Beliefs Underlying Colorectal Cancer Information Seeking Among Young Black Adults: a Reasoned Action Approach Elicitation Study

Anita Silwal1 · Carina M. Zelaya2 · Diane B. Francis3

Accepted: 5 September 2022 / Published online: 17 September 2022
© The Author(s) under exclusive licence to American Association for Cancer Education 2022

Abstract
Colorectal cancer in younger adults is more likely to be diagnosed at an advanced stage. Furthermore, younger Black adults are more likely to be diagnosed with and die from colorectal cancer than younger White adults. Given these persistent racial disparities, urgent attention is needed to increase colorectal cancer awareness and information seeking among young Black adults. Guided by the reasoned action approach, the purpose of this study was to identify behavioral, normative, and control beliefs that influence general colorectal cancer information seeking, talking to a healthcare provider about colorectal cancer, and talking to family about cancer history. The sample included N = 194 participants; \( M_{\text{age}} = 28.00 \) (SD = 5.48). Thirty-one percent had ever searched for colorectal cancer information. We identified salient educational advantages to seeking information about colorectal cancer and talking to healthcare providers and family members about cancer history. Barriers included fear, misinformation, low priority, inaccessibility of information, and lack of interest or willingness. This is one of the few studies to investigate cancer communication behaviors among young Black adults. The findings can inform interventions to motivate engagement in cancer communication behaviors.

Keywords Cancer information seeking · Health communication · Colorectal cancer · African Americans · Young adults

Colorectal cancer is the third leading cause of cancer-related deaths in the USA, accounting for over 50,000 deaths yearly [1]. Although the annual rates of new colorectal cancer diagnoses have decreased in recent years, the proportion of cases among adults less than 50 years old is rising [2]. In addition, colorectal cancer in younger adults is more likely to be diagnosed at an advanced stage and less likely to be curable than if diagnosed at a later age [3]. By 2030, 10% of colorectal cancer diagnoses will be among adults 50 years old or younger [4]. This surge in diagnoses among younger adults highlights the importance of early screening, especially among the younger Black adults, given persistent racial disparities in colorectal cancer diagnosis. Younger Black adults are 20% more likely to be diagnosed with colorectal cancer and almost 40% more likely to die than younger White adults [1]. Black Americans also have the highest prevalence of precancerous growths at the time of colonoscopy and advanced-stage cancer at diagnosis while having lower screening rates and later diagnosis than their White counterparts [5, 6]. In response to colorectal cancer disparities, the Multi-Society Task Force on colorectal cancer recommends that average-risk Black Americans start screening at 45 years [7]; the American College of Physicians recommends screenings start at 40 years [5].

Awareness and knowledge of early-onset colorectal cancer are essential components of health behavior [2]. Unfortunately, Black Americans have lower knowledge and awareness about cancer screening and testing than other racial groups [8]. Lack of conversation about family cancer history and not knowing the reliable source of information may impede screening behaviors among younger people [9, 10]. Yet, communication behaviors, such as family cancer history conversations, are mainly studied among older adults. Expanding accessibility to cancer-related health information may help increase knowledge and decision-making, such as for early cancer screening [11]. Given the persistent racial disparities in diagnoses and deaths, urgent attention...
is needed to increase colorectal cancer awareness among younger Black adults. Therefore, the primary aim of this study, guided by the reasoned action approach, was to elicit insights into beliefs about colorectal cancer information seeking, aiming to motivate engagement in cancer communication behaviors.

Cancer Information Seeking

Cancer information seeking is the action of purposefully getting cancer information from interpersonal conversations, online searches, media sources, or posing questions to friends, family, or providers [12]. Information seeking is essential for health-relevant outcomes. There is a positive association between cancer information seeking and cancer-related outcomes, such as screening adherence, health knowledge, self-efficacy, and positive beliefs [13]. Furthermore, a study on colorectal cancer information seeking and scanning found that only a small proportion of the population at risk of developing colon cancer actively looked for screening information, with Blacks using more sources than Whites [12]. Thus, exploring the sources that may influence cancer information-seeking behavior is essential in developing cancer communication interventions.

