overall engagement remains suboptimal. The absence of structured outreach results in a disproportionate burden of access on populations with limited resources.

Conclusions

Where CRC screening programs are well organized and achieve high participation, the proportion of malignancy detected at an early stage increases, thereby reducing disease-related mortality. However, this reality is not universal. Attendance rates and system capacities vary across different regions. Optimizing these efforts therefore transcends clinical logistics to constitute a multifaceted cognitive and organizational imperative.

The landscape of CRC early detection reveals evident differences in the selection of diagnostic modalities. While physicians value the additional therapeutic yield of colonoscopy, the general population heavily weighs lifestyle preservation. Consequently, many individuals favor non-invasive alternatives.

Naturally, procedures associated with logistical demands, such as specialized bowel preparation or disruption of daily routines, generate reduced initial appeal.

Screening choices are also profoundly shaped by demographic variables and psychological barriers. Preferences diverge across age, educational attainment, sex, and racial or ethnic groups. As an example, colonoscopy uptake is higher among younger cohorts, men, and White individuals. In contrast, older adults, women, and Asian populations frequently favor blood- or stool-based tests. The strongest inclination toward invasive procedures is observed among people with a family history of CRC, chronic intestinal conditions, or those characterized by a higher academic background. However, actual compliance hinges heavily on an individual's perceived self-efficacy, prior medical exposure, and healthcare infrastructure.

Systems with well-established CRC screening programs achieve higher participation rates than those relying on unstructured, patient-initiated care. While non-invasive stool-based tests successfully generate initial engagement, a critical challenge remains. Many individuals abandon the diagnostic pathway following a positive result. Active navigation programs and personalized guidance appear to hold the potential to overcome this specific attrition. Furthermore, raising public awareness regarding CRC and its available diagnostic options also seems crucial to ensure better completion rates.

Certain social groups consistently show lower compliance with recommended diagnostic pathways. Analyzing these most underscreened populations yields valuable insights for overhauling current outreach efforts. Simultaneously, there is a growing interest in alternative screening tools. When widely and properly implemented, tests such as the mt-sDNA assay and CTC possess the robust potential to increase overall uptake.

Future research should actively evaluate the real-world scalability of these novel methods across diverse demographics. Further studies might also assess the long-term cost-effectiveness of integrating these tools into primary care networks. To address this clinical attrition, existing frameworks may benefit from a thoughtful recalibration. Moving from strict hierarchical algorithms to genuine shared decision-making appears to be a more effective strategy. Scientific inquiry should prioritize implementation science—specifically, the development of strategies that seamlessly integrate evidence-based interventions into routine care—focusing directly on translating theoretical clinical efficacy into sustained patient adherence.

Next-generation screening tools are becoming increasingly affordable, precise, and available. As a result, public expectations are likely to rise. This shifting landscape prompts a continuous re-evaluation of the underlying drivers that dictate patient compliance and medical continuity. In practice, the mechanics of early detection require close alignment with the lived realities, cultural backgrounds, and genuine preferences of the public. A structurally supportive and empathetic framework is vital. It allows health networks to maximize the full potential of CRC screening strategies. Translating patient intent into actual clinical action appears to be a primary mechanism for lowering global mortality from this disease.

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