Information acquisition is not confined to singular media. People use diverse information-seeking sources, such as technology-based, mass media, healthcare providers, family, and friends. The Internet is a primary source of cancer health information and is sometimes used more than other sources [14]. A nationally sampled study found only 17.14% of Blacks sought health information from healthcare providers [15]. Fear of physicians, mistrust of the medical system, and privacy concerns are significant information-seeking barriers for Black Americans [16]. Likewise, individuals seek health information from family members. Family communication about cancer is essential, as family health history is a risk factor for cancer. Research suggests that while the conversation is important in understanding family history, family communication is lacking. Talking to family about cancer could lead to discussions that help facilitate informed decisions on preventive care, increase the awareness of cancer risk, help understand family cancer history and risk reduction choices, and encourage screening [9]. Notably, further research is needed to understand the consequences, referents, and circumstances of people’s motivation to engage in behaviors towards colorectal cancer screening. Individuals seek information congruent to their beliefs, and we associate these beliefs with the adoption of health behaviors [17]. Therefore, this study aimed to identify the salient beliefs among younger Black adults on information seeking, talking to healthcare providers, and talking to family about colorectal cancer.

A Reasoned Action Approach to Understanding Cancer Information Seeking

The reasoned actioned approach is a social cognition theory for understanding and predicting human behavior [18]. It posits that intentions to engage in behavior are the most immediate determinant of the behavior. An important step in the reasoned action approach is eliciting salient beliefs that people form towards a specific behavior. These salient beliefs are (1) behavioral beliefs, which are the positive or negative consequences of performing a behavior; (2) normative beliefs, which are beliefs about who in the participants’ social network might approve or disapprove of the participant engaging in a particular behavior; and (3) control beliefs, which are beliefs about the possible facilitating or inhibiting factors to perform a behavior, that people form towards a specific behavior [18]. These beliefs can arbitrate an individual’s behavioral intentions; for example, when individuals hold more positive than adverse outcomes of engaging in a behavior, their attitude will be favorable. Similarly, if individuals believe that their social network approves of their behavior, individuals are more likely to perceive social pressure to engage in the specific behavior. Finally, if individuals’ perceived behavior control is assumed to be high, control beliefs identify more facilitating factors than the barriers.

The current study reports findings on the behavioral, normative, and control beliefs among younger Black adults about colorectal cancer information seeking, such as talking to providers, family members, and friends. The reasoned action approach effectively identifies beliefs about health-related behaviors [18]. However, there is a paucity of theory-driven research examining younger Black adults’ beliefs about colorectal cancer and how it may affect their information-seeking and screening behaviors. There is even less research on younger Blacks. Our study is unique as we tap into the beliefs of the younger Black adults under 40 years. In addition, to our knowledge, this is the first study to examine salient factors that influence colorectal cancer information-seeking behaviors among younger Black adults using the reasoned action approach as a theoretical framework.

Methods

Study Design and Data Collection

The reasoned action approach informed this qualitative, descriptive beliefs elicitation study. This elicitation study
allowed us to rank the beliefs that influence or hinder information-seeking behaviors about colorectal cancer the most. Data collection was based on the approach described by Middlestadt and colleagues [19], whereby participants are asked a series of open-ended questions to find out their beliefs. According to Fishbein and Ajzen, a sample size of about 30 individuals is adequate for achieving data saturation [18]. However, studies by Middlestadt and others have used samples ranging from 50 to over 300 individuals [20, 21]. For our study, we aimed to recruit about 200 participants. We recruited prospective participants through an online panel maintained by the research firm Prolific in October 2020. Prolific is an online platform that enables researchers to recruit a convenient sample of study participants. Participants were eligible to participate if they identified as Black/African American and were 18 to 39 years old. Of the 280 individuals who started survey, 194 met the inclusion criteria and completed the study. The 86 individuals who did not complete the study met the inclusion criteria; however, they were not allowed to finish the study because we reached the threshold for the number of participants paid for through the Prolific research firm. For those who completed the study, the survey took about 12 min to complete. Participants were compensated by Prolific after completing the questionnaire. Informed consent was obtained from all participants in the study. After providing consent, participants answered a series of demographic questions, followed by questions about information-seeking behavior and exposure to information on colorectal cancer. The University Institutional Review Board approved all study procedures (IRB # 62,479).

**Measures**

**Information-Seeking Behaviors**

First, we assessed participants’ information-seeking behaviors about colorectal cancer by adapting questions about general cancer information-seeking behaviors [22]: “Have you ever looked or searched for information about colorectal cancer from any source?” Participants responded either “Yes” or “No” to the question. We then asked, “In the past three (3) months, have you searched for information about colorectal cancer from any source?”

**Cancer Experiences**

Participants responded to cancer experience–related questions on whether they or their family members have been diagnosed with cancer. For example, we asked: “Have you ever been diagnosed as having cancer?” and “Has a family member or relative ever been diagnosed as having cancer?” Both questions had a yes/no response format. Furthermore, we asked participants about family cancer history: “Have you ever had a discussion about your family cancer history with any biological family member or relative?” (Yes or No). For this item, we define a biological family member or relative as someone’s mother, father, siblings, or children related by blood.

**Belief Elicitation Questions**

The open-ended belief elicitation questions assessed behavioral, normative, and control beliefs and were developed following previously established procedures [18, 19, 21]. Questions elicited (a) behavioral beliefs, or the perceived consequences of engaging in a behavior; (b) normative beliefs, whether the referents acknowledge the behavior; and (c) control beliefs, evaluation of whether the adoption of behavior will be easy or hard. We assessed information-seeking beliefs about colorectal cancer, talking to a healthcare provider, and talking to family and friends. We describe the questions about individual information-seeking behavior only for brevity; the question stems were the same for each target. To identify participants’ behavioral beliefs, we asked: “What are the advantages or good things that might happen if you seek information about colorectal cancer in the next 12 months?” and “What are the disadvantages or bad things that might happen if you seek information about colorectal cancer in the next 12 months?” To identify participants’ normative beliefs, we asked: “Who, or which people or groups, might approve or support you if you were to seek information about colorectal cancer in the next 12 months?” and “Who or which people or groups might disapprove or not support you if you were to seek information about colorectal cancer in the next 12 months?” Lastly, to identify participants’ control beliefs, we asked: “What might make it easier for you to seek information about colorectal cancer in the next 12 months?” and “What might make it harder for you to seek information about colorectal cancer in the next 12 months?”

**Data Analysis**

To analyze the beliefs elicitation questions, we followed procedures outlined by Middlestadt and colleagues [19], which have been validated in other research [21]. Responses to the open-ended questions were thematically analyzed by two research team members. They grouped the responses into themes representing distinct behavioral, normative, and control beliefs. The PI (and senior author), who has over 10 years of experience with the reasoned action approach and formative health communication research, reviewed all coding and guided the analysis. There were few discrepancies between coders, but when differences occurred, they
were discussed among team members to reach a conclusion. The themes were subjected to a frequency analysis by behavior (e.g., seeking information about colorectal cancer) for each belief.

Results

Sample Characteristics

Of the $N = 194$ participants in the sample, 53% were males ($n = 103$) and 47% were females ($n = 91$). The mean age of the sample was 28 ($SD = 5.48$). More than a third of the sample (27%) had a college degree, and 41% had some college education or less. Most (84%) had health insurance. Only two of the participants had ever been diagnosed with cancer; however, almost half (49%) had a family member or relative who had ever been diagnosed. Only 31% ($n = 62$) of the participants had ever searched for colorectal cancer information, whereas 18% mentioned searching for colorectal cancer information in the past 3 months. Fifty percent had discussed their family cancer history with a family member or relative.

Beliefs Elicitation Findings

Table 1 reports behavioral, normative, and control beliefs about seeking information about colorectal cancer. Table 2 reports beliefs about talking to a healthcare provider. Table 3 reports beliefs about talking to family about cancer history.

Beliefs About Seeking Information About Colorectal Cancer

The most common advantages of information seeking were learning preventive measures ($n = 67; 34.54\%$) and colorectal cancer symptoms and risk factors ($n = 63; 32.47\%$). Similarly, the most common disadvantage of seeking information was that one might cause themselves or others to panic ($n = 67; 34.54\%$). Several participants, 33.5% ($n = 65$), mentioned no disadvantages in seeking information on colorectal cancer, whereas 21.65% ($n = 42$) believed that seeking information could cause some to self-diagnose or misdiagnose with colorectal cancer.

Approval about seeking information about colorectal cancer was most commonly expected from family and friends ($n = 172; 88.66\%$) and health care providers ($n = 69; 35.57\%$). Participants mentioned expecting disapproval about seeking information about colorectal cancer from some family and friends ($n = 25; 12.89\%$) and skeptics

Table 1 Beliefs about seeking information about colorectal cancer

| Advantage                                      | n  | %     | Disadvantage                             | n  | %     |
|-----------------------------------------------|----|-------|------------------------------------------|----|-------|
| Learn preventive measures                     | 67 | 34.54 | Might cause oneself and others to panic  | 67 | 34.54 |
| Learn about symptoms and risk factors         | 63 | 32.47 | No disadvantages                          | 65 | 33.51 |
| Learn how to detect colorectal cancer         | 28 | 14.43 | Self-diagnose/misdiagnose                | 42 | 21.65 |
| Share information with people at risk of colorectal cancer | 23 | 11.86 | Being diagnosed late                      | 20 | 10.31 |
| Plan and prepare if a close other or oneself are diagnosed | 17 | 8.76  |                                          |    |       |

Expected approval and disapproval about seeking information

| Approval                                      | n  | %     | Disapproval                              | n  | %     |
|-----------------------------------------------|----|-------|------------------------------------------|----|-------|
| Family and friends                           | 172| 88.66 | No disapproval                           | 153| 78.87 |
| Healthcare providers                         | 69 | 35.57 | Family and friends                       | 25 | 12.89 |
| Unsure/no one                                | 17 | 8.76  | Healthcare providers                     | 12 | 6.19  |
| Everyone/anyone                              | 15 | 7.73  | Medicine skeptics                        | 7  | 3.61  |
| Advocacy/support groups                      | 9  | 4.64  |                                          |    |       |

Facilitators and barriers about seeking information

| Facilitators                                   | n  | %     | Barriers                                 | n  | %     |
|-----------------------------------------------|----|-------|------------------------------------------|----|-------|
| Using the Internet                            | 53 | 27.32 | Nothing                                  | 50 | 25.77 |
| Availability and accessibility to correct information | 48 | 24.74 | Lack of information and credible source  | 48 | 24.74 |
| Visit to and recommendation from doctor       | 33 | 17.01 | Low priority                             | 45 | 23.2  |
| Need or perceived risk                        | 31 | 15.98 | Limited or no access to the Internet     | 37 | 19.07 |
| Awareness and reminder                        | 27 | 13.92 | Fear factor and embarrassment            | 27 | 13.92 |
| Nothing                                       | 21 | 10.82 | Lack of support and encouragement        | 11 | 5.67  |
| Access to healthcare professionals and insurance | 10 | 5.15  | Not having access to healthcare providers and insurance | 10 | 5.15 |
| Having enough time                            | 8  | 4.12  | COVID-19 restrictions                    | 2  | 1.03  |
However, most participants do not expect disapproval from anyone (n = 153) for seeking information about colorectal cancer.

The most common facilitators to seek information on colorectal cancer were using Internet and website (n = 53; 27.32%), availability and accessibility to accurate information on colorectal cancer (n = 48; 24.74%), and visiting and getting a recommendation from doctors (n = 33; 17.01%). Similarly, the common barriers to seeking information were lack of information and credible source (n = 48; 24.74%) and low priority (n = 45; 23.2%). Most participants, 25.77% (n = 50), mentioned that there are no barriers to seeking information on colorectal cancer.

Beliefs About Talking to a Healthcare Provider

The most common advantage of talking to a healthcare provider was learning about personal risk factors and how to prevent colorectal cancer (n = 81; 41.75%). Participants also mentioned that talking to a provider would help them understand colorectal cancer screening and testing (n = 63; 32.47%) and receive accurate and reliable information from an expert source (n = 31; 15.98%). Most participants (n = 73; 37.63%) mentioned there was no disadvantage in talking to a healthcare provider, while others said it might cause them anxiety and paranoia (n = 37) as well as potential financial distress (n = 25; 12.89%). Some participants hesitated to talk to a healthcare provider if they encountered a dismissive doctor (n = 19; 9.79%) or if they feared discovering they had colorectal cancer (n = 19; 9.79%).

Approval about talking to a healthcare provider about colorectal cancer was commonly expected from family and friends (n = 131; 67.53%) or healthcare providers (n = 40; 20.62). Most participants (n = 157; 80.93%) expressed not expecting any disapprovals.

The most common facilitators of talking to a healthcare provider were seeing a knowledgeable and empathetic healthcare provider (n = 76; 39.18%) and having correct information about colorectal cancer, which helps prepare during the healthcare provider visit (n = 56; 28.87%). Similarly, some participants mentioned that prompts and reminders (n = 23; 11.86%) would help them prepare to talk to a healthcare provider about colorectal cancer. Most participants said there were no barriers to talking to a healthcare provider (n = 59; 30.41%). However, some participants mentioned having a dismissive provider (n = 32; 16.49%) as a barrier to engaging in these conversations. Other participants expressed fear and embarrassment when talking to their providers about colorectal cancer (n = 39; 20.1%). Finally, some participants mentioned COVID-19 restrictions being a barrier (n = 11; 5.67%).

Table 2 Beliefs about talking to a healthcare provider

| Advantage | n | % | Disadvantage | n | % |
|-----------|---|---|--------------|---|---|
| Learn personal risk factors and preventive measures | 81 | 41.75 | No disadvantage | 90 | 46.39 |
| Receive accurate and proven information from a credible source | 63 | 32.47 | It might cause anxiety and paranoia | 37 | 19.07 |
| Learn about screenings and testing for colorectal cancer | 31 | 15.98 | Financial distress | 25 | 12.89 |

| Expected approval and disapproval about talking to a healthcare provider |
|-----------------------------|---|---|--------------------------------|---|---|
| Approval | n | % | Disapproval | n | % |
| Family and friends | 131 | 67.53 | No disapproval | 157 | 80.93 |
| Healthcare providers | 40 | 20.62 | Family and friends | 18 | 9.28 |
| Everyone/anyone | 24 | 12.37 | Healthcare providers | 6 | 3.09 |
| Unsure/no one | 20 | 10.31 | Medicine skeptics | 6 | 3.09 |
| Advocacy/support groups | 2 | 1.03 | |

| Facilitators and barriers about talking to a healthcare provider |
|-------------------------------------------------------------|---|---|-----------------|---|---|
| Facilitators | n | % | Barriers | n | % |
| Knowledgeable and empathetic healthcare provider | 76 | 39.18 | Nothing | 59 | 30.41 |
| Having correct information and be prepared | 56 | 28.87 | Fear factor and embarrassment | 39 | 20.1 |
| Nothing/Unsure | 24 | 12.37 | Apathetic providers | 32 | 16.49 |
| Prompts and Reminders | 23 | 11.86 | No insurance and high medical costs | 23 | 11.86 |
| Support and comfort | 18 | 9.28 | Low priority | 21 | 10.82 |
| Flexible COVID-19 restrictions | 4 | 2.06 | Having limited knowledge | 15 | 7.73 |
| COVID-19 restrictions | 11 | 5.67 | |
| Lack of family and friend support | 6 | 3.09 | |
restrictions (n = 11; 5.67%) as a barrier to visiting their healthcare providers.

**Beliefs About Talking to Family About Cancer History**

Some of the most common advantages of talking to family members about cancer history mentioned by participants were to learn about risk factors, symptoms, and preventive measures (n = 59; 30.41%), learn about family history of cancer (n = 50; 25.77%), encourage healthy lifestyle changes (n = 16; 8.25%), and increase screening (n = 16; 8.25%). Conversely, the most common disadvantages of talking to family members about cancer history were the potential to cause unnecessary anxiety and worry among family members (n = 54; 27.84%) and to receive no valuable information from family members (n = 20; 10.31%). However, most participants (n = 67; 34.54%) mentioned no disadvantages of engaging in these conversations.

Approval and support about talking to family members about the history of colorectal cancer was most commonly expected from family and friends (n = 122; 62.89%) and healthcare providers (n = 44; 22.68%). Most participants (n = 140; 72.16%) expected no disapprovals, while some expected disapproval from family and friends (n = 31; 15.98%), some healthcare providers (n = 7; 3.61%), and skeptics (n = 2; 1.03%).

Some of the most common facilitators for talking to family members about colorectal cancer were having a positive relationship with family members (n = 87; 44.85%), having knowledge and correct information to talk about colorectal cancer (n = 34; 17.53%), and having a prompt to talk (n = 24; 12.37%). However, most participants also mentioned no barriers to talking to family about colorectal cancer (n = 58; 29.9%).

**Discussion**

The primary aim of our study was to elicit insights into young Black adults’ beliefs regarding information-seeking behaviors, talking to healthcare providers, and talking with family members about colorectal cancer. As a result, several salient consequences, referents, and circumstances about information-seeking behaviors were identified.

Learning the personal risk factors, symptoms, and preventive measures about colorectal cancer were the most frequently perceived benefits associated with behavioral and control beliefs about information-seeking behaviors.
on colorectal cancer, talking to healthcare providers about colorectal cancer, and talking about the history of colorectal cancer with family members. Seeking information about colorectal cancer may encourage individuals to engage in colorectal cancer conversations with their healthcare providers. However, limited knowledge about colorectal cancer may hinder individuals’ ability to ask for and seek additional information about symptoms or preventive measures. Even though some participants were aware and willing to seek consultation from providers, the potential of encountering dismissive doctors acted as a barrier to reaching out for information. Individuals mentioned being discouraged from talking to healthcare providers if (a) it is hard to schedule an appointment, (b) there is a lack of cordial relationship with their provider, (c) the provider uses medical jargon to explain and describe colorectal cancer topics, and (d) the provider is condescending and not attuned to patients’ concerns. This finding corroborates results from a recent study among African American men who felt that in-depth discussion is critical in enabling patients to get screened [23].

The Internet was identified as a facilitator and a barrier to information-seeking behaviors. Even though the Internet is a primary source for information seeking, a lack of clarity on accurate and legit information from a credible source is a potential barrier for individuals. Participants stated that a plethora of information makes it difficult to separate facts from opinions about colorectal cancer. In contrast, some mentioned limited or false information about the disease. This finding suggests that Internet use may be beneficial if younger Black adults have a general understanding of colorectal cancer and where to find accurate information. The COVID-19 pandemic was also identified as a barrier to seeking consultation. Participants mentioned not being comfortable talking to their provider about colorectal cancer in a telehealth appointment. Participants also indicated that their busy schedules, lack of support and motivation, and lack of knowledge about colorectal cancer are reasons why seeking information about it is low in their health-related priorities. However, this could be remedied by educational interventions and peer-support interventions.

Many participants noted no disadvantages in seeking information and talking to healthcare providers and family. However, some pointed to the negative consequences of information-seeking, such as increased paranoia, potential hypochondria, mental distress, and developing a fear of being diagnosed or misdiagnosed with colorectal cancer. Fear and embarrassment were frequently reported barriers to information-seeking behaviors on colorectal cancer, talking to healthcare providers about colorectal cancer, and talking about the history of colorectal cancer with family members. A recent study among African Americans also reported similar findings: fear of being diagnosed with colorectal cancer may lead to negative attitudes or catastrophic thinking [24].

Negative consequences of information-seeking contribute as much to its theorization as its positive outcomes on health behaviors. Although most participants indicated no one would disapprove of them seeking information about colorectal cancer, some participants believed that family and friends would disapprove of them for superstitious reasons. Because of their faith, some families may not engage in “negative” conversations, such as their family history of colorectal cancer. Furthermore, some participants mentioned their families would not support or motivate them to get screened for colorectal cancer or receive treatment if they were diagnosed. We suggest that education in church settings could help target the faith-based community. Health and medicine skepticism were also identified as a disapproving referent. A family-centered or peer-mediated intervention may be effective, since participants’ normative beliefs show they seek approval from family and friends.

Our findings suggest several primary facilitator areas for educational component and interventions. First, the availability and accessibility to correct information was identified by young Black adults. This shows that a streamlined authentic information resources catering to the colon cancer can educate people about the symptoms, preventative measures, and risk factors. Interventions may include educational sessions, verified social media posts, mobile applications, or authentic magazines with expert’s opinions excluding the medical jargons. The resources and information can be placed strategically in physical and digital settings such as social media group pages, churches, local health departments, providers’ office, and targeted ads making it accessible for young Black adults. While information seeking is prevalent, it could be accosted by a cacophony of misinformation, and those having poor health literacy and educational attainment are vulnerable to misinformation. Thus, it is critical to incorporate interventions to mitigate misinformation while developing educational component. Participants reported that tailored reminders and prompts can trigger conversation with family members and providers and encourage cancer screening. Interventions focusing on provider communication skills such as spending time with patients in discussing the importance of screening, eliciting barriers, and being responsive to patients’ concerns may encourage information-seeking and screening behavior. Approaches such as frequent reminder emails, phone calls, text reminders, or post cards and prompts such as colorectal cancer screening ads or sign boards can prompt individuals to seek information and consult with provider.

Similarly, fear factor and embarrassment were frequently reported as barrier. This means that emotions may impede individuals to talk about the health conditions and seek information. Persuasive health messages such as humor-based messages can serve as an effective method in dealing with fear-related and embarrassing topic.
to help relax and motivate individuals for conversations with family and providers or seek information. Furthermore, a positive emotional appeal and hope messages may motivate better behaviors. Similarly, online interventions such as social media groups or social support groups may influence information-seeking behavior.

Celebrity health announcements can influence and amplify health information-seeking behaviors and increase health communication among minorities. For instance, Black women sought information on pancreatic cancer after the death of Aretha Franklin [14]. And many Black Americans mentioned Chadwick Boseman’s death from colorectal cancer in their knowledge of colorectal cancer [24]. Furthermore, in a post hoc review of additional data collected during this study, several participants said they searched for information and learned about colorectal cancer after Boseman’s death. This suggests more evidence that news coverage or announcement of a celebrity’s illness can induce cancer information-seeking behaviors.

Despite the theoretical and practical implications, the study is not without limitations. First, these findings may not generalize to other people, including the Black people over 40 years, who may have different beliefs and barriers to information-seeking and getting screened. Second, our results primarily represent the beliefs of younger Black adults who have not been diagnosed with colorectal cancer. Future work may benefit from recruiting individuals who have been diagnosed. Finally, we sampled participants recruited through an online database, not in a community setting. There is a need to collect community-based samples to corroborate our findings. Nevertheless, with an emphasis on big data studies, such as the National Institutes of Health’s All of Us research program, online recruitment has merit for advancing science. Despite these limitations, our study supports using theory-based behavioral models in explaining underlying information-seeking beliefs among younger Black adults. To develop future interventions to effectively increase information-seeking and screening behaviors for colorectal cancer among younger Black adults, it is necessary to understand the mechanism by which individuals’ behavior is influenced. Salient belief elicitation studies are critical to developing effective public health interventions; thus, this study contributes to developing theory-based interventions to promote colorectal cancer screening among younger Black adults.

**Funding** This research was aided by grant #IRG 16–182-28 from the American Cancer Society.

**Declarations**

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Kentucky IRB #62479 and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Conflict of Interest** The authors declare no competing interests.

**References**

1. Siegel RL, Miller KD, Jemal A (2020) Cancer statistics, 2020. CA Cancer J Clin 70:7–30
2. Kasi PM, Shahjehan F, Cochuyt JJ, Li Z, Colibaseanu DT, Merchea A (2019) Rising proportion of young individuals with rectal and colon cancer. Clin Colorectal Cancer 18:e87–e95. https://doi.org/10.1016/j.crc.2018.10.002
3. Saad El Din K, Loree JM, Sayre EC, Gill S, Brown CJ, Dau H et al (2020) Trends in the epidemiology of young-onset colorectal cancer: a worldwide systematic review. BMC Cancer. 20:288. https://doi.org/10.1186/s12885-020-06766-9
4. Bailey CE, Hu CY, You YN, Bednarski BK, Rodriguez-Bigas MA, Skibber JM et al (2015) Increasing disparities in the age-related incidences of colon and rectal cancers in the United States, 1975–2010. JAMA Surg 150:17–22. https://doi.org/10.1001/jamasurg.2014.1756
5. Williams R, White P, Nieto J, Vieira D, Francois F, Hamilton F (2016) Colorectal cancer in African Americans: an update. Clin Transl Gastroenterol 7:e185. https://doi.org/10.1038/ctg.2016.36
6. Jackson CS, Oman M, Patel AM, Vega KJ (2016) Health disparities in colorectal cancer among racial and ethnic minorities in the United States. J Gastrointest Oncol 7:S32–S43. https://doi.org/10.3978/j.issn.2078-6891.2015.039
7. Rex DK, Boland CR, Dominitz JA, Giardiello FM, Johnson DA, Kaltenbach T et al (2017) Colorectal cancer screening: recommendations for physicians and patients from the U.S. Multi-society task force on colorectal cancer. Am J Gastroenterol 112:1016–30. https://doi.org/10.1038/ajg.2017.174
8. Carnahan LR, Jones L, Brewer KC, Watts EA, Peterson CE, Ferrans CE et al (2021) Race and gender differences in awareness of colorectal cancer screening tests and guidelines among recently diagnosed colon cancer patients in an urban setting. J Cancer Educ 36:567–575. https://doi.org/10.1007/s13187-019-01666-4
9. Krakow M, Rising CJ, Trivedi N, Yoon DC, Vanderpool RC (2020) Prevalence and correlates of family cancer history knowledge and communication among US adults. Prev Chronic Dis 17:E146. https://doi.org/10.5888/pcd17.200257
10. Mitchell JA, Hawkins J, Watkins DC (2013) Factors associated with cancer family history communication between African American men and their relatives. J Mens Stud 21:97–111. https://doi.org/10.3149/jms.2102.97
11. Brandt HM, Dolinger HR, Sharpe PA, Hardin JW, Berger FG (2012) Relationship of colorectal cancer awareness and knowledge with colorectal cancer screening. Colorectal Cancer 1:383–396. https://doi.org/10.2217/crc.12.45
12. Liu J, King AJ, Margolin D, Niederdeppe J (2020) Information seeking and scanning about colorectal cancer screening among Black and White Americans, ages 45–74: Comparing information sources and screening behaviors. J Health Commun 25:402–411. https://doi.org/10.1080/10810730.2020.1776424
13. Shneyderman Y, Rutten LJ, Arheart KL, Byrne MM, Kornfeld J, Schwartz SJ (2016) Health information seeking and cancer
screening adherence rates. J Cancer Educ 31:75–83. https://doi.org/10.1007/s13187-015-0791-6
14. Francis DB, Zelaya CM (2021) Cancer fatalism and cancer information seeking among Black women: Examining the impact of Aretha Franklin’s death on cancer communication outcomes. J Cancer Educ 36:763–768. https://doi.org/10.1007/s13187-020-01701-9
15. Swoboda CM, Van Hulle JM, McAlearney AS, Huerta TR (2018) Odds of talking to healthcare providers as the initial source of healthcare information: updated cross-sectional results from the Health Information National Trends survey (HINTS). BMC Fam Pract 19:146. https://doi.org/10.1186/s12875-018-0805-7
16. Landrine H, Corral I (2015) Targeting cancer information to African Americans: the trouble with talking about disparities. J Health Commun 20:196–203. https://doi.org/10.1080/10810730.2014.920061
17. Waters EA, Wheeler C, Hamilton JG (2016) How are information seeking, scanning, and processing related to beliefs about the roles of genetics and behavior in cancer causation? J Health Commun 21:6–15. https://doi.org/10.1080/10810730.2016.1193917
18. Fishbein M, Ajzen I (2010) Predicting and changing behavior: the reasoned action approach. Psychology Press, New York, NY
19. Middlestadt SE, Bhattacharyya K, Rosenbaum J, Fishbein M, Shepherd M (1996) The use of theory based semistructured elicitation questionnaires: formative research for CDC’s prevention marketing initiative. Public Health Rep 111:18–27
20. Middlestadt SE (2012) Beliefs underlying eating better and moving more: Lessons learned from comparative salient belief elicitations with adults and youths. Ann Am Acad Pol Soc Sci 640:81–100. https://doi.org/10.1177/0002716211425015
21. Yzer M, Gilasevitch J (2019) Beliefs underlying stress reduction and depression help-seeking among college students: an elicitation study. J Am Coll Health 67:153–160. https://doi.org/10.1080/07448481.2018.1462828
22. Westat (2019) Health Information National Trends survey 5 (HINTS 5) Cycle 2 methodology report Rockville, MD: National Cancer Institute; Available from: https://hints.cancer.gov/docs/methodologyreports/HINTS5_Cycle_2_Methodology_Report.pdf
23. Earl V, Beasley D, Ye C, Halpin SN, Gauthreaux N, Escoffery C et al (2021) Barriers and facilitators to colorectal cancer screening in African-American men. Dig Dis Sci. https://doi.org/10.1007/s10620-021-06960-0
24. Luque JS, Vargas M, Wallace K, Matthew OO, Tawk R, Ali AA, Kiros G-E, Harris CM, Gwede CK (2022) Engaging the community on colorectal cancer screening education: focus group discussions among African Americans. J Cancer Educ 37(2):251–262. https://doi.org/10.1007/s13187-021-02019-w

Publisher’s Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.